Heatherglen Planned Development, TTM 17604, CUP 15-006

Draft Environmental Impact Report

Appendix D – Traffic Impact Analysis

LINSCOTT LAW & GREENSPAN engineers

REVISED TRAFFIC IMPACT ANALYSIS REPORT

HEATHERGLEN RESIDENTIAL PROJECT

Highland, California

June 13, 2019

(Update of the February 5, 2019 Report)

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EXECUTIVE SUMMARY

Project Description

- The Heatherglen Residential Project site is generally located on the south side of Greenspot Road, east of Merris Street, and west of the Creek Flood Control Channel in the City of Highland, San Bernardino County, California. The proposed Project will consist of up to 215 single-family dwelling units (DU). The site will also include a community park and areas designated for conservation and a retention basin. Please note the community park is for the use of the residents and will not be used for youth soccer, baseball, or at large community events that would draw an increase of Project trips from outside of the development. The proposed Project is expected to be completed by Year 2019.

- Access for the proposed Project will be provided via the extension of Old Greenspot Road and one (1) full-movement access driveway and one (1) left/right-turn in and right-turn out driveway on Greenspot Road. The full access driveway will be located at the existing intersection of Gold Buckle Road at Greenspot Road and the limited access driveway will be located east of Gold Buckle Road. The proposed Project will also connect to the existing Abbey Way in the southwest corner of the site to provide emergency access only.

- The Project is expected to generate 2,047 weekday daily trips (one half arriving, one half departing), with 161 trips (40 inbound, 121 outbound) produced in the weekday AM peak hour and 215 trips (135 inbound, 80 outbound) produced in the weekday PM peak hour.

Study Area

- Nine (9) key study intersections and one (1) future Project driveway were designated for evaluation based on City of Highland Traffic Impact Analysis (TIA) criteria and discussions with City staff. The key intersections selected for evaluation in this report provide local and regional access to the study area and are listed as follows:

    1. SR-210 EB Ramps at 5th Street
    2. SR-210 WB Ramps at Greenspot Road
    3. Lowes Center at Greenspot Road
    4. Shopping Center at Greenspot Road
    5. Boulder Avenue at Greenspot Road
    6. Orange Street at Greenspot Road
    7. Church Street at Greenspot Road
    8. Club View Drive/Merris Street at Greenspot Road

9. Gold Buckle Road at Greenspot Road
10. Project Driveway 2 at Greenspot Road *[Future Intersection]*

Related Projects Description

- The ten (10) related projects are expected to generate 78,313 daily trips (one half arriving, one half departing) on a "typical" weekday, with 4,961 trips (1,758 inbound and 3,203 outbound) forecast during the AM peak hour and 7,640 trips (4,419 inbound and 3,221 outbound) forecast during the PM peak hour.

Traffic Impact Analysis

Existing Traffic Conditions

- For the Existing traffic conditions, all of the nine (9) key study intersections currently operate at acceptable LOS D or better during the AM and PM peak hours.

Existing With Project Traffic Conditions

- For the Existing With Project traffic conditions, two (2) of the nine (9) key study intersections are forecast to operate at unacceptable levels of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The remaining seven (7) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours.

  Two (2) of the nine (9) key study intersections will have a significant impact under the Existing With Project traffic conditions when compared to the LOS criteria defined in this report. However, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Year 2019 With Project Traffic Conditions

- For the Year 2019 With Project traffic conditions, three (3) of the nine (9) key study intersections are forecast to operate at unacceptable levels of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The remaining six (6) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours.

  Three (3) of the nine (9) key study intersections will have a significant impact under the Year 2019 With Project traffic conditions when compared to the LOS criteria defined in this report. However, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the

recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Year 2040 With Project Traffic Conditions

- For the Year 2040 With Project traffic conditions, five (5) of the nine (9) key study intersections are forecast to operate at unacceptable levels of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The remaining four (4) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours.

  Five (5) of the nine (9) key study intersections will have a significant impact under the Year 2040 With Project traffic conditions when compared to the LOS criteria defined in this report. However, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Project-Specific Improvements

Existing With Project, Year 2019 With Project, and Year 2040 With Project Traffic Conditions

- The Project-specific improvements listed below are anticipated to be completed in conjunction with the Project development and have been assumed in the Existing With Project, Year 2019 With Project, and Year 2040 With Project traffic conditions:
  - Intersection 9. Gold Buckle Road at Greenspot Road: Add a south leg with a shared northbound left-thru-right-turn outbound lane and one inbound lane to provide Project access. Restripe the westbound approach on Greenspot Road to provide an exclusive left-turn lane.
  - Intersection 10. Project Driveway 2 at Greenspot Road: This intersection is proposed to be a one-way stop-controlled three-legged intersection with no north leg. The northbound movement will consist of a right-turn only lane. The eastbound movement will consist of a through lane and a shared through-right-turn lane. The westbound movement will consist of an exclusive left-turn lane and two (2) through lanes.

5th Street/Greenspot Road Master Plan Planned Improvements

Year 2019 Without Project, Year 2019 With Project, Year 2040 Without Project, and Year 2040 With Project Traffic Conditions

- The planned improvements listed below are anticipated to be completed in conjunction with the 5th Street/Greenspot Road Master Plan and have been assumed in the Year 2019 Without

Project, Year 2019 With Project, Year 2040 Without Project, and Year 2040 With Project traffic conditions:

- Intersection 1. SR-210 EB Ramps at 5th Street: Widen and/or restripe the SR-210 EB off-ramp to provide an exclusive left-turn lane. Convert the existing shared through-left-turn lane to a shared left-through-right-turn lane. Widen and/or restripe the south leg to provide a third on-ramp lane. Widen and/or restripe the eastbound approach of 5th Street to provide two (2) additional through lanes and a second exclusive right-turn lane. Provide a third westbound departure lane. Widen and/or restripe to provide two additional eastbound departure lanes. Remove the crosswalks on the north and south legs. Modify the existing traffic signal.
- Intersection 2. SR-210 WB Ramps at Greenspot Road: Widen and/or restripe the north leg to provide a third on-ramp lane. Widen and/or restripe the eastbound approach of Greenspot Road to provide a third through lane. Provide a fourth westbound departure lane. Restripe the westbound approach to provide a fourth through lane. Modify the existing traffic signal.
- Intersection 3. Lowes Center at Greenspot Road: Add a north leg and provide the southbound approach with an exclusive left-turn lane and a shared through-right-turn lane. Provide two northbound departure lanes. Restripe the northbound approach to convert the northbound right-turn lane to a shared through-right-turn lane. Stripe a crosswalk across the north leg. Modify the existing traffic signal to provide an eight phase signal.
- Intersection 4. Shopping Center at Greenspot Road: Add a north leg and provide the southbound approach with an exclusive left-turn lane, a through lane, and an exclusive right-turn lane. Provide two northbound departure lanes. Restripe the northbound approach to convert the second exclusive left-turn lane to a through lane and to convert the shared through-right turn lane to an exclusive right-turn lane. Restripe the eastbound approach on Greenspot Road to provide a second exclusive left-turn lane. Stripe a crosswalk across the north leg and remove the crosswalk on the west leg. Modify the existing traffic signal to provide an eight phase signal.
- Intersection 5. Boulder Avenue at Greenspot Road: Widen and/or restripe the northbound approach on Boulder Avenue to convert the shared through-right-turn lane to a through lane and an unsignalized exclusive right-turn lane. Restripe the southbound approach to provide a second exclusive left-turn lane. Restripe the eastbound approach on Greenspot Road to provide a third through lane. Widen and/or restripe the westbound approach to provide a second exclusive left-turn lane and a third through lane. Provide a third eastbound departure lane. Modify the existing traffic signal.
- Intersection 6. Orange Street at Greenspot Road: Widen and/or restripe the eastbound approach on Greenspot Road to provide an exclusive right-turn lane. Provide the westbound departure with a third lane. Widen and/or restripe the

westbound approach to provide an exclusive right-turn lane. Modify the existing traffic signal.

Recommended Improvements

Existing With Project Traffic Conditions

- The results of the Existing With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact two (2) of the of nine (9) key study intersections. The remaining seven (7) key study intersections are forecast to operate at acceptable levels of service under the Existing With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Existing With Project traffic:
  - Intersection 8. Club View Drive/Merris Street at Greenspot Road: Install a traffic signal and design for five-phase operation with protected left-turn phasing on Greenspot Road.
  - Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation.

Year 2019 With Project Traffic Conditions

- The results of the Year 2019 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact three (3) of the of nine (9) key study intersections. The remaining six (6) key study intersections are forecast to operate at acceptable levels of service under the Year 2019 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Year 2019 With Project traffic:
  - Intersection 6. Orange Street at Greenspot Road: Restripe the southbound through lane on Orange Street to a shared through-right-turn lane. Modify the existing traffic signal as needed.
  - Intersection 8. Club View Drive/Merris Street at Greenspot Road: Install a traffic signal and design for five-phase operation with protected left-turn phasing on Greenspot Road.
  - Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation.

Year 2040 With Project Traffic Conditions

- The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact five (5) of the of nine (9) key study intersections. The remaining four (4) key study intersections are forecast to operate at acceptable levels of service under the Year 2040 With Project traffic conditions. The

improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Year 2040 With Project traffic:

- Intersection 1. SR-210 EB Ramps at 5th Street: Widen and/or restripe the southbound off-ramp to provide a second exclusive left-turn lane. Modify the existing traffic signal as needed.
- Intersection 6. Orange Street at Greenspot Road: Restripe the southbound through lane on Orange Street to a shared through-right-turn lane. Restripe the westbound right-turn lane on Greenspot Road to a shared through-right-turn lane. Modify the existing traffic signal as needed.
- Intersection 7. Church Street at Greenspot Road: Restripe the southbound through lane on Church Street to a shared through-right-turn lane. Modify the existing traffic signal as needed.
- Intersection 8. Club View Drive/Merris Street at Greenspot Road: Install a traffic signal and design for five-phase operation with protected left-turn phasing on Greenspot Road.
- Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation.

Traffic Signal Warrant Analysis

Existing With Project Traffic Conditions

- The results of the peak-hour traffic signal warrant analysis for the Existing With Project traffic conditions indicate that the following two (2) key unsignalized impacted intersections have future traffic conditions that would exceed the volume thresholds of Warrant #3, Part B for the AM and/or PM peak hours:
  - 8. Club View Drive/Merris Street at Greenspot Road
  - 9. Gold Buckle Road at Greenspot Road

  The analysis and the recommended improvements show that the above-mentioned two (2) intersections in the Existing With Project traffic conditions are recommended to be signalized. With signalization of these two (2) intersections, which are warranted, these intersections are forecast to operate at acceptable service levels during the AM and PM peak hours.

Year 2019 With Project Traffic Conditions

- The results of the peak-hour traffic signal warrant analysis for the Year 2019 With Project traffic conditions indicate that the following two (2) key unsignalized impacted intersections have future traffic conditions that would exceed the volume thresholds of Warrant #3, Part A and/or Part B for the AM and/or PM peak hours:

- 8. Club View Drive/Merris Street at Greenspot Road
- 9. Gold Buckle Road at Greenspot Road

The analysis and the recommended improvements show that above-mentioned two (2) intersections in the Year 2019 With Project traffic conditions are recommended to be signalized. With signalization of these two (2) intersections, which are warranted, these intersections are forecast to operate at acceptable service levels during the AM and PM peak hours.

Year 2040 With Project Traffic Conditions

- The results of the peak-hour traffic signal warrant analysis for the Year 2040 With Project traffic conditions results indicate that the following two (2) key unsignalized impacted intersections have future traffic conditions that would exceed the volume thresholds of Warrant #3, Part A and/or Part B for the AM and/or PM peak hours:
  - 8. Club View Drive/Merris Street at Greenspot Road
  - 9. Gold Buckle Road at Greenspot Road

The analysis and the recommended improvements show that the above-mentioned two (2) intersections in the Year 2040 With Project traffic conditions are recommended to be signalized. With signalization of these two (2) intersections, which are warranted, these intersections are forecast to operate at acceptable service levels during the AM and PM peak hours.

Project Fair Share Analysis

Year 2019 With Project Traffic Conditions

- The fair share percentages (worse time period impacted) for the three (3) impacted intersections for the Year 2019 With Project traffic conditions are shown below:
  - 6. Orange Street at Greenspot Road 14.86%
  - 8. Club View Drive/Merris Street at Greenspot Road 21.71%
  - 9. Gold Buckle Road at Greenspot Road 17.58%

The Project's fair share contribution to offset all Year 2019 With Project intersection Project impacts is ***$113,085.00***.

Year 2040 With Project Traffic Conditions

- The Project fair share percentages (worse time period impacted) for the five (5) impacted intersections for the Year 2040 With Project traffic conditions are shown below:
  - 1. SR-210 EB Ramps at 5th Street 2.71%
  - 6. Orange Street at Greenspot Road 7.73%

- 7. Church Street at Greenspot Road 8.81%
- 8. Club View Drive/Merris Street at Greenspot Road 8.97%
- 9. Gold Buckle Road at Greenspot Road 7.20%

The Project's fair share contribution to offset all Year 2040 With Project intersection Project impacts is ***$19,927.50***.

Site Access and Internal Circulation Evaluation

- Gold Buckle Road at Greenspot Road is forecast to operate at an unacceptable LOS E during the PM peak hour. Project Driveway 2 at Greenspot Road is forecast to operate at an acceptable LOS B during the AM and PM peak hours under the Existing With Project traffic conditions. However, after implementation of the recommended mitigation measures, the impacted intersection is forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

- Gold Buckle Road at Greenspot Road is forecast to operate at an unacceptable LOS F during the AM and PM peak hours. Project Driveway 2 at Greenspot Road is forecast to operate at an acceptable LOS C or better during the AM and PM peak hours under the Year 2019 With Project traffic conditions. However, after implementation of the recommended mitigation measures, the impacted intersection is forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

- The Gold Buckle Road at Greenspot Road is forecast to operate at an unacceptable LOS F during the AM and PM peak hours. Project Driveway 2 at Greenspot Road is forecast to operate at an acceptable LOS C or better during the AM and PM peak hours under the Year 2040 With Project traffic conditions. However, after implementation of the recommended mitigation measures, the impacted intersection is forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Recommended Improvements

- The results of the Existing With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact one (1) of the two (2) Project driveways. The remaining Project driveway is forecast to operate at acceptable levels of service under the Existing With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersection significantly impacted by the Existing With Project traffic:
  - Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation.

- The results of the Year 2019 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact one (1) of the two (2) Project driveways.

The remaining Project driveway is forecast to operate at acceptable levels of service under the Year 2019 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersection significantly impacted by the Year 2019 With Project traffic:

- Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation.

- The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact one (1) of the two (2) Project driveways. The remaining Project driveway is forecast to operate at acceptable levels of service under the Year 2040 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersection significantly impacted by the Year 2040 With Project traffic:

  - Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation.

Internal Circulation Evaluation

- The on-site and off-site circulation was evaluated in terms of vehicle-pedestrian conflicts. Based on our review of the preliminary site plan, the overall layout does not create significant vehicle-pedestrian conflict points and the driveway throat lengths are sufficient such that access is not impacted by internal vehicle queuing/stacking. Project traffic is not anticipated to cause significant queuing/stacking on the Project driveway. The on-site circulation is acceptable based on our review of the proposed site plan. The alignment, spacing and throat length of the Project driveways are also deemed adequate. As such, motorists entering and exiting the Project site from this driveway will be able to do so comfortably, safely, and without undue congestion.

- "STOP" signs, bars and pavement messages are recommended at the intersection approaches from each of the cul-de-sacs and where the "loaded" local streets intersect with "unloaded" local streets that will be implemented when the Project is developed. Please note that "loaded" streets refer to the internal streets that have homes on its frontage. "Unloaded" streets refer to the internal streets that do not include homes on its frontage. In addition, the proposed roundabout will include appropriate signing and striping improvements. It should be noted that all traffic control devices must comply with the current Manual of Uniform Traffic Control Devices (MUTCD) standards. On-street parking will be available along the internal roadways within the Project.

Caltrans Facilities Analysis

Existing Traffic Conditions

- One (1) basic freeway segment currently operates at an adverse levels of service under the Existing traffic conditions based on the LOS standards defined in this report. The remaining three (3) basic freeway segments are forecast to operate at acceptable LOS D or better during the AM and PM peak hours under the Existing traffic conditions.

- One (1) freeway diverge segment and one (1) freeway merge segment currently operate at adverse levels of service under the Existing traffic conditions based on the LOS standards defined in this report. The remaining two (2) freeway merge and diverge segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Existing traffic conditions.

Existing With Project Traffic Conditions

- One (1) basic freeway segment is forecast to operate at an adverse level of service under the Existing With Project traffic conditions based on the LOS standards defined in this report. The remaining three (3) basic freeway segments are forecast to operate at acceptable LOS D or better during the AM and PM peak hours under the Existing With Project traffic conditions.

  However, the addition of Project trips is not anticipated to result in any new deficient service levels at this location and is forecast to remain an unacceptable LOS E. In compliance with Caltrans impact criteria, the Project's contribution to the SR-210 Eastbound *south of* 5th Street/Greenspot Road can be considered insignificant under this traffic impact analysis scenario.

- One (1) freeway diverge segment and one (1) freeway merge segment are forecast to operate at adverse levels of service under the Existing With Project traffic conditions based on the LOS standards defined in this report. The remaining two (2) freeway merge and diverge segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Existing With Project traffic conditions.

  However, the addition of Project trips is not anticipated to result in any new deficient service levels at these locations and is forecast to remain an unacceptable LOS E. In compliance with Caltrans impact criteria, the Project's contribution to the SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road and the SR-210 Eastbound On-Ramp *from* 5th Street/Greenspot Road can be considered insignificant under this traffic impact analysis scenario.

Year 2019 With Project Traffic Conditions

- Three (3) basic freeway segments are forecast to operate at adverse levels of service under the Year 2019 With Project traffic conditions based on the LOS standards defined in this report. The remaining one (1) basic freeway segment is forecast to operate at an acceptable

LOS D or better during the AM and PM peak hours under the Year 2019 With Project traffic conditions.

Three (3) of the four (4) basic freeway segments will have a significant cumulative impact under the Year 2019 With Project traffic conditions when compared to the LOS criteria defined in this report. However, the implementation of recommended mitigation measures at the impacted basic freeway segments mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted basic freeway segments are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

- Three (3) of the four (4) freeway merge and diverge segments are forecast to operate at adverse levels of service under the Year 2019 With Project traffic conditions based on the LOS standards defined in this report. The remaining one (1) freeway diverge segment is forecast to operate at an acceptable LOS D during the AM and PM peak hours under the Year 2019 With Project traffic conditions.

  Three (3) of the four (4) freeway merge and diverge segments will have a significant cumulative impact under the Year 2019 With Project traffic conditions when compared to the LOS criteria defined in this report. However, the implementation of recommended mitigation measures at the impacted freeway merge and diverge segments mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, the impacted freeway merge and diverge segments are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Year 2040 With Project Traffic Conditions

- All four (4) basic freeway segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Year 2040 With Project traffic conditions. It should be noted that the Basic Freeway Segment analysis includes the planned improvements from the SR-210 Mixed Flow Lane Addition Project in the Year 2040 background traffic conditions.

- One (1) of the four (4) freeway merge and diverge segments is forecast to operate at adverse levels of service under the Year 2040 With Project traffic conditions based on the LOS standards defined in this report. The remaining three (3) freeway merge and diverge segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Year 2040 With Project traffic conditions.

  One (1) of the four (4) freeway merge and diverge segments will have a significant cumulative impact under the Year 2040 With Project traffic conditions when compared to the LOS criteria defined in this report. However, the implementation of recommended mitigation measures at the impacted freeway merge and diverge segments mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, the

impacted freeway merge and diverge segment is forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

SR-210 Mixed Flow Lane Addition Project (Caltrans Facilities)

Year 2040 Without Project and Year 2040 With Project Traffic Conditions

- The planned improvements listed below for basic freeway segments are anticipated to be completed in conjunction with the SR-210 Mixed Flow Lane Addition Project and have been assumed in the Year 2040 Without Project and Year 2040 With Project traffic conditions:
  - 1. SR-210 Westbound *south of* 5th Street/Greenspot Road: Add one (1) mixed flow lane in the westbound direction.
  - 2. SR-210 Westbound *north of* 5th Street/Greenspot Road: Add one (1) mixed flow lane and one (1) auxiliary lane in the westbound direction.
  - 3. SR-210 Eastbound *north of* 5th Street/Greenspot Road: Add one (1) mixed flow lane and one (1) auxiliary lane in the eastbound direction.
  - 4. SR-210 Eastbound *south of* 5th Street/Greenspot Road: Add one (1) mixed flow lane in the eastbound direction.
- The planned improvements listed below for freeway merge and diverge segments are anticipated to be completed in conjunction with the SR-210 Mixed Flow Lane Addition Project and have been assumed in the Year 2040 Without Project and Year 2040 With Project traffic conditions:
  - 1. SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) mixed flow lane in the westbound direction.
  - 2. SR-210 Westbound On-Ramp *from* 5th Street/Greenspot Road: Add one (1) mixed flow lane and one (1) auxiliary lane in the westbound direction.
  - 3. SR-210 Eastbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) mixed flow lane and one (1) auxiliary lane in the eastbound direction.
  - 4. SR-210 Eastbound On-Ramp *from* 5th Street/Greenspot Road: Add one (1) mixed flow lane in the eastbound direction. Extend the existing acceleration lane.

Recommended Improvements (Caltrans Facilities)

Existing With Project Traffic Conditions

- The results of the Existing With Project traffic conditions level of service analyses indicate that one (1) of the four (4) basic freeway segments is forecast to have an unacceptable LOS. However, the addition of Project trips is not anticipated to result in any new deficient service levels at this location and is forecast to remain an unacceptable LOS E. In compliance with

Caltrans impact criteria, the Project's contribution to the SR-210 Eastbound *south of* 5th Street/Greenspot Road can be considered insignificant under this traffic impact analysis scenario. The remaining three (3) basic freeway segments are forecast to operate at acceptable levels of service under the Existing With Project traffic conditions.

- The results of Existing With Project traffic conditions level of service analyses indicate that two (2) of the four (4) freeway merge and diverge segments are forecast to have an unacceptable LOS. However, the addition of Project trips is not anticipated to result in any new deficient service levels at these locations and is forecast to remain an unacceptable LOS E. In compliance with Caltrans impact criteria, the Project's contribution to the SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road and the SR-210 Eastbound On-Ramp *from* 5th Street/Greenspot Road can be considered insignificant under this traffic impact analysis scenario. The remaining two (2) freeway merge and diverge segments are forecast to operate at acceptable levels of service under the Existing With Project traffic conditions.

Year 2019 With Project Traffic Conditions

- The results of the Year 2019 With Project traffic conditions level of service analyses indicate that the proposed Project will have significant cumulative impacts at three (3) of the four (4) basic freeway segments. The remaining one (1) basic freeway segment is forecast to operate at acceptable levels of service under the Year 2019 With Project traffic conditions. However, please note that mitigation is included for the SR-210 Westbound *north of* 5th Street/Greenspot Road freeway segment due to the unacceptable level of service at the adjacent freeway diverge segment. The improvements listed below have been identified to address the traffic impacts at the basic freeway segments cumulatively impacted by the Year 2019 With Project traffic:
    - 1. SR-210 Westbound *south of* 5th Street/Greenspot Road: Add one (1) general purpose lane in the westbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.
    - 2. SR-210 Westbound *north of* 5th Street/Greenspot Road: Add one (1) general purpose lane in the westbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.
    - 3. SR-210 Eastbound *north of* 5th Street/Greenspot Road: Add one (1) general purpose lane in the eastbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.
    - 4. SR-210 Eastbound *south of* 5th Street/Greenspot Road: Add one (1) general purpose lane in the eastbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.

- The results of the Year 2019 With Project traffic conditions level of service analyses indicate that the proposed Project will have significant cumulative impacts at three (3) of the four (4) freeway merge and diverge segments. The remaining one (1) basic freeway segment is forecast to operate at acceptable levels of service under the Year 2019 With Project traffic conditions. However, please note that mitigation is included for the SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road freeway merge segment due to the unacceptable level of service at the adjacent basic freeway segment. The improvements listed below have been identified to address the traffic impacts at the freeway merge and diverge segments cumulatively impacted by the Year 2019 With Project traffic:

    - 1. SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) general purpose lane in the westbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.
    - 2. SR-210 Westbound On-Ramp *from* 5th Street/Greenspot Road: Add one (1) general purpose lane in the westbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.
    - 3. SR-210 Eastbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) general purpose lane in the eastbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.
    - 4. SR-210 Eastbound On-Ramp *to* 5th Street/Greenspot Road: Add one (1) general purpose lane in the eastbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.

Year 2040 With Project Traffic Conditions

- The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will not have significant cumulative impacts at any of the four (4) basic freeway segments. No improvements are recommended.

- The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will have a significant cumulative impact at one (1) of the four (4) freeway merge and diverge segments. The remaining three (3) freeway merge and diverge segments are forecast to operate at acceptable levels of service under the Year 2040 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the basic freeway segments cumulatively impacted by the Year 2040 With Project traffic:

- 1. SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) general purpose lane in the westbound direction. It should be noted that the Project's fair share contribution to offset all Year 2040 With Project freeway diverge Project impacts is ***$23,625.50***.

Caltrans Project Fair Share Analysis

Year 2019 With Project Traffic Conditions – Basic Freeway Segments

- It should be noted that the Freeway improvements are consistent with the SR-210 Mixed Flow Lane Addition Project and the anticipated start of construction is Fall 2019. As such, the Project is not responsible for these improvements and thus no fair-share has been calculated.

Year 2019 With Project Traffic Conditions – Freeway Merge and Diverge Segments

- It should be noted that the Freeway improvements are consistent with the SR-210 Mixed Flow Lane Addition Project and the anticipated start of construction is Fall 2019. As such, the Project is not responsible for these improvements and thus no fair-share has been calculated.

Year 2040 With Project Traffic Conditions – Freeway Merge and Diverge Segments

- The Project fair share percentage (worse time period impacted) for the one (1) impacted diverge segment for the Year 2040 With Project traffic conditions is shown below:
  - 1. SR-210 WB Off Ramp to 5th Street/Greenspot Road 6.75%

  The Project's fair share contribution to offset all Year 2040 With Project freeway diverge Project impacts is ***$23,625.50***.

REVISED TRAFFIC IMPACT ANALYSIS REPORT

HEATHERGLEN RESIDENTIAL PROJECT

Highland, California

June 13, 2019

(Update of the February 5, 2019 Report)

1.0 INTRODUCTION

This traffic impact analysis evaluates the potential traffic impacts of the proposed Heatherglen Residential Project (hereinafter referred to as Project), on the area traffic circulation. The proposed Project would consist of up to 215 single-family dwelling units (DU). The site will also include a community park and areas designated for conservation and a retention basin. The proposed Project is expected to be completed by Year 2019 and this horizon year has been utilized to assess the Project's potential traffic impacts at full occupancy within a near-term cumulative traffic setting.

This report documents the findings and recommendations of a traffic impact analysis conducted by Linscott, Law & Greenspan, Engineers (LLG) to determine the potential traffic impacts that the Project may have on the local and/or regional transportation network in the vicinity of the Project site. The traffic impact analysis evaluates the operating conditions at nine (9) existing key study intersections and one (1) future Project driveway within the Project vicinity, estimates the trip generation potential of the Project and forecasts future (near-term and long-term) operating conditions without and with the Project. In addition, this report also includes a Caltrans Facilities Analysis which includes freeway mainline segments and merge/diverge segments.

The Project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing (i.e. baseline) peak hours and daily traffic information has been collected at nine (9) key study intersections on a "typical" weekday for use in the preparation of intersection and roadway segment level of service calculations. This traffic report analyzes existing and future (near-term and long-term) weekday AM and PM peak hour traffic conditions for Existing, Year 2019, and Year 2040 traffic conditions without and with the proposed Project. Peak hour traffic forecasts for the Year 2019 traffic conditions have been projected by increasing existing traffic volumes by an annual growth rate of two percent (2%) per year and adding the traffic from ten (10) related projects. In addition, peak hour forecasts for the Buildout (Year 2040) traffic conditions have been projected based on the San Bernardino Traffic Analysis Model (SBTAM), administered by LSA Associates, Inc. (LSA).

The work program for this traffic study was developed in conjunction with the City of Highland staff. ***Appendix A*** contains a copy of the approved City of Highland Traffic Impact Study Scoping Agreement.

1.1 Study Area

Nine (9) key study intersections and one (1) future Project driveway were designated for evaluation based on City of Highland Traffic Impact Analysis (TIA) criteria and discussions with City staff. The key intersections selected for evaluation in this report provide local and regional access to the study area and are listed as follows:

1. SR-210 EB Ramps at 5th Street
2. SR-210 WB Ramps at Greenspot Road
3. Lowes Center at Greenspot Road
4. Shopping Center at Greenspot Road
5. Boulder Avenue at Greenspot Road
6. Orange Street at Greenspot Road
7. Church Street at Greenspot Road
8. Club View Drive/Merris Street at Greenspot Road
9. Gold Buckle Road at Greenspot Road
10. Project Driveway 2 at Greenspot Road *[Future Intersection]*

1.2 Traffic Impact Analysis Components

The Highway Capacity Manual (HCM) Delay and corresponding Level of Service (LOS) calculations at the key study locations were used to evaluate the potential traffic-related impacts associated with area growth, related projects and the Project. When necessary, this report recommends intersection/roadway segment improvements that may be required to accommodate future traffic volumes and restore/maintain an acceptable Level of Service and/or addresses the impact of the Project.

Included in this Traffic Impact Analysis are:

- Existing Traffic Counts,
- Estimated Project traffic generation/distribution/assignment,
- Estimated Related Projects traffic generation/distribution/assignment,
- AM and PM peak hour LOS analyses for Existing Conditions,
- AM and PM peak hour LOS analyses for Existing Conditions with Project traffic,
- AM and PM peak hour LOS analyses for Near-Term (Year 2019) Conditions without and with Project traffic,
- Daily, AM and PM peak hour LOS analyses for Long-Term (Year 2040) Conditions without and with Project traffic,
- Planned and Recommended Improvements,
- Traffic Signal Warrant Analysis,
- Project Fair Share Analysis,

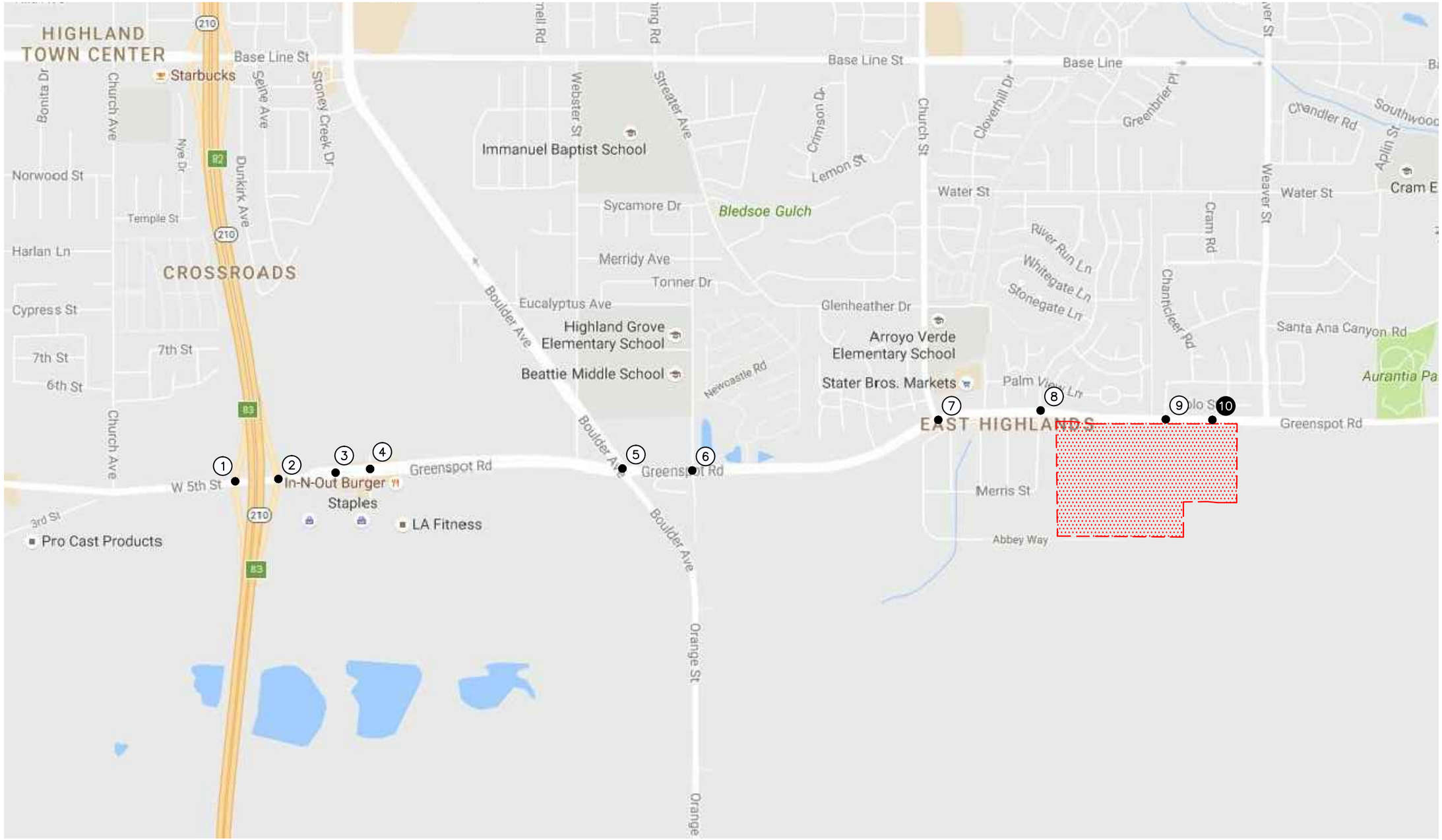
- Site Access and Internal Circulation Evaluation, and
- Caltrans Facilities Analysis.

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the Project and depicts the study locations and surrounding street system.

1.3 Traffic Impact Analysis Scenarios

The following scenarios are those for which Delay and corresponding LOS calculations have been performed at the key intersections and key roadway segments for existing, near-term, and long-term traffic conditions:

A. Existing Traffic Conditions,
B. Existing With Project Traffic Conditions,
C. Scenario (B) with Recommended Improvements, if any,
D. Year 2019 Without Project Traffic Conditions,
E. Year 2019 With Project Traffic Conditions,
F. Scenario (E) With Recommended Improvements, if any,
G. Year 2040 Without Project Traffic Conditions,
H. Year 2040 With Project Traffic Conditions, and
I. Scenario (H) With Recommended Improvements, if any.



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = EXISTING STUDY INTERSECTION

(#) = FUTURE STUDY INTERSECTION

= PROJECT SITE

FIGURE 1-1

VICINITY MAP

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

2.0 PROJECT DESCRIPTION AND LOCATION

The Project site is generally located on the south side of Greenspot Road, east of Merris Street, and west of the Creek Flood Control Channel in the City of Highland, San Bernardino County, California. The proposed Project will consist of the development of up to 215 single-family dwelling units (DU). The site will also include a community park and areas designated for conservation and a retention basin. Please note the community park is for the use of the residents and will not be used for youth soccer, baseball, or at large community events that would draw an increase of Project trips from outside of the development. The proposed Project is expected to be completed by Year 2019.

Figure 2-1 presents the existing site for the proposed Project. ***Figure 2-2*** present the proposed site plans prepared by Albert A. Webb Associates.

2.1 Site Access

Access for the proposed Project will be provided via the extension of Old Greenspot Road and one (1) full-movement access driveway and one (1) left/right-turn in and right-turn out driveway on Greenspot Road. The full access driveway will be located at the existing intersection of Gold Buckle Road at Greenspot Road and the limited access driveway will be located east of Gold Buckle Road.

The proposed Project will also connect to the existing Abbey Way in the southwest corner of the site to provide emergency access only.

SOURCE: GOOGLE

KEY

= PROJECT SITE

LINSCOTT LAW & GREENSPAN engineers

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FIGURE 2-1

EXISTING SITE AERIAL

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: ALBERT A. WEBB ASSOCIATES

FIGURE 2-2

PROPOSED SITE PLAN

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

3.0 ANALYSIS CONDITIONS AND METHODOLOGY

3.1 Existing Street Network

The Foothill Freeway (SR-210) provides regional access to the Project site. The SR-210 is located west of the Project site. Within the vicinity of the Project, the SR-210 provides two general purpose lanes in the eastbound and westbound directions. The principal local network of streets serving the site consists of Greenspot Road/5th Street, Boulder Avenue, and Church Street. The following discussion provides a brief synopsis of the key area streets.

Greenspot Road is an east-west, six-lane divided roadway west of Boulder Avenue and a four-lane divided roadway east of Boulder Street. It borders the north side of the Project site and has a two-way left-turn lane along the Project frontage. Parking is restricted on both sides of the roadway within the vicinity of the Project. Greenspot Road has a posted speed limit of 45 miles per hour (mph). The intersections of Greenspot Road at SR-210 Eastbound Ramps, SR-210 Westbound Ramps, Lowes Center, Shopping Center, Boulder Avenue, Orange Street, and Church Street are controlled by a traffic signal. The intersections of Greenspot Road at Club View Drive/Merris Street and Gold Buckle Road are controlled by a two-way stop. Greenspot Road becomes 5th Street west of the SR-210.

5th Street is an east-west, four-lane divided roadway and is located west of the Project site. Parking is restricted on both sides of the roadway within the vicinity of the Project. 5th Street has a posted speed limit of 45 mph. 5th Street becomes Greenspot Road east of the SR-210.

Boulder Avenue is a north-south, four-lane divided roadway north of Greenspot Road and a two-lane undivided roadway south of Greenspot Road. It is located west of the Project site. Parking is restricted on both sides of the roadway within the vicinity of the Project. Boulder Avenue has a posted speed limit of 50 mph north of Greenspot Road.

Church Street is a north-south, four-lane divided roadway and is located west of the Project site. Parking is restricted on both sides of the roadway within the vicinity of the Project. Church Street has a speed limit of 25 mph.

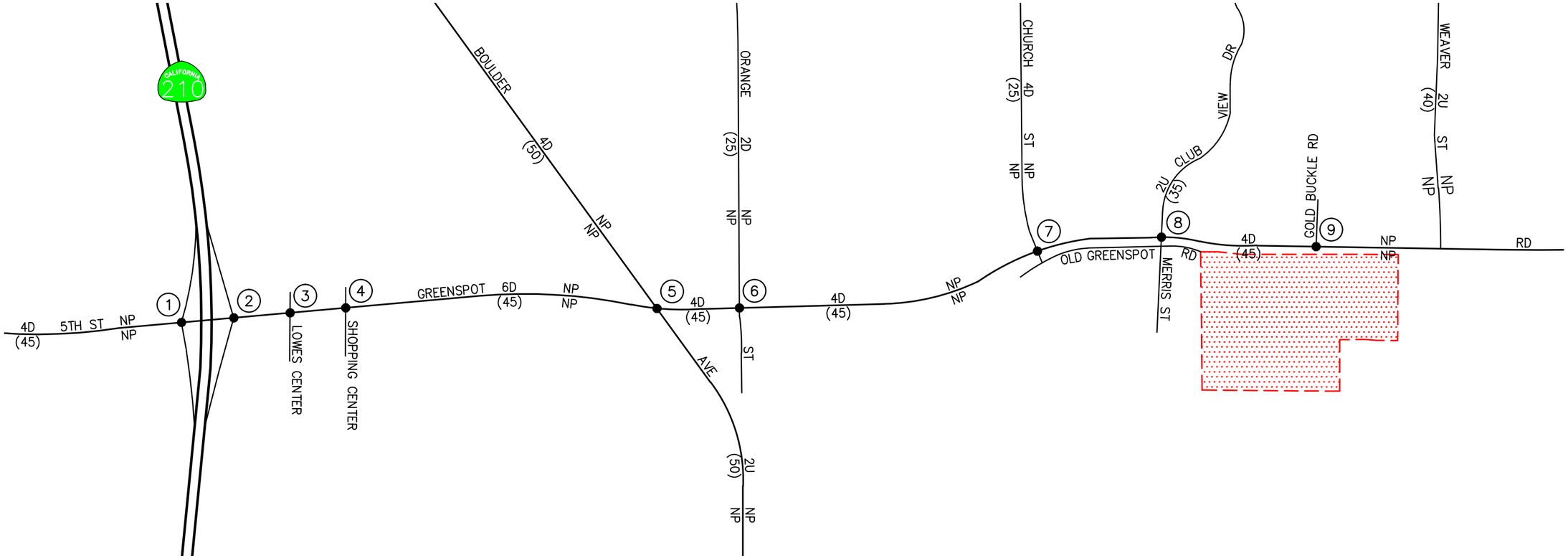
Figure 3-1 presents an inventory of the existing roadway conditions within the study area evaluated in this report. The number of travel lanes and intersection controls for the key area study intersections and roadway segments are identified. ***Figure 3-2*** shows the current City of Highland General Plan Circulation Element.

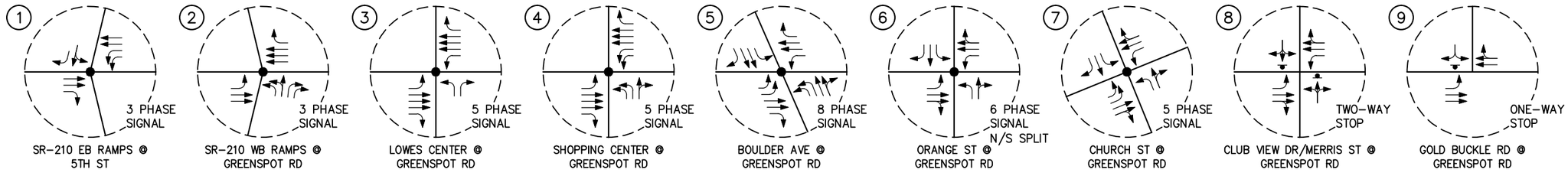
3.2 Existing Transit Services

The study area is served by Omnitrans. A description of the transit services is as follows:

Route 15:

- The route serves Fontana and Redlands via Rialto and San Bernardino.
- The route mainly travels along Orange Street/Boulder Avenue, Greenspot Road, and Church Street within the vicinity of the Project.





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

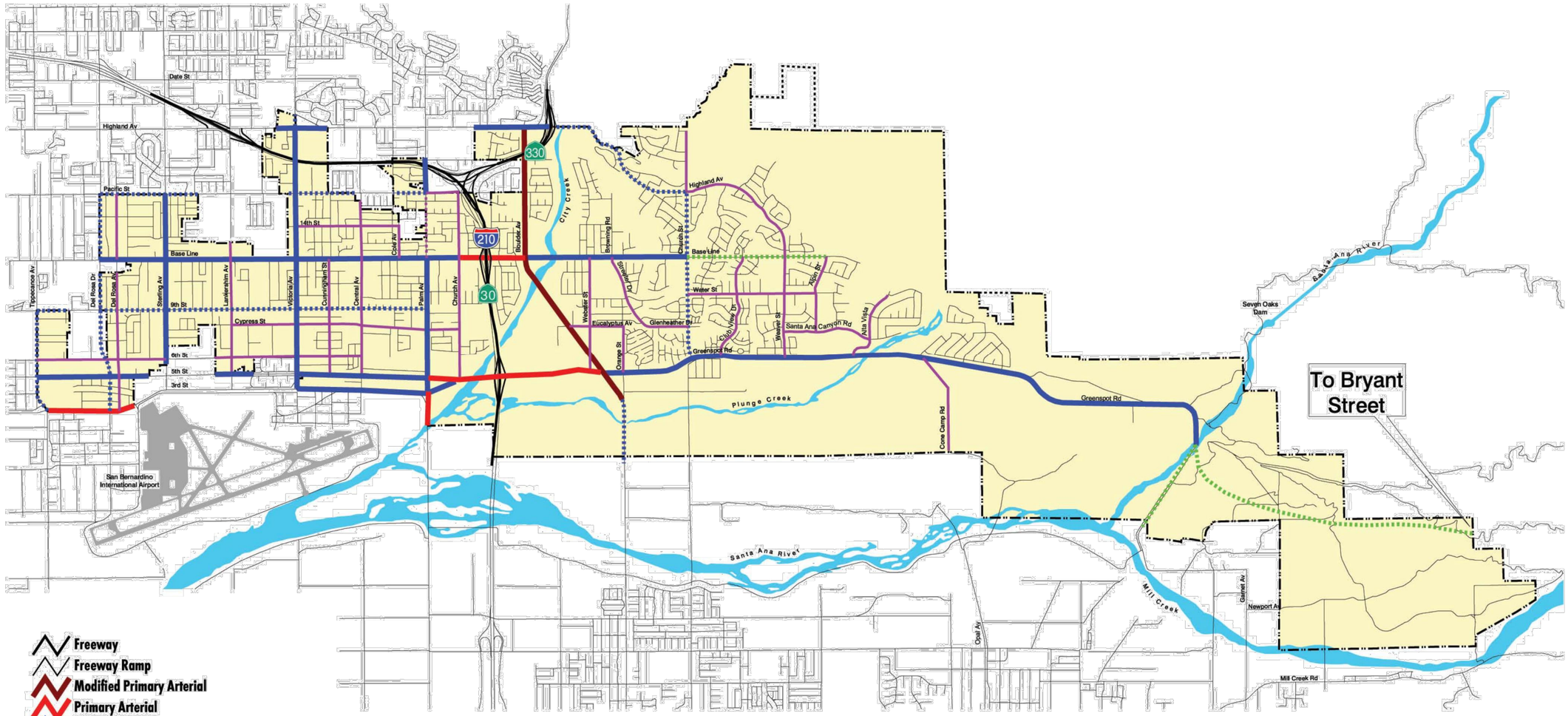
KEY

- ← = APPROACH LANE ASSIGNMENT
- ● = TRAFFIC SIGNAL, ▼ = STOP SIGN
- P = PARKING, NP = NO PARKING
- U = UNDIVIDED, D = DIVIDED
- 2 = NUMBER OF TRAVEL LANES
- (XX)= POSTED SPEED LIMIT (MPH)
- = PROJECT SITE

FIGURE 3-1

EXISTING ROADWAY CONDITIONS AND INTERSECTION CONTROLS

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: CITY OF HIGHLAND

FIGURE 3-2

CITY OF HIGHLAND GENERAL PLAN CIRCULATION ELEMENT
HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

Appendix B contains the most current public transit route schedules and maps.

3.3 Existing Traffic Volumes

Existing AM and PM peak hour traffic volumes for the nine (9) key study intersections evaluated in this report, were collected by *Counts Unlimited* in December 2016. Traffic data collection for the key study locations is inclusive of truck classifications (i.e. large 2-axle trucks, 3-axle trucks and 4+ axle trucks) will be collected. The truck traffic turning movements will be converted to passenger car equivalents (P.C.E.'s) using SANBAG approved factors. P.C.E. factors of 1.5, 2.0 and 3.0 were utilized for large 2-axle trucks, 3-axle trucks and 4+ axle trucks, respectively ***Appendix C*** contains the existing intersection turning movement traffic count data.

Figures 3-3 and ***3-4*** present the existing AM and PM peak hour traffic volumes, respectively, for the nine (9) key study intersections.

Existing traffic count data for the analyzed freeway segments was obtained from the Caltrans website. At the time of analysis, Year 2015 traffic volumes were available and grown 2% to baseline Year 2016.

3.4 Level Of Service (LOS) Analysis Methodologies

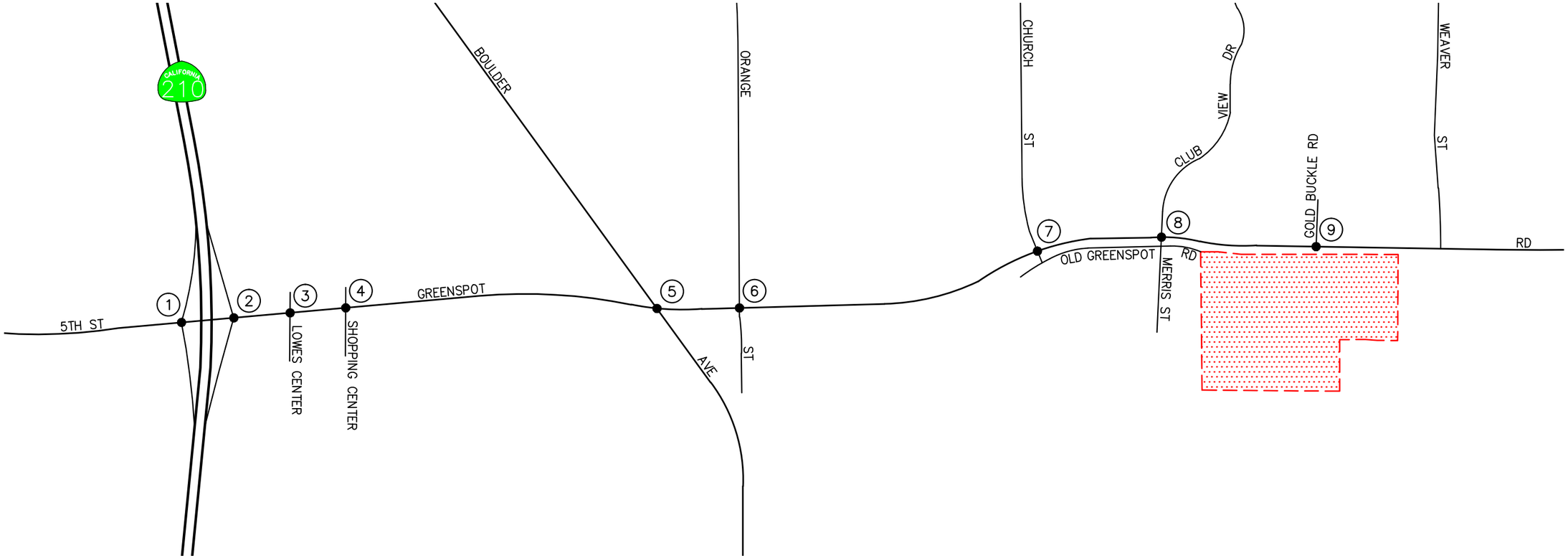
3.4.1 *Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)*

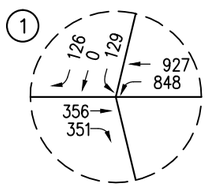
In conformance with City of Highland requirements, AM and PM peak hour operating conditions for the key study intersections were evaluated using the methodology outlined in *Chapter 18 of the Highway Capacity Manual 2010 (HCM 2010)* for signalized intersections. Based on the HCM operations method of analysis, level of service for signalized intersections and approaches is defined in terms of control delay, which is a measure of the increase in travel time due to traffic signal control, driver discomfort, and fuel consumption. Control delay includes the delay associated with vehicles slowing in advance of an intersection, the time spent stopped on an intersection approach, the time spent as vehicles move up in the queue, and the time needed for vehicles to accelerate to their desired speed. LOS criteria for traffic signals are stated in terms of the control delay in seconds per vehicle. The LOS thresholds established for the automobile mode at a signalized intersection are shown in ***Table 3-1***.

3.4.2 *Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections)*

Per the requirements of the City of Highland, the methodology outlined in *Chapter 19 of the HCM 2010* for two-way stop-controlled intersections. LOS criteria for unsignalized intersections differ from LOS criteria for signalized intersections as signalized intersections are designed for heavier traffic and therefore a greater delay. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable, which can reduce users' delay tolerance.

.Two-way stop-controlled intersections are comprised of a major street, which is uncontrolled, and a minor street, which is controlled by stop signs. Level of service for a two-way stop-controlled intersection is determined by the computed or measured control delay. The control delay by movement, by approach, and for the intersection as a whole is estimated by the computed capacity





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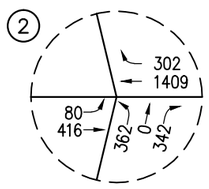
5TH ST



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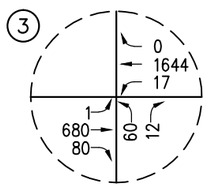
GREENSPOT RD



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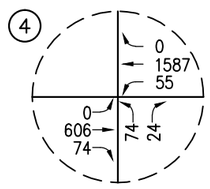

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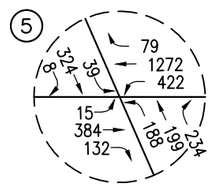

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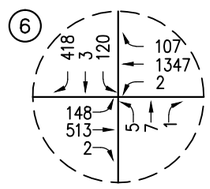

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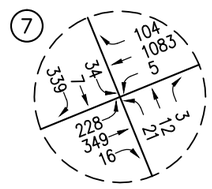
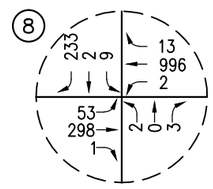
GREENSPOT RD



CHURCH ST @
GREENSPOT RD



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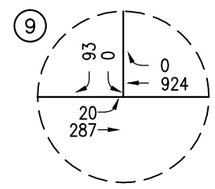
GREENSPOT RD



GOLD BUCKLE RD @
GREENSPOT RD

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

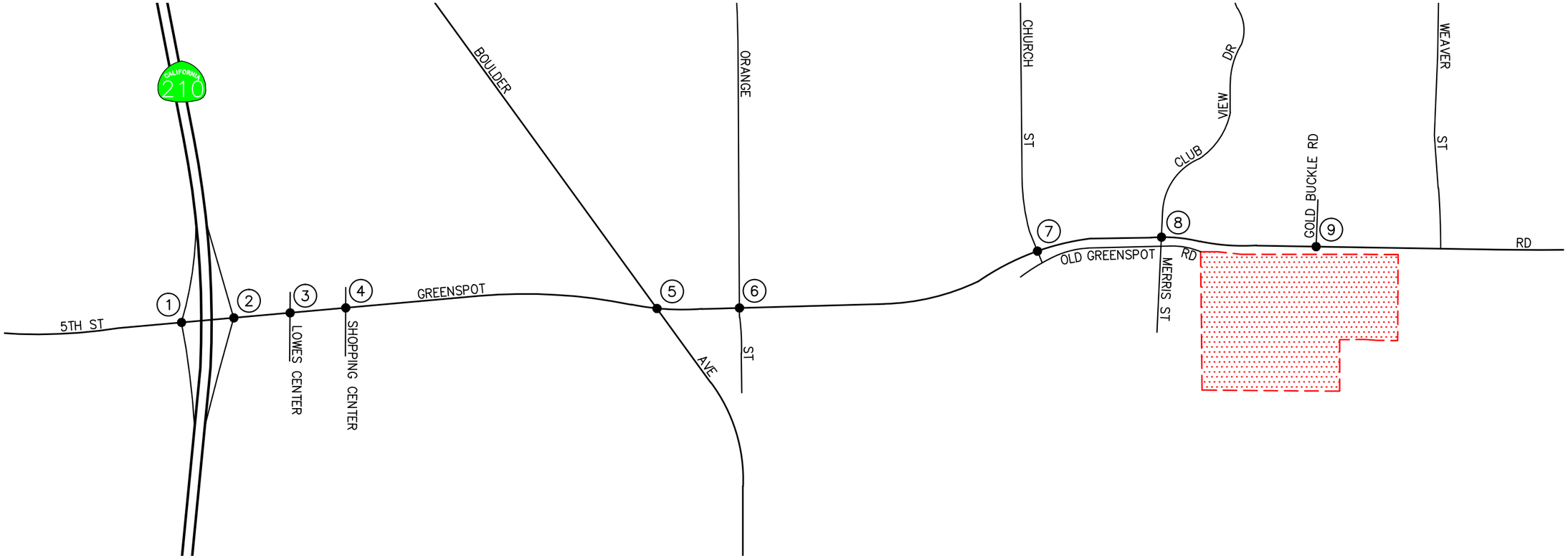
(#) = STUDY INTERSECTION

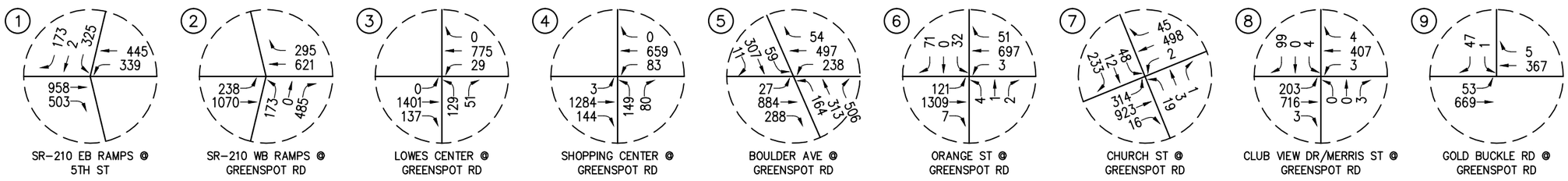
= PROJECT SITE

FIGURE 3-3

EXISTING AM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 3-4

EXISTING PM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

for each movement. LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. The worst side street approach delay is reported. LOS is not defined for the intersection as a whole or for major-street approaches, as it is assumed that major-street through vehicles experience zero delay. The HCM control delay value ranges for two-way stop-controlled intersections are shown in ***Table 3-2***.

3.4.3 *Basic Freeway Segments*

The basic freeway segment criteria are based on peak hour *HCM 2010* density analysis. The capacities are based on information contained in the *HCM 2010*. Basic freeway segment levels of service are determined from segment density. ***Table 3-3*** presents the correlation between LOS and density in terms of passenger cars per mile per lane (pc/mi/ln) for freeway basic freeway segments.

3.4.4 *Freeway Merge And Diverge Segments*

Freeway merge and diverge segment analysis is based on peak hour *HCM 2010* density analysis for freeway-to-arterial interchanges. According to *HCM 2010* methodology, the ramp merge and diverge segments focus on an influential area of 1,500 feet, including the acceleration or deceleration lane(s) and adjacent freeway ramps. The methodology incorporates three fundamental steps:

- Determination of the traffic entering the freeway lanes upstream of the merge or at the beginning of the deceleration lane at diverge;
- Determination of the capacity for the segment; and
- Determination of the density of traffic flow within the ramp influence area and its level of service.

The level of service (LOS) for freeway merge and diverge segments is determined by traffic density based on criteria outlined in the *HCM 2010*. ***Table 3-4*** presents the correlation between LOS and density in terms of passenger cars per mile per lane (pc/mi/ln) for freeway merge and diverge segments.

3.5 Impact Criteria and Thresholds

3.5.1 *Intersections*

The *City of Highland General Plan Circulation Element* states that the City of Highland considers LOS D to be the minimum acceptable LOS for all intersections for peak operating periods. Therefore, any intersection operating at LOS E or LOS F is considered deficient.

3.5.2 *Caltrans Facilities*

Based on the *Caltrans Traffic Impact Study Guidelines,* dated December 2002, Caltrans endeavors to maintain a target LOS at the transition between LOS C and D on State highway facilities and *Caltrans District 8* has typically established that LOS D is the operating standard for all Caltrans facilities. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than appropriate target LOS, the existing service level

should be maintained. Analysis of Caltrans facilities is conducted in ***Sections 14.0*** through ***17.0*** of this report.

TABLE 3-1

LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM METHODOLOGY)[1]

Control Delay (sec/veh)	Level of Service (LOS)	Level of Service Description
≤ 10	A	This level of service occurs when the v/c ratio is low and either progression is exceptionally favorable or the cycle length is very short.
> 10-20	B	This level generally occurs when the v/c ratio is low and either progression is highly favorable or the cycle length is short.
> 20-35	C	Average traffic delays. These higher delays may result when progression is favorable or the cycle length is moderate. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
> 35-55	D	Long traffic delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high *v/c* ratios. Many vehicles stop and individual cycle failures are noticeable.
> 55-80	E	Very long traffic delays. This level is considered by many agencies (i.e. SANBAG) to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high *v/c* ratios. Individual cycle failures are frequent.
> 80	F	Severe congestion. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high *v/c* ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

[1] Source: *Highway Capacity Manual*, Chapter 18: Signalized Intersections.

TABLE 3-2

LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM METHODOLOGY)[2]

Control Delay (sec/veh)	Level of Service (LOS)	Level of Service Description
0-10	A	Little or no delay
> 10-15	B	Short traffic delays
> 15-20	C	Average traffic delays
> 25-35	D	Long traffic delays
> 35-50	E	Very long traffic delays
> 50	F	Severe congestion

[2] Source: *Highway Capacity Manual*, Chapter 19: Two-Way Stop-Controlled Intersections. The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

TABLE 3-3

BASIC FREEWAY SEGMENTS LEVEL OF SERVICE CRITERIA (HCM METHODOLOGY)[3]

LOS	Basic Freeway Segment Density (pc/mi/ln)
A	≤ 11.0
B	> 11.0 – 18.0
C	> 18.0 – 26.0
D	> 26.0 – 35.0
E	> 35.0 – 45.0
F	> 45.0

[3] Source: *HCM 2010, Chapter 11 – Basic Freeway Segments, Exhibit 11-5*.

TABLE 3-4

FREEWAY MERGE AND DIVERGE SEGMENTS LEVEL OF SERVICE CRITERIA (HCM METHODOLOGY)[4]

LOS	Freeway Ramp Density (pc/mi/ln)	Level of Service Description
A	≤ 10.0	Unrestricted operations
B	> 10.0 – 20.0	Merging and diverging maneuvers noticeable to drivers
C	> 20.0 – 28.0	Influence area speeds begin to decline
D	> 28.0 – 35.0	Influence area turbulence becomes intrusive
E	> 35.0	Turbulence felt by virtually all drivers
F	Demand Exceeds Capacity	Ramp and freeway queues form

[4] Source: *HCM 2010, Chapter 13 – Freeway Merge and Diverge Segments, Exhibit 13-2.*

4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations and/or rates to the Project development tabulation.

The second step of the forecasting process is traffic distribution, which identifies the origins and destinations of inbound and outbound Project traffic. These origins and destinations are typically based on demographics and existing/expected future travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of Project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds.

Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway segments and intersection turning movements throughout the study area.

With the forecasting process complete and Project traffic assignments developed, the impact of the Project is isolated by comparing operational (LOS) conditions at selected key intersections using expected future traffic volumes with and without forecast Project traffic. If necessary, the need for site-specific and/or cumulative local area improvements can then be evaluated.

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Trip Generation Forecast

Trip generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and/or rates used in the traffic forecasting procedure are found in the 9th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2012].

The first part of ***Table 5-1*** summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project. The trip generation potential for the proposed Project was forecast using ITE Land Use Code 210: Single-Family Detached Housing rates. Please note the community park is for the use of the residents and will not be used for youth soccer, baseball, or at large community events that would draw an increase of Project trips from outside of the development.

A review of the bottom portion of *Table 5-1* shows that the proposed Project is forecast to generate 2,047 weekday daily trips (one half arriving, one half departing), with 161 trips (40 inbound, 121 outbound) produced in the weekday AM peak hour and 215 trips (135 inbound, 80 outbound) produced in the weekday PM peak hour.

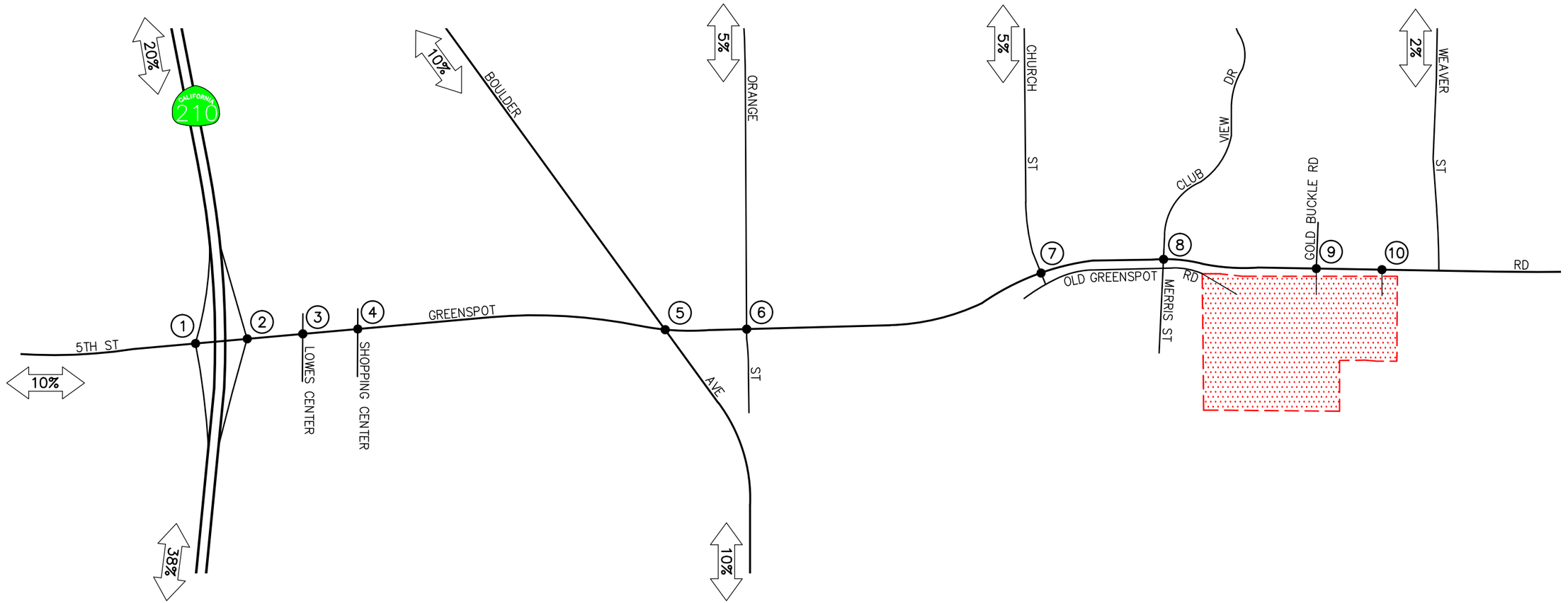
5.2 Project Trip Distribution and Assignment

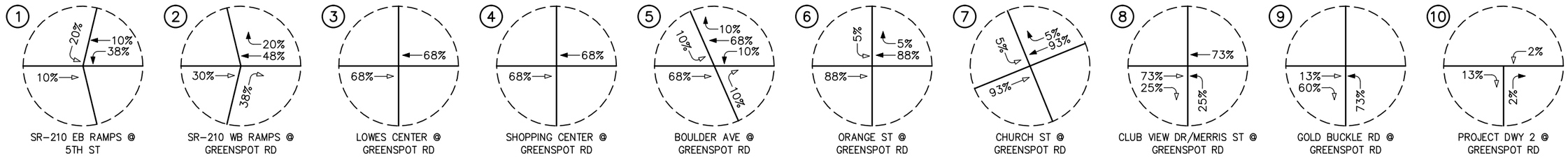
The directional trip distribution patterns for the Project are presented in ***Figure 5-1***. Project traffic volumes, both entering and exiting the site, have been distributed and assigned to the adjacent street system based on the following considerations:

- the site's proximity to major traffic carriers (i.e. State Route 210, etc.),
- expected localized traffic flow patterns based on adjacent street channelization and presence of traffic signals,
- input from City of Highland,
- the traffic-carrying capacity and travel speed available on roadways serving the Project site, and
- ingress/egress availability at the Project site.

The Project trip distribution patterns were submitted to the City staff for their review and approval prior to proceeding with further analyses.

The anticipated AM and PM peak hour Project traffic volumes at the nine (9) key study intersections and one (1) future Project driveway are presented in ***Figures 5-2*** and ***5-3***, respectively.





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LINSCOTT LAW & GREENSPAN engineers

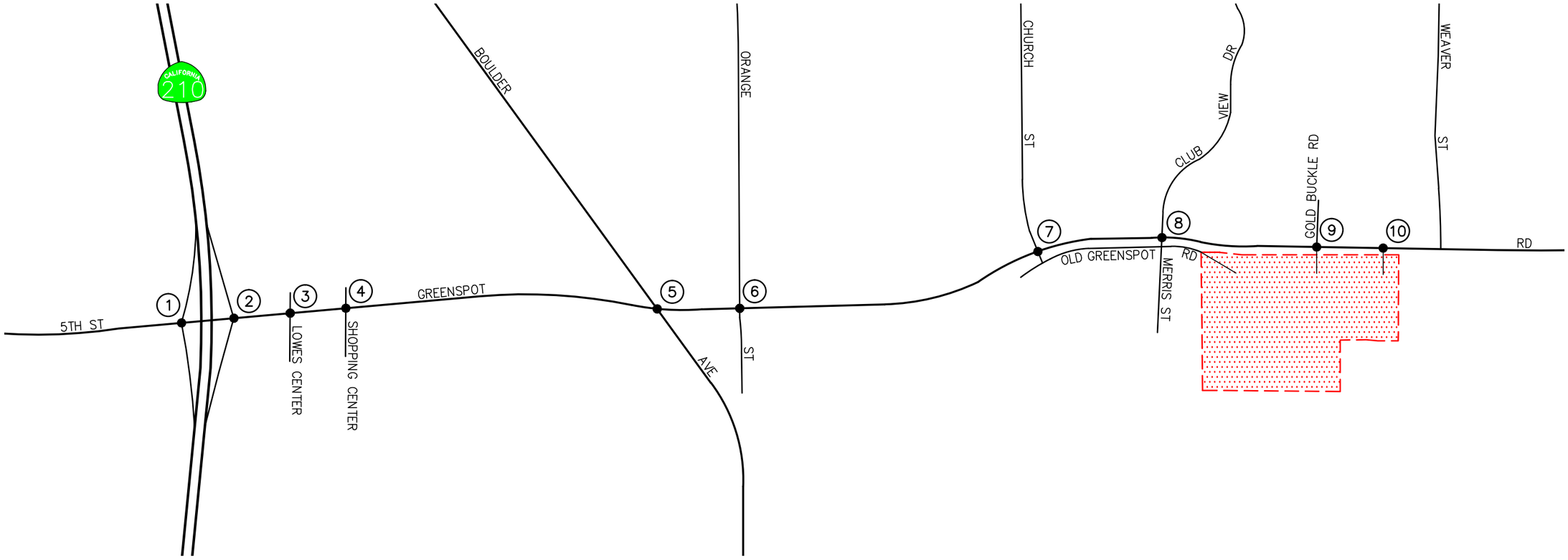
N NO SCALE

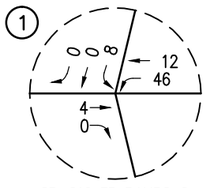
KEY
= INBOUND PERCENTAGE
= OUTBOUND PERCENTAGE
= PROJECT SITE

FIGURE 5-1

PROJECT TRIP DISTRIBUTION PATTERN

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





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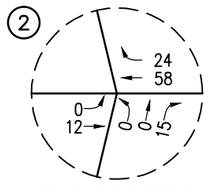

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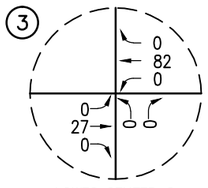
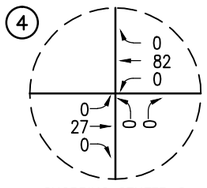


LOWES CENTER @
GREENSPOT RD



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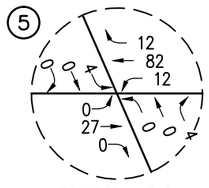
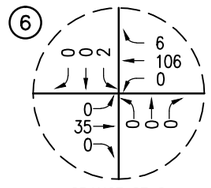


BOULDER AVE @
GREENSPOT RD



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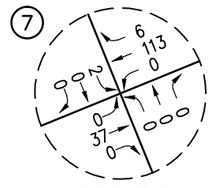

CHURCH ST @
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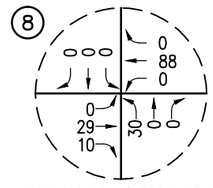

CLUB VIEW DR/MERRIS ST @
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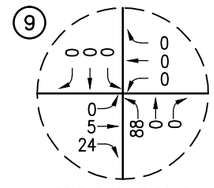
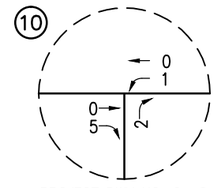


GOLD BUCKLE RD @
GREENSPOT RD



PROJECT DWY NO. 2 @
GREENSPOT RD

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N NO SCALE

KEY

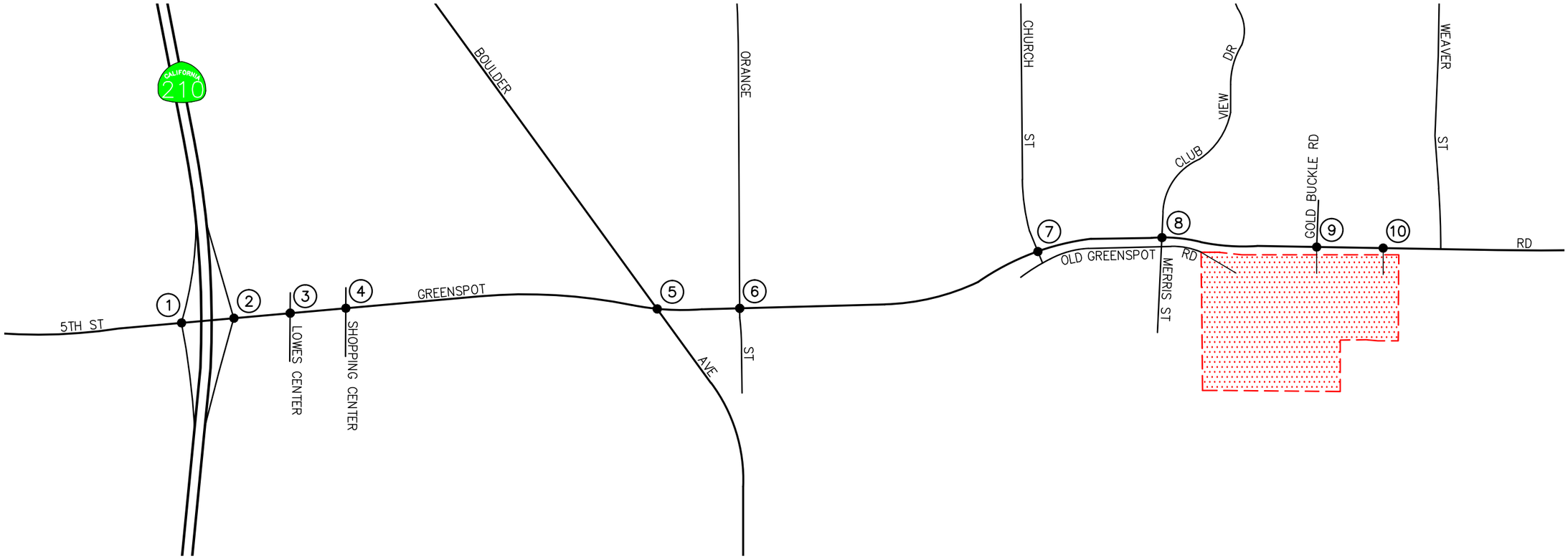
(#) = STUDY INTERSECTION

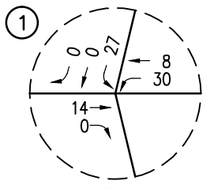
= PROJECT SITE

FIGURE 5-2

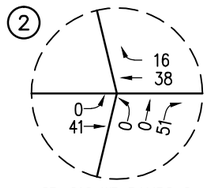
AM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





SR-210 EB RAMPS @
5TH ST



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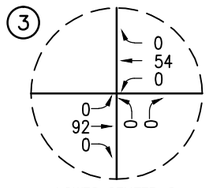

LOWES CENTER @
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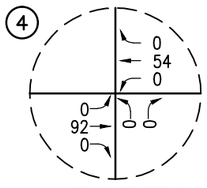

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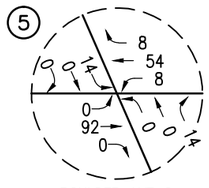
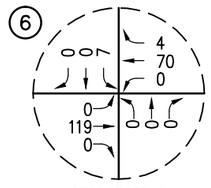


BOULDER AVE @
GREENSPOT RD



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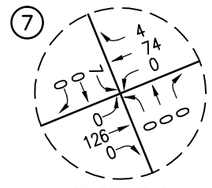
GREENSPOT RD



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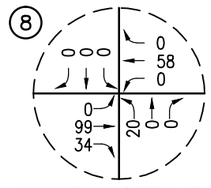
GREENSPOT RD



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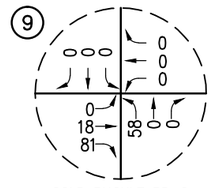
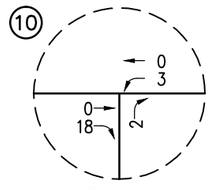
GREENSPOT RD



GOLD BUCKLE RD @
GREENSPOT RD



PROJECT DWY NO. 2 @
GREENSPOT RD

n:\3700\2163773 - heatherglen residential project, highland\6 - dwg\3773f5-3.dwg LDP 08:29:54 02-05-2019 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 5-3

PM PEAK HOUR PROJECT TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

TABLE 5-1
PROJECT TRIP GENERATION FORECAST[5]

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Trip Generation Rates:							
▪ 210: Single-Family Detached Housing (TE/DU)	9.52	25%	75%	0.75	63%	37%	1.00
Trip Generation Forecast:							
▪ 210: Single-Family Detached Housing (215 DU)	2,047	40	121	161	135	80	215

Notes:
- TE/DU = Trip Ends per Dwelling Unit

[5] Source*: Trip Generation, 9th Edition*, Institute of Transportation Engineers, (ITE) [Washington, D.C. (2012)]. Average rates used.

6.0 FUTURE TRAFFIC CONDITIONS

6.1 Existing With Project Traffic Volumes

The estimates of Project generated traffic volumes were added to the Existing traffic conditions to develop traffic projections for the Existing With Project traffic conditions. ***Figures 6-1*** and ***6-2*** present the anticipated AM and PM peak hour Existing With Project traffic volumes, respectively, at the nine (9) key study intersections and one (1) future Project driveway.

6.2 Year 2019 Without Project Traffic Volumes

6.2.1 *Ambient Growth Traffic*

Near-term horizon year, traffic growth estimates have been calculated using an ambient growth factor. The ambient growth factor is intended to include unknown and future related projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The application of the two percent (2%) annual growth rate to baseline Year 2016 traffic volumes results in a six percent (6%) growth in existing baseline volumes at the nine (9) key study intersections to horizon Year 2019.

6.2.2 *Related Projects Traffic*

Nine (9) related projects located in the City of Highland and one (1) related project located in the City of Redlands have been identified within the Project study area. Related projects, as defined by Section 15355 of the CEQA Guidelines, are "closely related past, present and reasonably foreseeable probable future projects". The Traffic Impact Analysis assumes that these related projects will be developed and operational when the proposed Project is operational. This is the most conservative, worst-case approach, since the exact timing of each related project is uncertain. In addition, impacts for these related projects would likely be, or have been, subject to mitigation measures, which could reduce potential impacts. Under this analysis, however, those mitigation measures are not considered. The locations of these related projects are presented in ***Figure 6-3***.

Table 6-1 presents the jurisdiction, description and development totals of the related projects. ***Table 6-2*** presents the resultant trip generation for the related projects. As shown in *Table 6-2*, the related projects are expected to generate 78,313 daily trips (one half arriving, one half departing) on a "typical" weekday, with 4,961 trips (1,758 inbound and 3,203 outbound) forecast during the AM peak hour and 7,640 trips (4,419 inbound and 3,221 outbound) forecast during the PM peak hour.

The anticipated AM and PM peak hour related projects traffic volumes at the nine (9) key study intersections are presented in ***Figures 6-4*** and ***6-5***, respectively.

Appendix D contains the related projects information.

Figures 6-6 and ***6-7*** present Year 2019 Without Project AM and PM peak hour traffic volumes at the nine (9) key study intersections, respectively. It should be noted that the Year 2019 Without Project traffic volumes include ambient traffic growth as well as the traffic from the ten (10) related

projects. Please also note that, per direction of the City, only 20% of the Greenspot Village & Marketplace and the Harmony Specific Plan was assumed to be completed by the Year 2019.

It should again be emphasized that because this traffic impact analysis utilizes both an ambient growth factor along with a list of related projects approach to analyze cumulative impacts, this traffic impact analysis is highly conservative and would tend to overstate cumulative traffic impacts.

6.3 Year 2019 With Project Traffic Volumes

The estimates of Project generated traffic volumes were added to the Year 2019 Without Project traffic conditions to develop traffic projections for the Year 2019 With Project traffic conditions. ***Figures 6-8*** and ***6-9*** present the anticipated AM and PM peak hour Year 2019 With Project traffic volumes, respectively, at the nine (9) key study intersections and one (1) future Project driveway.

6.4 Year 2040 Travel Demand Model Methodology

The Year 2040 General Plan Buildout traffic volume forecasts were obtained through utilization of the San Bernardino Traffic Analysis Model (SBTAM) travel demand model developed by LSA Associates, Inc.

6.4.1 *Volume Adjustment*

Using the SBTAM, projected traffic volumes were obtained for each intersection. The model produces peak period and off-peak period volumes (6 AM – 9 AM, 9 AM – 3 PM, 3 PM – 7 PM and 7 PM – 6 AM). Before converting the model peak period link volumes to future turning movement volumes for analysis, the model volumes must be reviewed and adjusted.

The first step is to obtain the approach and departure volumes from the model for each leg of the analyzed intersections. The next step converts the model approach and departure volumes from AM and PM peak period volumes to peak hour volumes. The AM peak hour volumes are calculated by multiplying the AM peak period volumes by 38%. Similarly, the PM peak hour volumes are calculated by multiplying the PM period volumes by 28%. These are the percentages of vehicles that are assumed to occur in the peak hour of the peak period. These factors are derived from SCAG research. The next step is to determine the difference between the base year (2008) peak hour model volumes and the Buildout peak hour model volumes. This "difference" represents the projected growth in traffic on each approach to the Buildout of the General Plan using SBTAM.

6.4.2 *B-turn Methodology*

The base year turning movement counts (Year 2016) for each intersection must be converted to approach and departure volumes for each leg of the intersection. Once the base counts are in this format, the difference between the Buildout model and base model are then added to the base year counts for each corresponding approach and departure volume. This step provides the adjusted volumes that will be used to determine the Buildout turning movement volumes. The next process in the forecasting of future turning volumes applies the B-turn methodology. The B-turn methodology is generally described in the *"National Cooperative Highway Research Program Report (NCHRP) 255: Highway Traffic Data for Urbanized Area Project Planning and Design", Chapter 8*. The B-

turn method uses the base year turning percentages (from traffic counts) and proceeds through an iterative computational technique to produce a final set of future year turning volumes. The computations involve alternatively balancing the rows (approaches) and the columns (departures) of a turning movement matrix until an acceptable convergence is obtained. Future year link volumes are fixed using this method and the turning movements are adjusted to match. The results must be checked for reasonableness, and manual adjustments are sometimes necessary.

Finally, it should be noted that all provided volumes are from a Citywide General Plan level model that was not specifically developed for analysis of individual intersection turning movements. Therefore each projected volume was reviewed carefully and adjustments were applied as warranted based on local conditions and professional judgment.

Copies of the traffic model post-processing worksheets are contained in ***Appendix E***. Please note that the post-processing methodology utilized in this report is consistent with SCAG requirements.

It should be noted the updated SBTAM with Year 2012 base and Year 2040 future was not officially available for use at the time when these analyses were conducted. Therefore, the currently available approved version of SBTAM has been used with a base year 2008 and future year 2035 to develop post-processed Year 2040 volumes. The Year 2040 volumes have been developed by extrapolating the post-processed volumes from Year 2035 to 2040. The Year 2040 volumes are more conservative than Year 2035 volumes.

6.5 Year 2040 Without Project Traffic Volumes

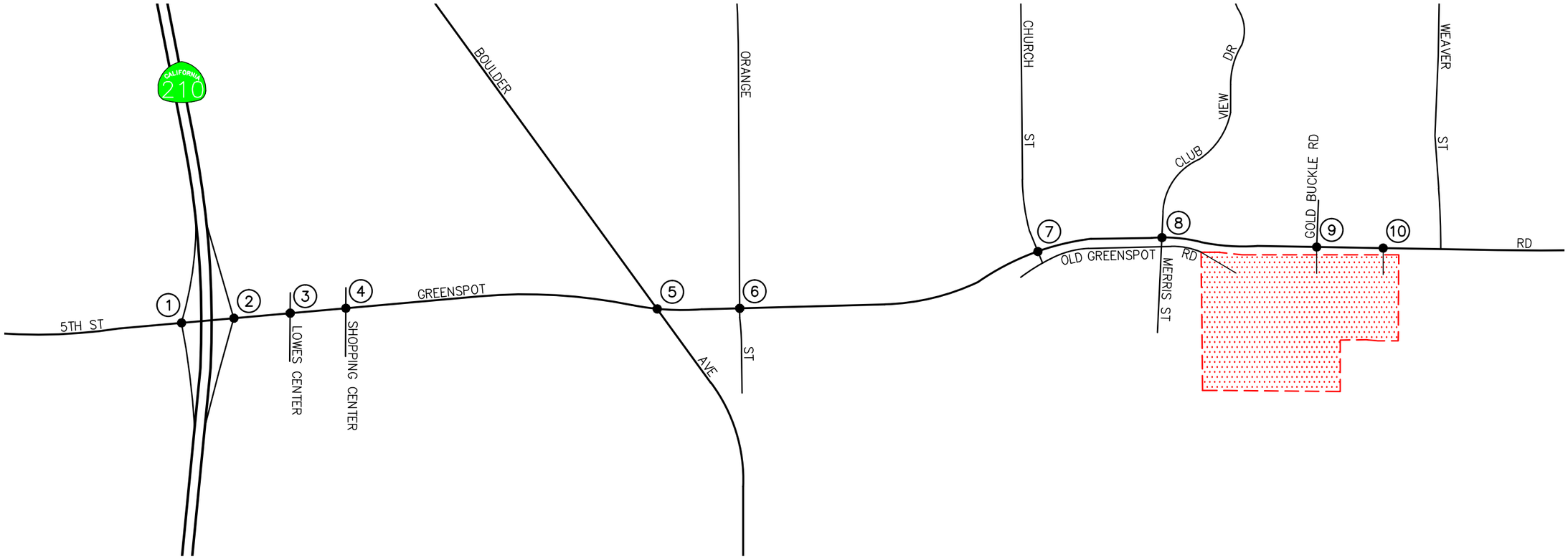
The Year 2040 Without Project traffic volumes were obtained by post-processing the peak hour approach and departure traffic volumes based on the relationship of the base year validation model run output to the base year ground traffic counts and represent the General Plan Buildout traffic conditions. Please note that the remaining 80% of the Greenspot Village & Marketplace and the Harmony Specific Plan was manually assigned to the Year 2040 traffic volumes after these volumes were post-processed from the model runs.

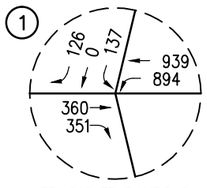
The anticipated Year 2040 Without Project traffic conditions AM and PM peak hour traffic volumes at the nine (9) key study intersections are presented in ***Figures 6-10*** and ***6-11,*** respectively.

6.6 Year 2040 With Project Traffic Volumes

To provide a conservative analysis, the Year 2040 forecast volumes from the City of Highland Model are considered to be the Year 2040 Without Project volumes. Please note that, per direction of the City, the remaining 80% of the Greenspot Village & Marketplace and the Harmony Specific Plan was assumed to be completed by the Year 2040 and were manually assigned to the key study intersections. To obtain the "With" Project volumes, the Project trips were manually superimposed on the Year 2040 Without Project volumes to obtain the Year 2040 With Project volumes.

Figures 6-12 and ***6-13*** present the anticipated AM and PM peak hour Year 2040 With Project traffic volumes, respectively, at the nine (9) key study intersections and one (1) future Project driveway.





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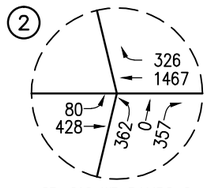

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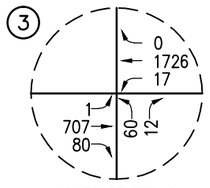

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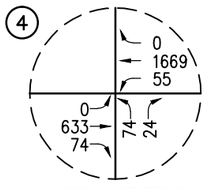

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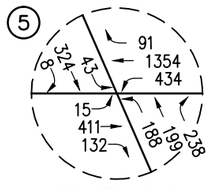

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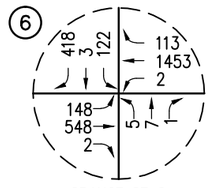

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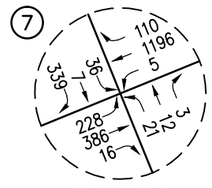
GREENSPOT RD



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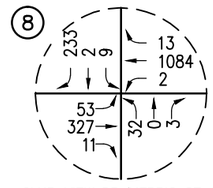
GREENSPOT RD



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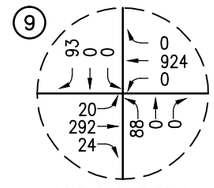
GREENSPOT RD



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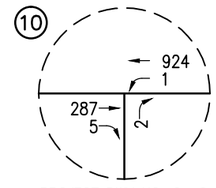
GREENSPOT RD



PROJECT DWY NO. 2 @
GREENSPOT RD

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

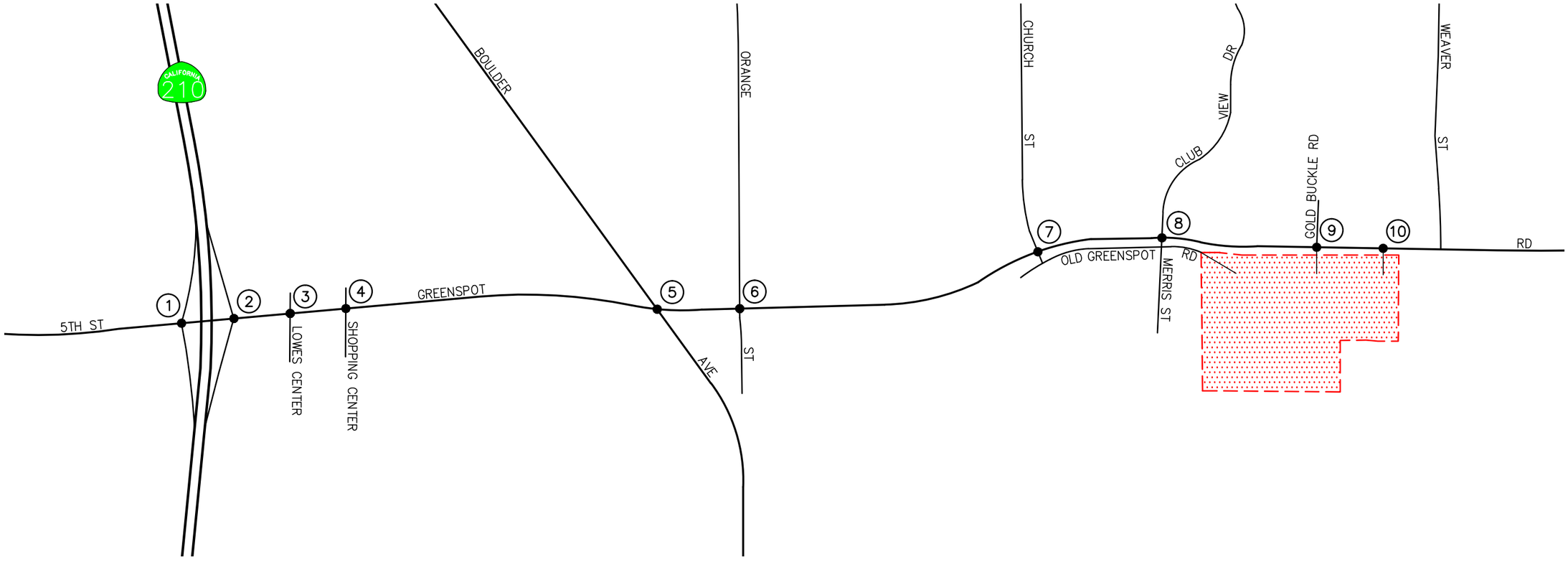
(#) = STUDY INTERSECTION

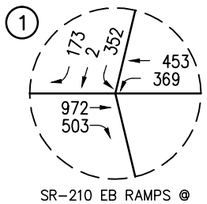
= PROJECT SITE

FIGURE 6-1

EXISTING WITH PROJECT AM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





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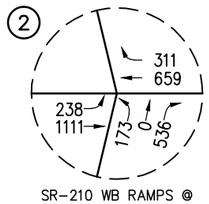

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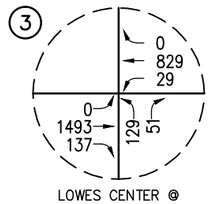
GREENSPOT RD



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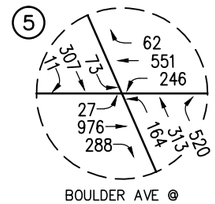
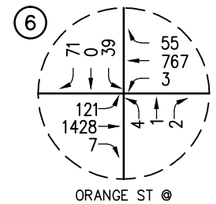
GREENSPOT RD

SHOPPING CENTER @
GREENSPOT RD



BOULDER AVE @
GREENSPOT RD



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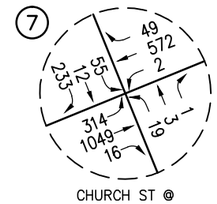

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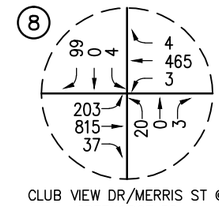

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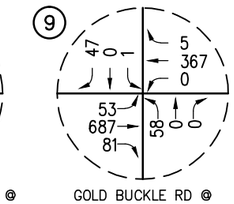

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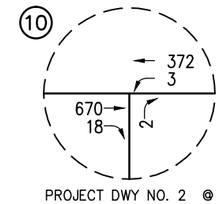

PROJECT DWY NO. 2 @
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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 6-2

EXISTING WITH PROJECT PM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

KEY

1. BLOSSOM TRAILS
2. GATED COMMUNITY
3. REGENCY CENTERS
4. HIGHLAND RETAIL PROJECT
5. CENTERSTONE SUBDIVISION
6. GREENSPOT VILLAGE & MARKETPLACE
7. HARMONY SPECIFIC PLAN
8. MEDITERRA AT EAST HIGHLANDS
9. TTM NO. 18935
10. TTM NO. 18979

SOURCE: GOOGLE

KEY

(#) = LOCATION OF CUMULATIVE PROJECT

= PROJECT SITE

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

FIGURE 6-3

LOCATION OF RELATED PROJECTS
HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

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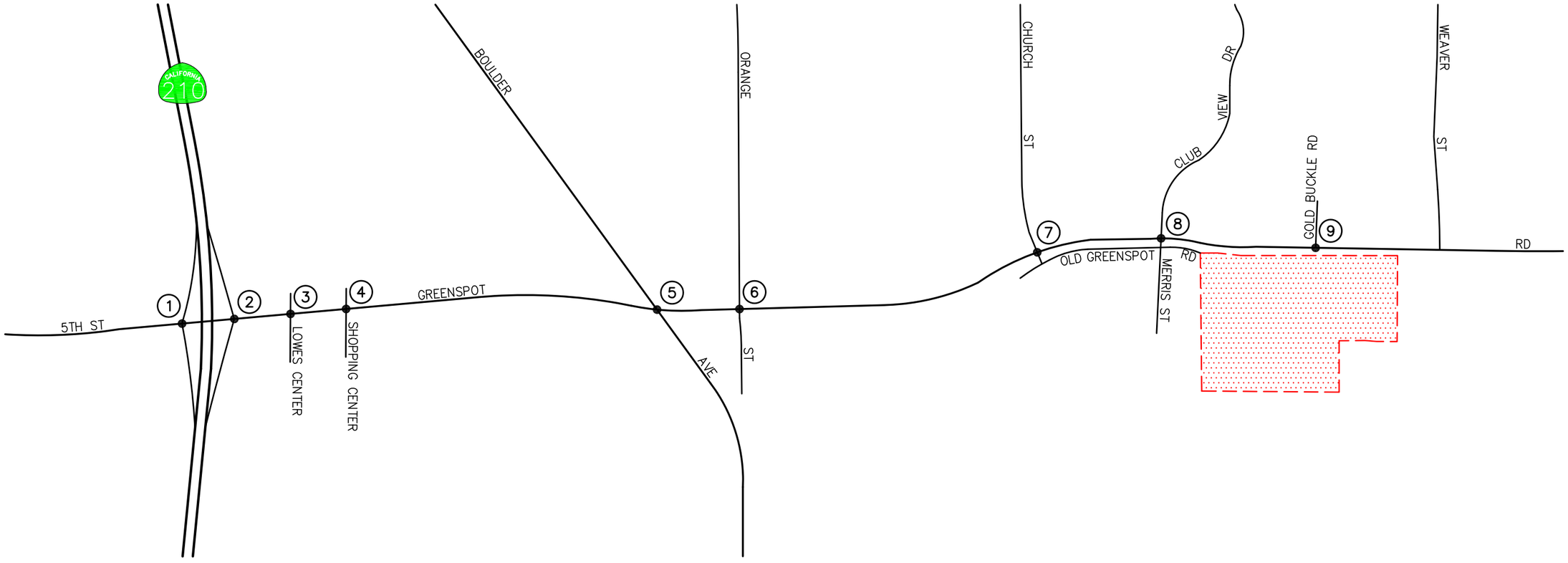

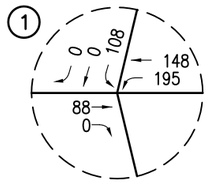

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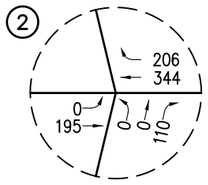

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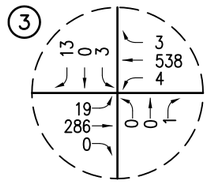

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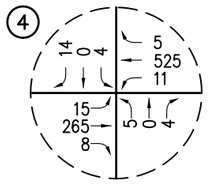

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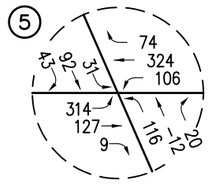
GREENSPOT RD



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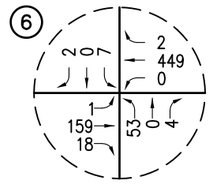

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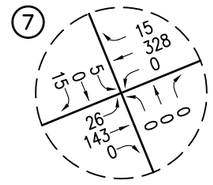

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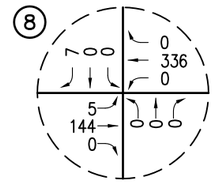
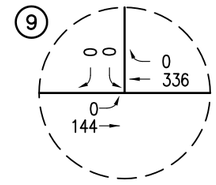


CLUB VIEW DR/MERRIS ST @
GREENSPOT RD



GOLD BUCKLE RD @
GREENSPOT RD

n:\3700\2163773 - heatherglen residential project, highland\6 - dwg\3773 prn base 3.dwg LDP 13:19:45 02-27-2018 pontepsiripong

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

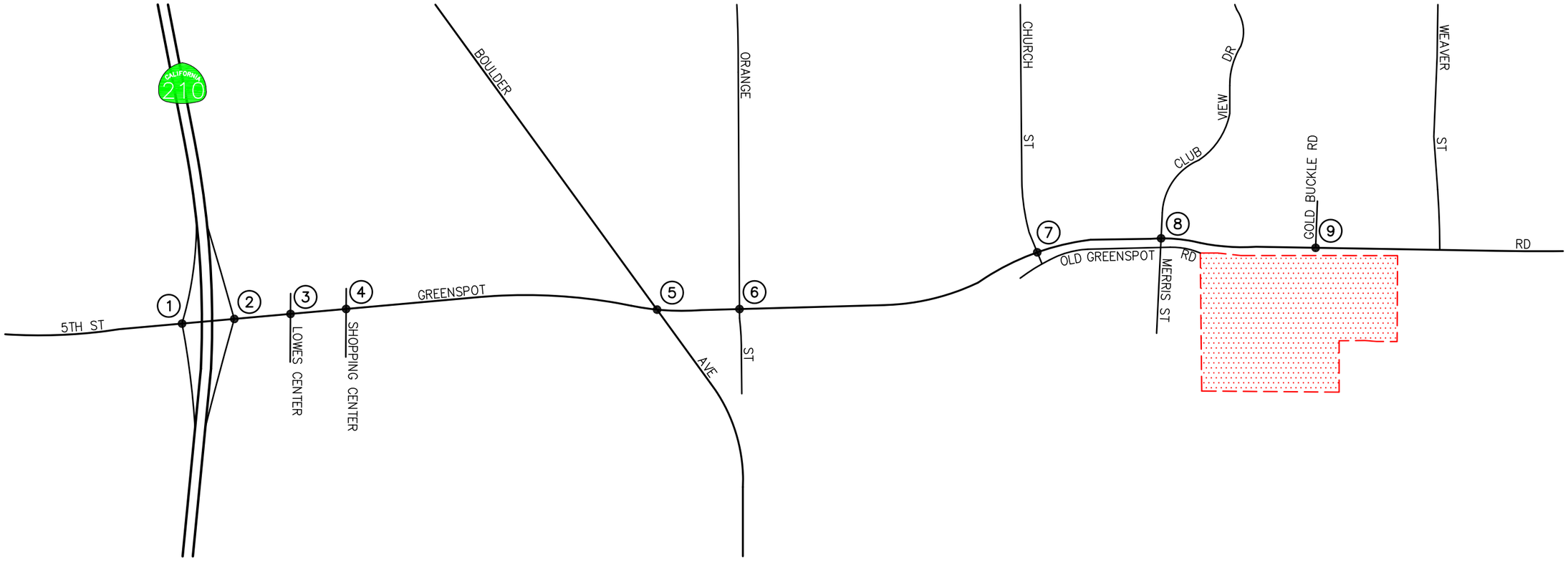
(#) = STUDY INTERSECTION

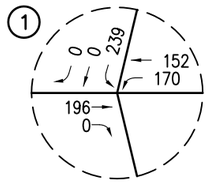
= PROJECT SITE

FIGURE 6-4

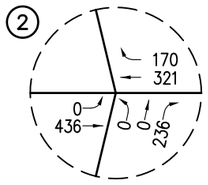
AM PEAK HOUR RELATED PROJECTS TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

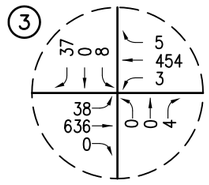




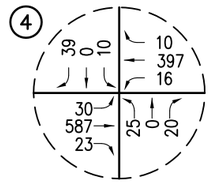
SR-210 EB RAMPS @
5TH ST



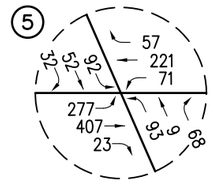
SR-210 WB RAMPS @
GREENSPOT RD



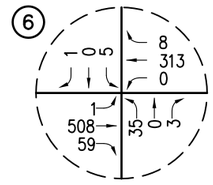
LOWES CENTER @
GREENSPOT RD



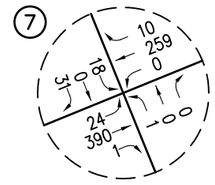
SHOPPING CENTER @
GREENSPOT RD



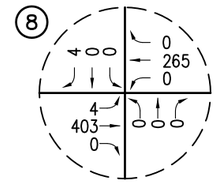
BOULDER AVE @
GREENSPOT RD



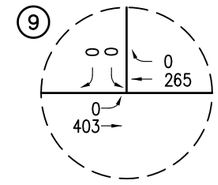
ORANGE ST @
GREENSPOT RD



CHURCH ST @
GREENSPOT RD



CLUB VIEW DR/MERRIS ST @
GREENSPOT RD



GOLD BUCKLE RD @
GREENSPOT RD

n:\3700\2163773 - heatherglen residential project, highland\6 - dwg\3773 prn base 3.dwg LDP 13:21:41 02-27-2018 pontepsiripong

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

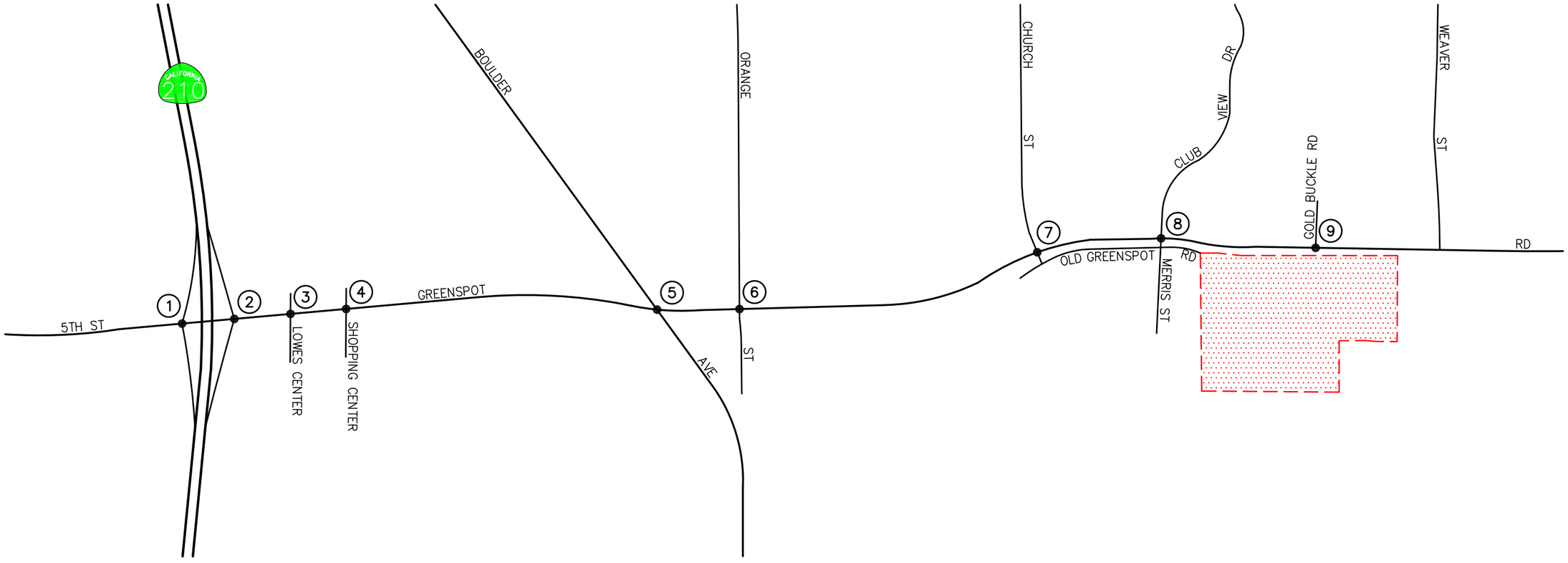
(#) = STUDY INTERSECTION

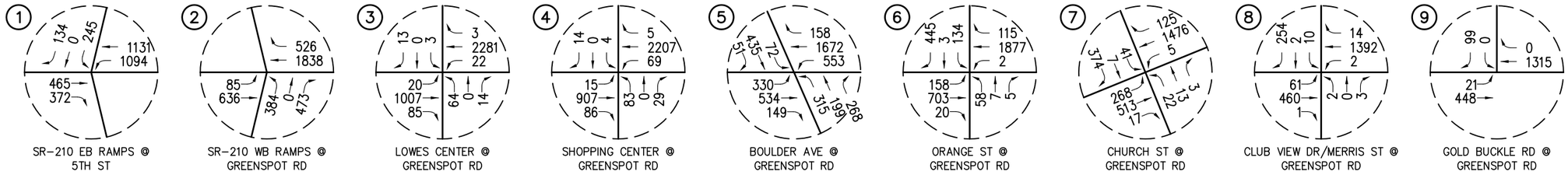
= PROJECT SITE

FIGURE 6-5

PM PEAK HOUR RELATED PROJECTS TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





n:\3700\2163773 - heatherglen residential project, highland\6 - dwg\3773 prn base 3.dwg LDP 13:23:22 02-27-2018 pontepsiripong

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

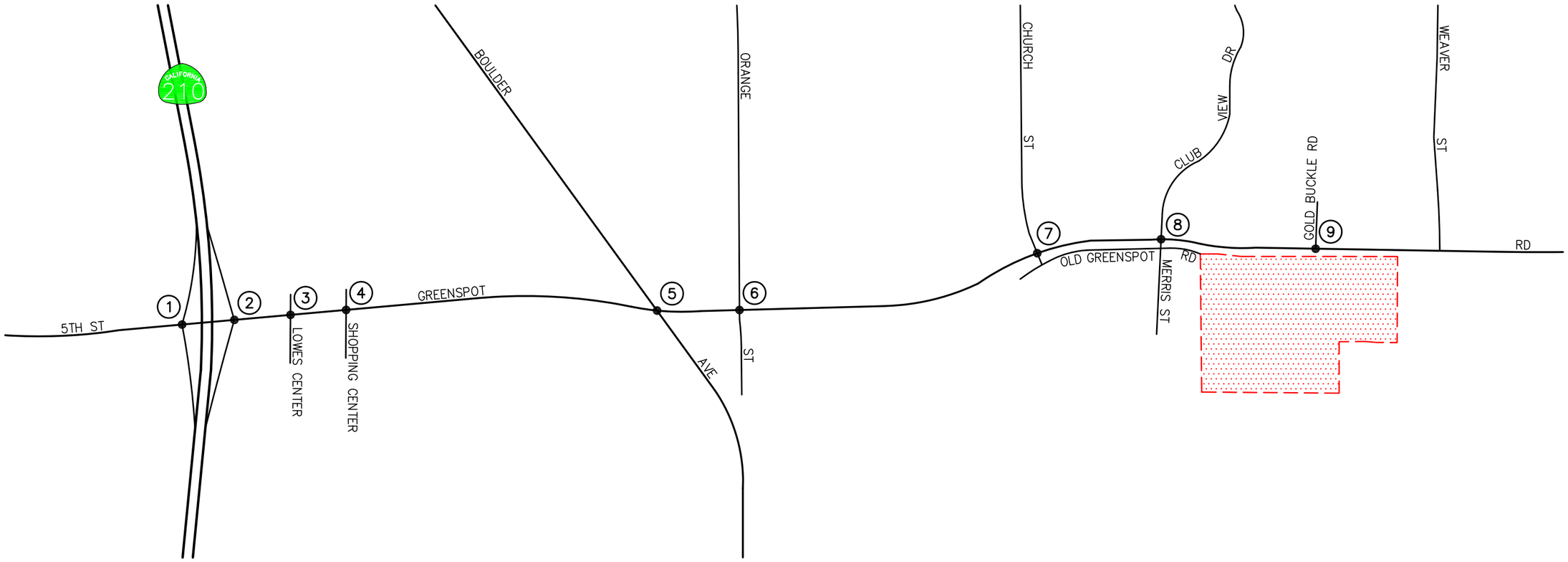
(#) = STUDY INTERSECTION

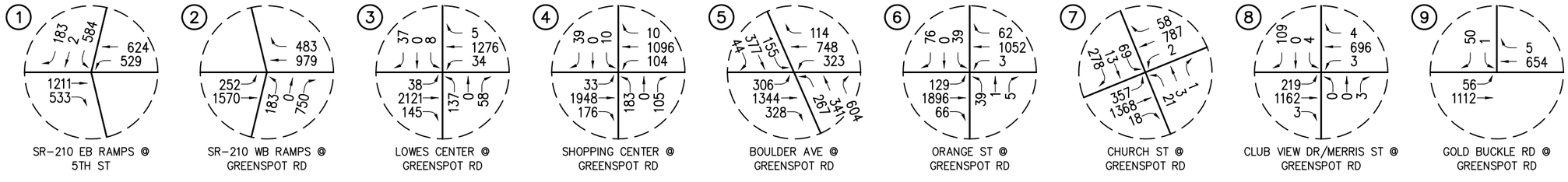
= PROJECT SITE

FIGURE 6-6

YEAR 2019 WITHOUT PROJECT AM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

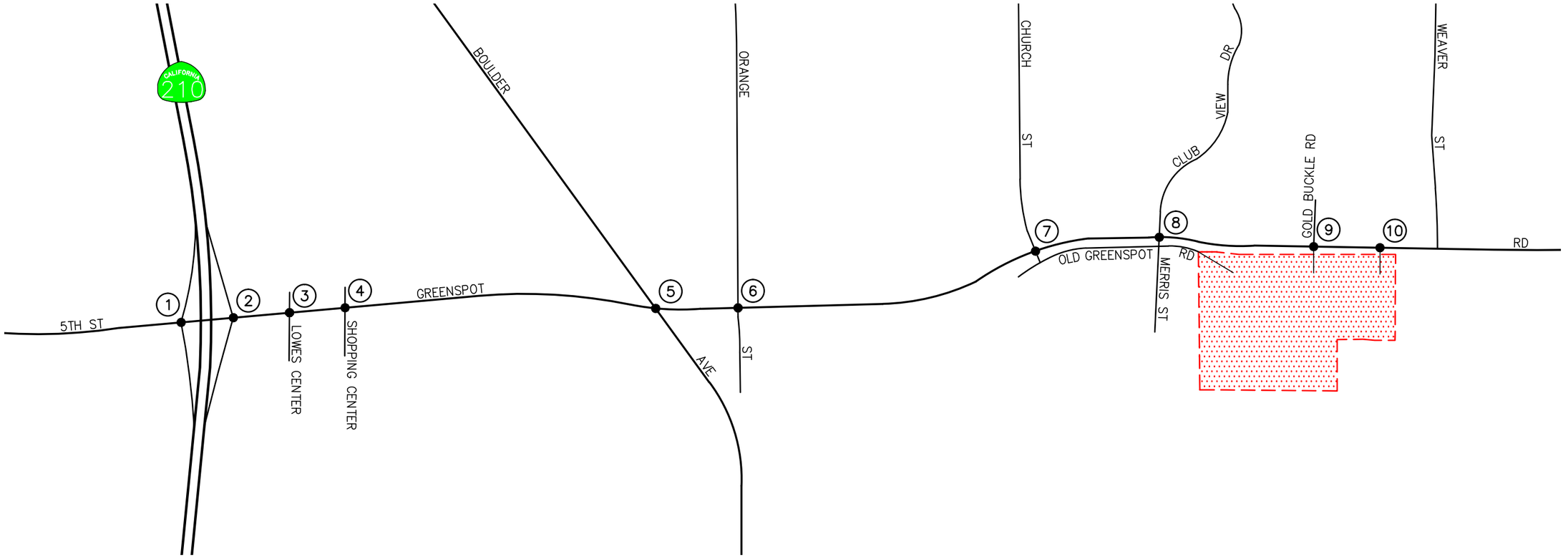
(#) = STUDY INTERSECTION

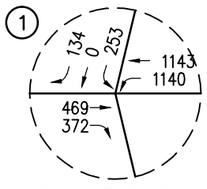
= PROJECT SITE

FIGURE 6-7

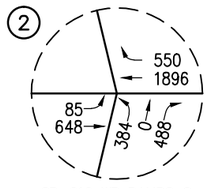
YEAR 2019 WITHOUT PROJECT PM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

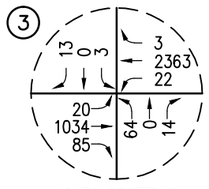




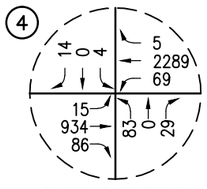
SR-210 EB RAMPS @
5TH ST



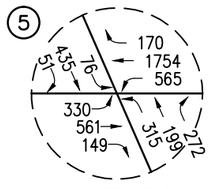
SR-210 WB RAMPS @
GREENSPOT RD



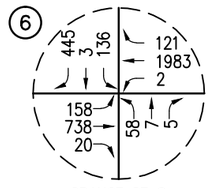
LOWES CENTER @
GREENSPOT RD



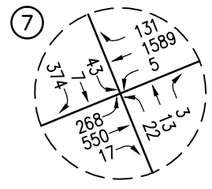
SHOPPING CENTER @
GREENSPOT RD



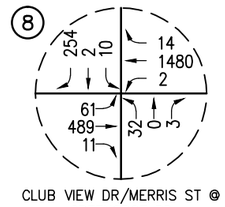
BOULDER AVE @
GREENSPOT RD



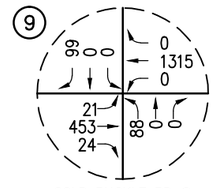
ORANGE ST @
GREENSPOT RD



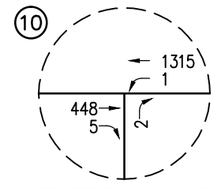
CHURCH ST @
GREENSPOT RD



CLUB VIEW DR/MERRIS ST @
GREENSPOT RD



GOLD BUCKLE RD @
GREENSPOT RD



PROJECT DWY NO. 2 @
GREENSPOT RD

n:\3700\2163773 - heatherglen residential project, highland\6 - dwg\377366-8.dwg LDP 08:32:58 02-05-2019 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

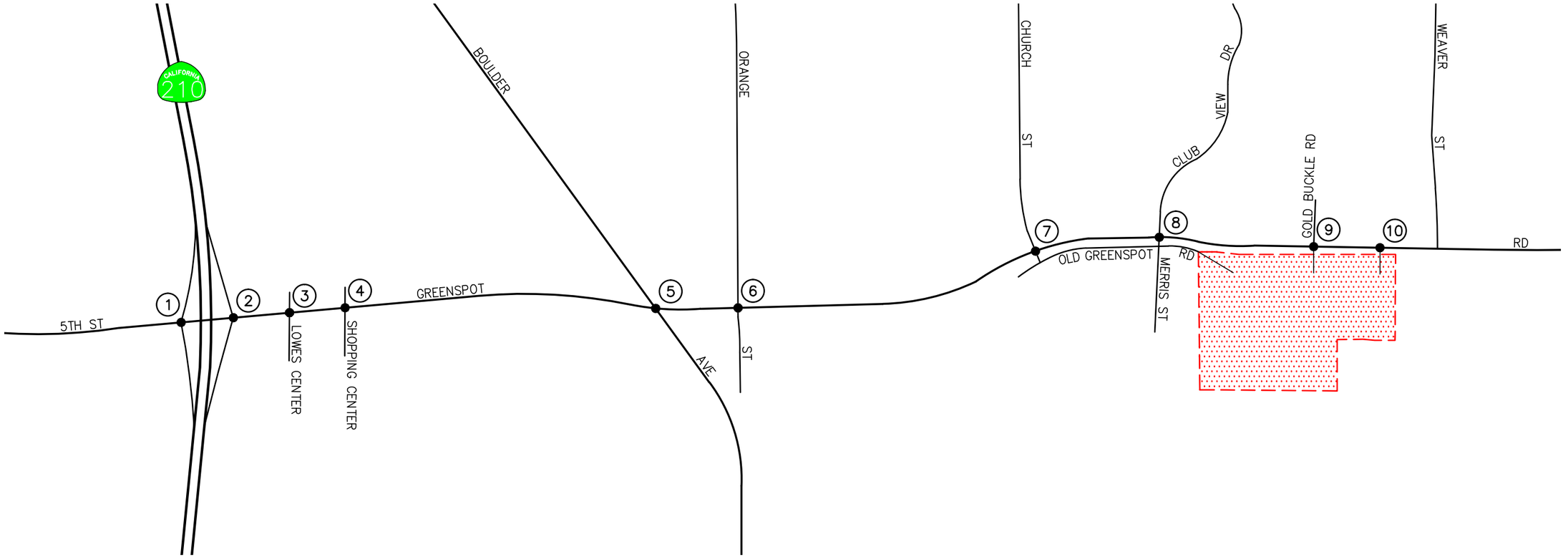
(#) = STUDY INTERSECTION

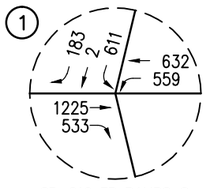
= PROJECT SITE

FIGURE 6-8

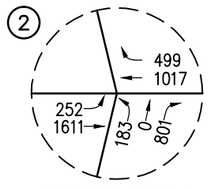
YEAR 2019 WITH PROJECT AM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

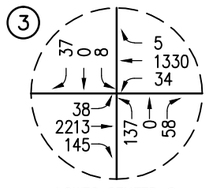




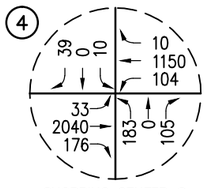
SR-210 EB RAMPS @
5TH ST



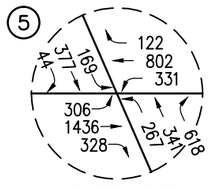
SR-210 WB RAMPS @
GREENSPOT RD



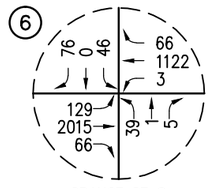
LOWES CENTER @
GREENSPOT RD



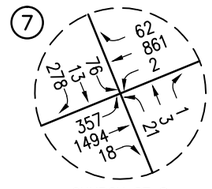
SHOPPING CENTER @
GREENSPOT RD



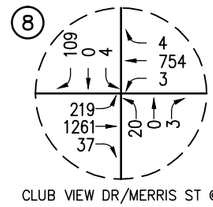
BOULDER AVE @
GREENSPOT RD



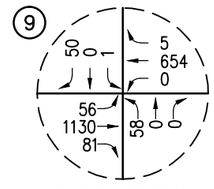
ORANGE ST @
GREENSPOT RD



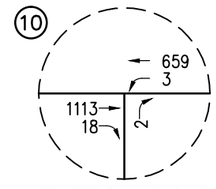
CHURCH ST @
GREENSPOT RD



CLUB VIEW DR/MERRIS ST @
GREENSPOT RD



GOLD BUCKLE RD @
GREENSPOT RD



PROJECT DWY NO. 2 @
GREENSPOT RD

n:\3700\2163773 - heatherglen residential project, highland\6 - dwg\377366-9.dwg LDP 08:33:49 02-05-2019 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

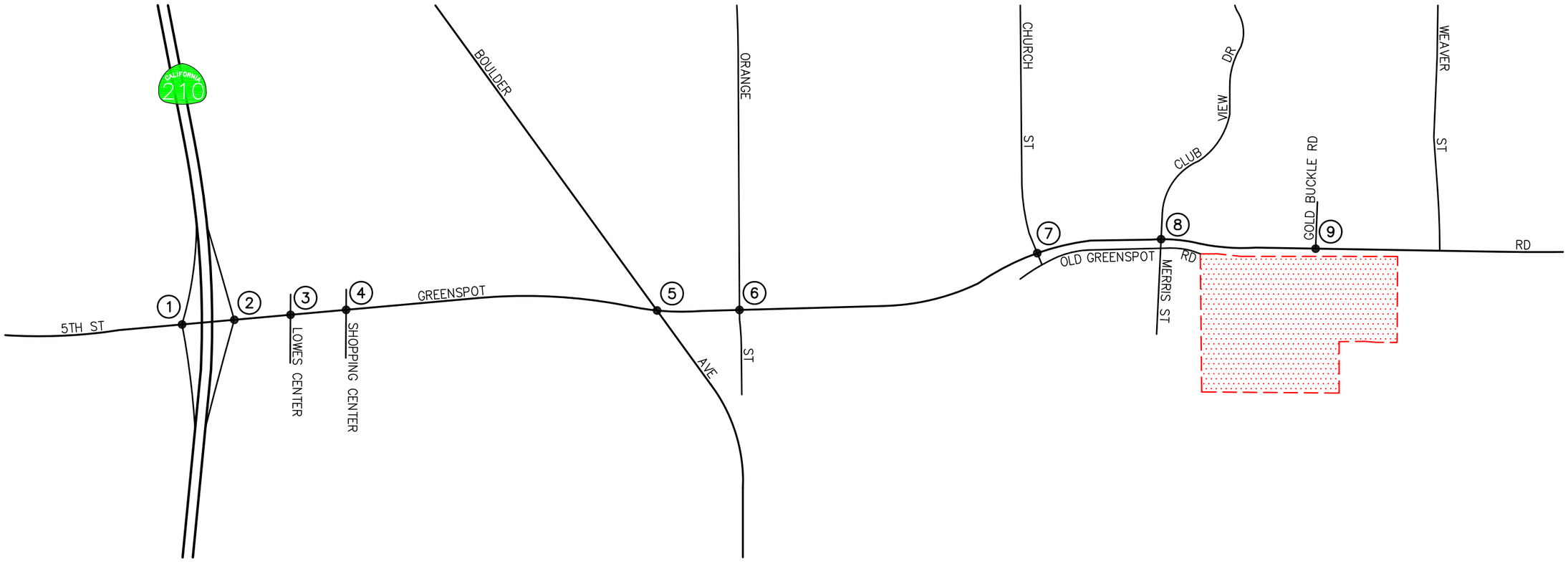
(#) = STUDY INTERSECTION

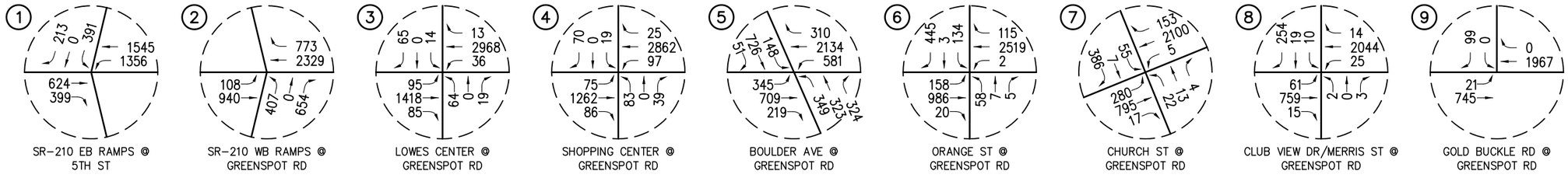
= PROJECT SITE

FIGURE 6-9

YEAR 2019 WITH PROJECT PM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

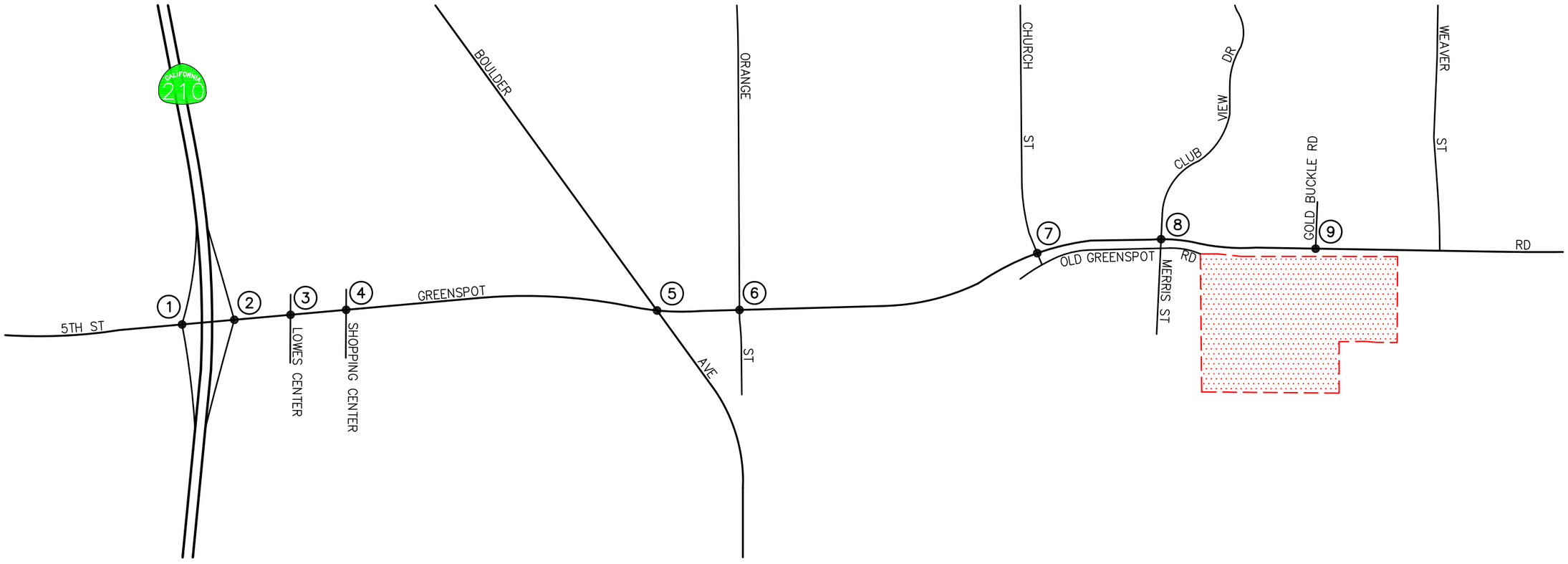
(#) = STUDY INTERSECTION

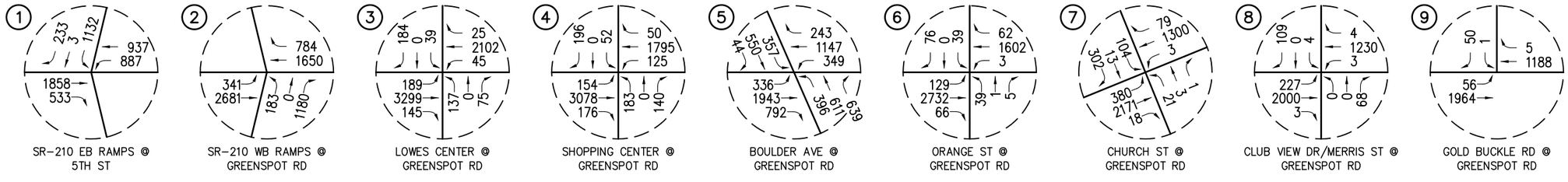
= PROJECT SITE

FIGURE 6-10

YEAR 2040 WITHOUT PROJECT AM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

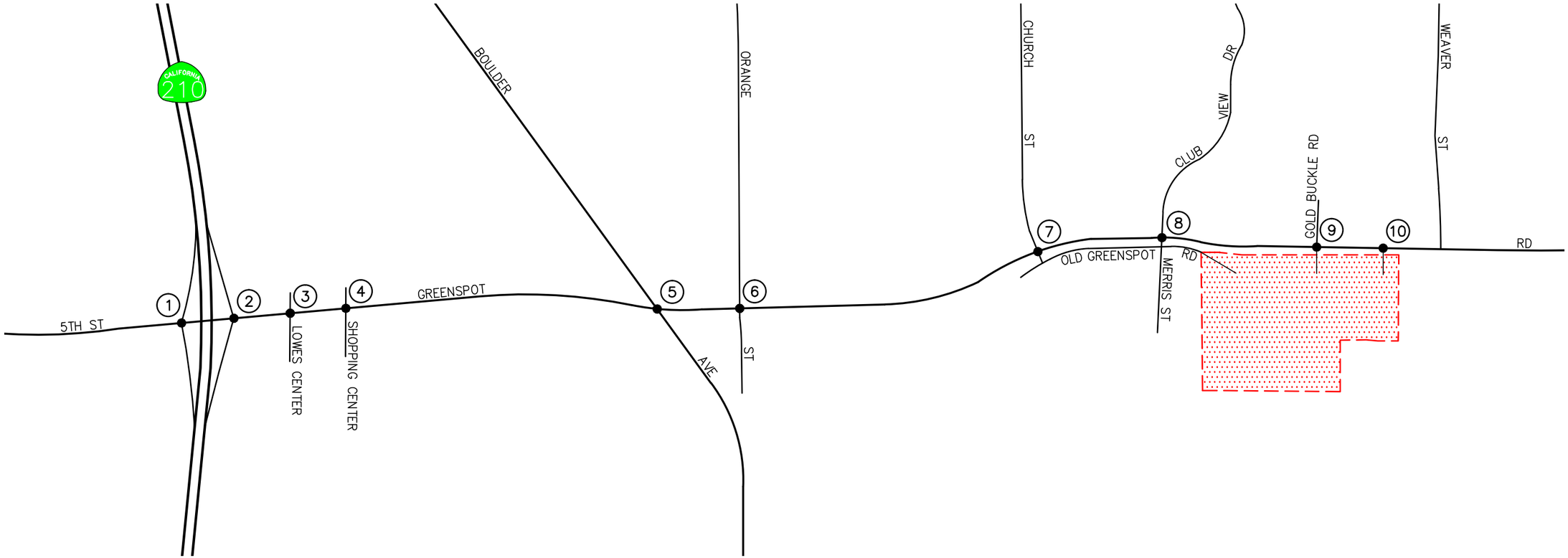
(#) = STUDY INTERSECTION

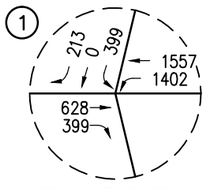
= PROJECT SITE

FIGURE 6-11

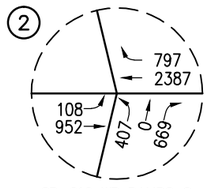
YEAR 2040 WITHOUT PROJECT PM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

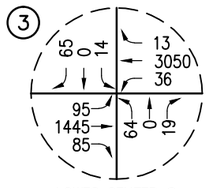




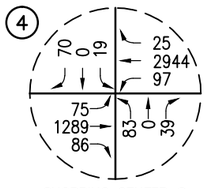
SR-210 EB RAMPS @
5TH ST



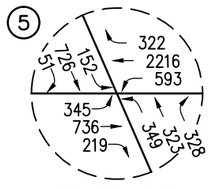
SR-210 WB RAMPS @
GREENSPOT RD



LOWES CENTER @
GREENSPOT RD



SHOPPING CENTER @
GREENSPOT RD



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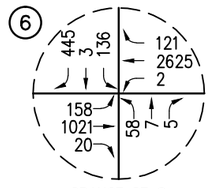
GREENSPOT RD



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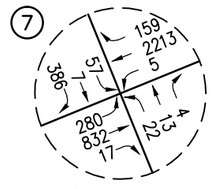
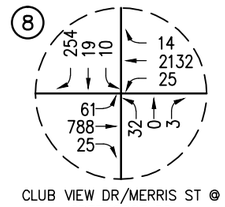
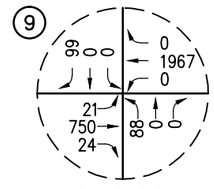
GREENSPOT RD



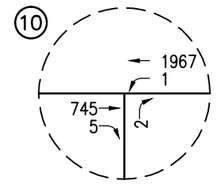
CHURCH ST @
GREENSPOT RD



CLUB VIEW DR/MERRIS ST @
GREENSPOT RD



GOLD BUCKLE RD @
GREENSPOT RD



PROJECT DWY NO. 2 @
GREENSPOT RD

n:\3700\2163773 - heatherglen residential project, highland\6 - dwg\377316-12.dwg LDP 08:35:39 02-05-2019 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

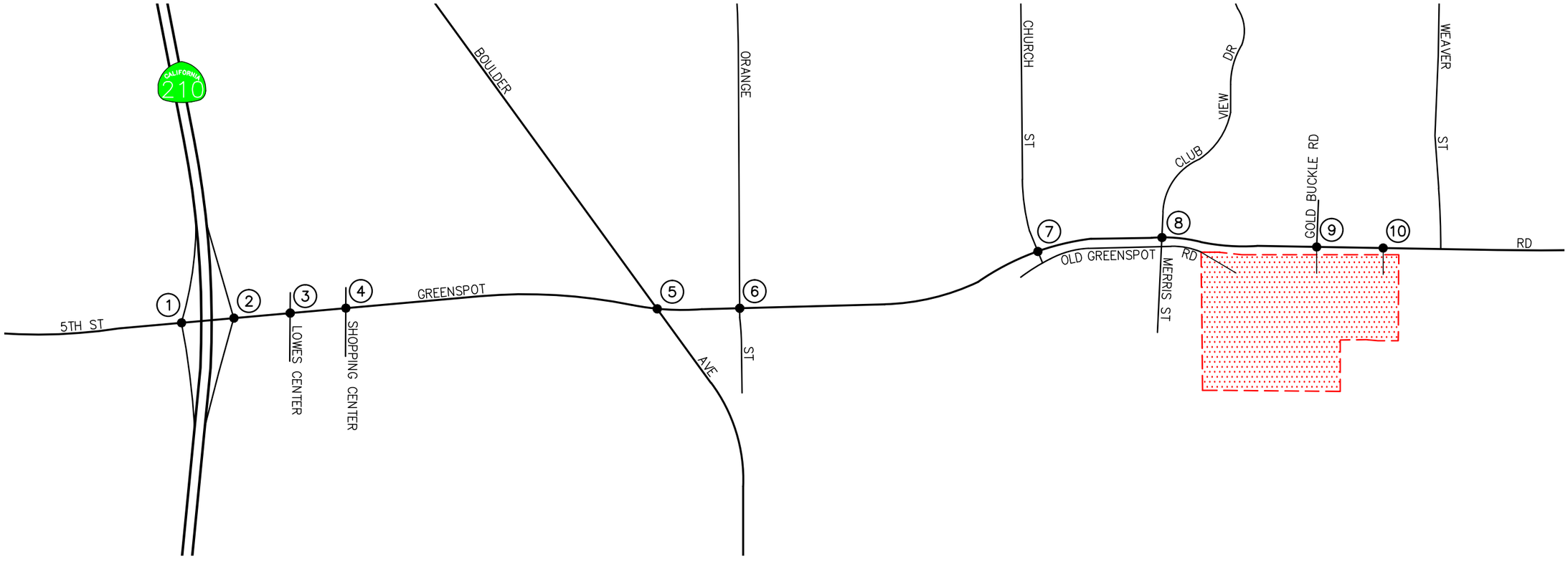
(#) = STUDY INTERSECTION

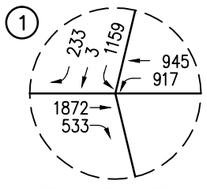
= PROJECT SITE

FIGURE 6-12

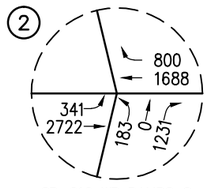
YEAR 2040 WITH PROJECT AM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

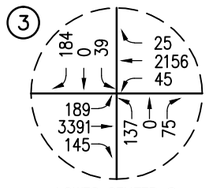




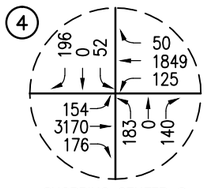
SR-210 EB RAMPS @
5TH ST



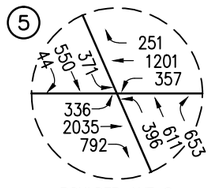
SR-210 WB RAMPS @
GREENSPOT RD



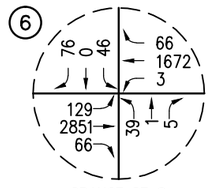
LOWES CENTER @
GREENSPOT RD



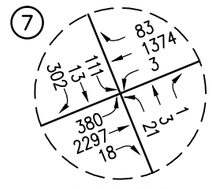
SHOPPING CENTER @
GREENSPOT RD



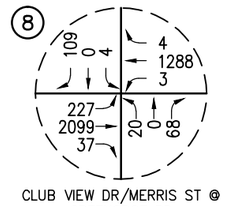
BOULDER AVE @
GREENSPOT RD



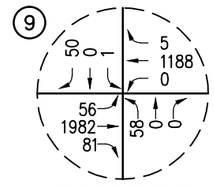
ORANGE ST @
GREENSPOT RD



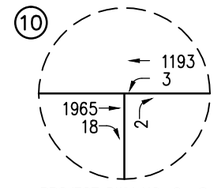
CHURCH ST @
GREENSPOT RD



CLUB VIEW DR/MERRIS ST @
GREENSPOT RD



GOLD BUCKLE RD @
GREENSPOT RD



PROJECT DWY NO. 2 @
GREENSPOT RD

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 6-13

YEAR 2040 WITH PROJECT PM PEAK HOUR TRAFFIC VOLUMES

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

TABLE 6-1
LOCATION AND DESCRIPTION OF RELATED PROJECTS

No.	Cumulative Project	Location/Address	Description
City of Highland Development[6]			
1.	Blossom Trails	South of Greenspot Boulevard, East of Boulder Avenue	14 DU Single Family Detached, 306 DU Residential Condo/Townhouse[7]
2.	Gated Community	Northwest corner of Orange Street at Greenspot Road	121 DU Single Family Detached
3.	Regency Centers	Southwest corner of Shopping Center at Greenspot Road	26.690 TSF Shopping Center[8]
4.	Highland Retail Project	Southwest corner of Boulder Avenue at Greenspot Road	6.019 TSF Fast Food With Drive-Thru, 8.356 TSF Fast Food Without Drive-Thru, 16,332 TSF Retail[9]
5.	Centerstone Subdivision	South of Greenspot Boulevard, East of Boulder Avenue	133 DU Single Family Detached[10]
6.	Greenspot Village & Marketplace	North of Greenspot Road, East of SR-210, West of Boulder Avenue	679 TSF Shopping Center, 11.2 TSF Fast Food With Drive-Thru, 3.6 Gasoline/Service Station, 10 TSF Drive-In Bank, 696 DU Apartment, 104 DU Senior Adult Housing-Attached, 240 RM Hotel[11]
7.	Harmony Specific Plan	South of Greenspot Road, North of Mill Creek Road, East of Crafton Avenue, West of Bryant Street	1,650 Acres Master Plan with Residential, Park, Recreational, School, & Commercial uses[12]
8.	Mediterra at East Highlands	North of Greenspot Road, East of Santa Paula Street	277 DU Single Family Detached[13]
9.	TTM No. 18935	North of Santa Ana Canyon Road, South of Water Street, East of Aplin Street,	80 DU Single Family Detached[14]
City of Redlands Development[15]			
10.	TTM No. 18979	North of San Bernardino Avenue, East of Judson Street	55 DU Single Family Detached

6 Source: Hernandez, Kroone & Associates, Inc.

7 Source: *Blossom Trails Site Access Evaluation,* prepared by Urban Crossroads, dated January 27, 2006.

8 Source: *Regency Centers Traffic Impact Study,* prepared by RK Engineering Group, Inc. Please note that at the time of this report, only 26,690 SF of retail has not yet been constructed. Therefore, trip generation was provided for the incomplete portion only.

9 Source: *Traffic Study for a Retail Project in the City of Highland,* prepared by KOA Corporation, dated February 17, 2009.

10 Source: *Traffic Impact Study Centerstone Subdivision,* prepared by Hernandez, Kroone, & Associates, Inc., dated September 2009.

11 Source: *Greenspot Village & Marketplace Traffic Study Update,* prepared by Urban Crossroads.

12 Source: *Harmony Specific Plan Traffic Impact Analysis,* prepared by LSA.

13 Source: *Mediterra at East Highlands Traffic Impact Analysis,* prepared by Urban Crossroads.

14 Source: *Tentative Tract Map No. 18935,* prepared by Kunzman Associates, Inc., dated April 2, 2015.

15 Source: City of Redlands Planning Department staff.

TABLE 6-2
RELATED PROJECTS TRAFFIC GENERATION FORECAST[16]

Cumulative Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
1. Blossom Trails[17]	1,927	24	121	145	116	57	173
2. Gated Community[18]	1,158	23	68	91	77	45	122
3. Regency Centers	1,140	16	10	26	48	51	99
Pass-by (25% Daily, 25% AM peak, 25% PM peak) [19]	*-285*	*-4*	*-3*	*-7*	*-12*	*-13*	*-25*
Net Total Trips	855	12	7	19	36	38	74
4. Highland Retail Project[20]	3,674	249	171	420	148	141	289
5. Centerstone Subdivision[21]	1,273	25	75	100	84	50	134
6. Greenspot Village & Marketplace[22]	31,754	747	780	1,527	1,513	1,426	2,939
7. Harmony Specific Plan[23]	33,749	600	1,750	2,350	2,185	1,312	3,497
8. Mediterra at East Highlands[24]	2,637	53	155	208	175	102	277
9. TTM No. 18935[25]	762	15	45	60	50	30	80
10. TTM No. 18979	524	10	31	41	35	20	55
Related Projects Total Trip Generation Potential	**78,313**	**1,758**	**3,203**	**4,961**	**4,419**	**3,221**	**7,640**

16 Source: *Trip Generation*, 9th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2012).

17 Source: *Blossom Trails Site Access Evaluation,* prepared by Urban Crossroads, dated January 27, 2006.

18 Source: Hernandez, Kroone, & Associates, Inc.

19 Source: *Regency Centers Traffic Impact Study,* prepared by RK Engineering Group, Inc. Please note that at the time of this report, only 26,690 SF of retail has not yet been constructed. Therefore, trip generation was provided for the incomplete portion only.

20 Source: *Traffic Study for a Retail Project in the City of Highland,* prepared by KOA Corporation, dated February 17, 2009.

21 Source: *Traffic Impact Study Centerstone Subdivision,* prepared by Hernandez, Kroone, & Associates, Inc., dated September 2009.

22 Source: *Greenspot Village & Marketplace Traffic Study Update,* prepared by Urban Crossroads.

23 Source: *Harmony Specific Plan Traffic Impact Analysis,* prepared by LSA.

24 Source: *Mediterra at East Highlands Traffic Impact Analysis,* prepared by Urban Crossroads.

25 Source: *Tentative Tract Map No. 18935,* prepared by Kunzman Associates, Inc., dated April 2, 2015.

7.0 EXISTING CONDITIONS TRAFFIC IMPACT ANALYSIS

The existing conditions traffic analysis establishes the basis for the future forecasts for the Project. This analysis was based on existing intersection collected in December 2016. The existing conditions analysis reflects these counts as well as existing lane configurations for all analyzed intersections.

Table 7-1 summarizes the peak hour Level of Service results at the nine (9) key study intersections for existing traffic conditions, with and without the Project. The first column (1) of Delay/LOS values in *Table 7-1* presents a summary of Existing AM and PM peak hour traffic conditions. The second column (2) in *Table 7-1* presents forecast Existing With Project traffic conditions. The third column (3) of *Table 7-1* shows whether the traffic associated with the Project will have a significant impact based on the LOS standards and the significance impact criteria defined in this report. The fourth column (4) of *Table 7-1* presents the Level of Service with the implementation of traffic mitigation improvements, if necessary.

Project-specific improvements, which are discussed in more detail in *Section 10.0* of this report, have been assumed for the "With" Project scenarios for the intersections listed below:

- 9. Gold Buckle Road at Greenspot Road[26]

7.1 Existing Traffic Conditions

Review of column (1) of *Table 7-1* indicates that for the Existing traffic conditions, all of the nine (9) key study intersections currently operate at acceptable LOS D or better during the AM and PM peak hours.

7.2 Existing With Project Traffic Conditions

Review of column (2) of *Table 7-1* indicates that for the Existing With Project traffic conditions, two (2) of the nine (9) key study intersections are forecast to operate at unacceptable levels of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The remaining seven (7) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours.

Review of column (3) of *Table 7-1* indicates that two (2) of the nine (9) key study intersections will have a significant impact under the Existing With Project traffic conditions when compared to the LOS criteria defined in this report. However, as shown in column (4) of *Table 7-1*, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Appendix F contains the Delay/LOS calculation worksheets for the Existing Traffic Conditions.

[26] This intersection will be converted to a four-legged intersection in conjunction with the Project development and has been assumed in the background traffic conditions for the "With" Project scenarios.

TABLE 7-1

EXISTING CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[27]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing With Project Traffic Conditions		(3) Significant Impact	(4) Existing With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
1. SR-210 EB Ramps at 5th Street	D	AM	19.5	B	19.8	B	No	--	--
		PM	23.2	C	24.7	C	No	--	--
2. SR-210 WB Ramps at Greenspot Road	D	AM	17.2	B	16.5	B	No	--	--
		PM	18.0	B	18.5	B	No	--	--
3. Lowes Center at Greenspot Road	D	AM	4.2	A	4.2	A	No	--	--
		PM	7.6	A	7.5	A	No	--	--
4. Shopping Center at Greenspot Road	D	AM	5.4	A	5.3	A	No	--	--
		PM	9.1	A	8.9	A	No	--	--
5. Boulder Avenue at Greenspot Road	D	AM	30.2	C	30.8	C	No	--	--
		PM	39.7	D	47.1	D	No	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[27] *Appendix F* contains the Delay/LOS calculation worksheets for all study intersections.

TABLE 7-1 (CONTINUED)
EXISTING CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[28]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing With Project Traffic Conditions		(3) Significant Impact	(4) Existing With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
6. Orange Street at Greenspot Road	D	AM	39.4	D	43.5	D	No	--	--
		PM	11.0	B	11.2	B	No	--	--
7. Church Street at Greenspot Road	D	AM	23.4	C	24.3	C	No	--	--
		PM	17.5	B	17.0	B	No	--	--
8. Club View Drive/Merris Street at Greenspot Road	D	AM	24.8	C	**71.6**	**F**	**Yes**	14.8	B
		PM	11.7	B	**94.4**	**F**	**Yes**	12.7	B
9. Gold Buckle Road at Greenspot Road[29]	D	AM	13.2	B	34.5	D	No	7.2	A
		PM	9.8	A	**37.1**	**E**	**Yes**	4.8	A

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[28] *Appendix F* contains the Delay/LOS calculation worksheets for all study intersections.

[29] This intersection will be converted to a four-legged intersection in conjunction with the Project development and has been assumed in the background traffic conditions for the "With" Project scenarios.

8.0 YEAR 2019 CONDITIONS TRAFFIC IMPACT ANALYSIS

The relative impacts of the added Project traffic volumes generated by proposed Project during the AM peak hour and PM peak hour conditions was evaluated based on analysis of future Year 2019 operating conditions at the nine (9) key study intersections, with and without the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future Delay and service level characteristics at each study intersection. The significance of the potential impacts of the Project at each key intersection was then evaluated using the traffic impact criteria mentioned in this report.

Table 8-1 summarizes the AM and PM peak hour Level of Service results at the nine (9) key study intersections for the Year 2019 traffic conditions. The first column (1) of Delay/LOS values in *Table 8-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Table 7-1*). The second column (2) presents forecast Year 2019 Without Project traffic conditions and the third column (3) identifies forecast Year 2019 With Project traffic conditions. The fourth column (4) indicates whether the traffic associated with the Project will have a significant impact based on the significant impact criteria mentioned in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended improvements, where needed, to achieve an acceptable level of service.

Project-specific improvements, which are discussed in more detail in *Section 10.0* of this report, have been assumed for the "With" Project scenarios for the intersections listed below:

- 9. Gold Buckle Road at Greenspot Road[30]

In addition to the above, the intersections listed below are being improved with the 5th Street/Greenspot Road Master Plan, which are discussed in more detail in *Section 10.0* of this report. These intersection planned improvements have been assumed for the Year 2019 traffic conditions.

- 1. SR-210 EB Ramps at 5th Street
- 2. SR-210 WB Ramps at Greenspot Road
- 3. Lowes Center at Greenspot Road
- 4. Shopping Center at Greenspot Road
- 5. Boulder Avenue at Greenspot Road
- 6. Orange Street at Greenspot Road

8.1 Year 2019 Without Project Traffic Conditions

Review of column (2) of *Table 8-1* indicates that for the Year 2019 Without Project traffic conditions, two (2) of the nine (9) key study intersections are forecast to operate at an unacceptable level of service during the AM peak hour when compared to the LOS standards defined in this

[30] This intersection will be converted to a four-legged intersection in conjunction with the Project development and has been assumed in the background traffic conditions for the "With" Project scenarios.

report. The remaining seven (7) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours.

8.2 Year 2019 With Project Traffic Conditions

Review of column (3) of *Table 8-1* indicates that for the Year 2019 With Project traffic conditions, three (3) of the nine (9) key study intersections are forecast to operate at unacceptable levels of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The remaining six (6) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours.

Review of column (4) of *Table 8-1* indicates that three (3) of the nine (9) key study intersections will have a significant impact under the Year 2019 With Project traffic conditions when compared to the LOS criteria defined in this report. However, as shown in column (5) of *Table 8-1*, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Appendix G contains the Delay/LOS calculation worksheets for the Year 2019 Traffic Conditions.

TABLE 8-1

YEAR 2019 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[31]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Without Project Traffic Conditions		(3) Year 2019 With Project Traffic Conditions		(4) Significant Impact	(5) Year 2019 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
1. SR-210 EB Ramps at 5th Street	D	AM	19.5	B	19.6	B	19.8	B	No	--	--
		PM	23.2	C	22.3	C	23.0	C	No	--	--
2. SR-210 WB Ramps at Greenspot Road	D	AM	17.2	B	15.6	B	15.7	B	No	--	--
		PM	18.0	B	19.7	B	20.5	C	No	--	--
3. Lowes Center at Greenspot Road	D	AM	4.2	A	8.1	A	8.2	A	No	--	--
		PM	7.6	A	13.0	B	13.2	B	No	--	--
4. Shopping Center at Greenspot Road	D	AM	5.4	A	9.3	A	9.4	A	No	--	--
		PM	9.1	A	16.2	B	16.4	B	No	--	--
5. Boulder Avenue at Greenspot Road	D	AM	30.2	C	34.1	C	35.3	D	No	--	--
		PM	39.7	D	29.7	C	29.8	C	No	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[31] *Appendices F* and *G* contain the Delay/LOS calculation worksheets for all study intersections.

TABLE 8-1 (CONTINUED)
YEAR 2019 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[32]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2019 Without Project Traffic Conditions		(3) Year 2019 With Project Traffic Conditions		(4) Significant Impact	(5) Year 2019 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
6. Orange Street at Greenspot Road	D	AM	39.4	D	**81.9**	**F**	**97.0**	**F**	**Yes**	49.4	D
		PM	11.0	B	14.2	B	14.8	B	No	14.4	B
7. Church Street at Greenspot Road	D	AM	23.4	C	31.7	C	36.1	D	No	--	--
		PM	17.5	B	18.9	B	19.3	B	No	--	--
8. Club View Drive/Merris Street at Greenspot Road	D	AM	24.8	C	**112.7**	**F**	**967.1**	**F**	**Yes**	17.1	B
		PM	11.7	B	17.2	C	**664.9**	**F**	**Yes**	12.1	B
9. Gold Buckle Road at Greenspot Road[33]	D	AM	13.2	B	17.7	C	**167.0**	**F**	**Yes**	6.5	A
		PM	9.8	A	11.6	B	**301.7**	**F**	**Yes**	4.2	A

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[32] *Appendices F* and *G* contain the Delay/LOS calculation worksheets for all study intersections.

[33] This intersection will be converted to a four-legged intersection in conjunction with the Project development and has been assumed in the background traffic conditions for the "With" Project scenarios.

9.0 YEAR 2040 CONDITIONS TRAFFIC IMPACT ANALYSIS

The relative impacts of the added Project traffic volumes generated by the proposed Project during the AM peak hour and PM peak hour conditions was evaluated based on analysis of future Year 2040 operating conditions at the nine (9) key study intersections, with and without the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future Delay and service level characteristics at each study intersection. The significance of the potential impacts of the Project at each key intersection was then evaluated using the traffic impact criteria mentioned in this report.

Table 9-1 summarizes the AM and PM peak hour Level of Service results at the nine (9) key study intersections for the Year 2040 traffic conditions. The first column (1) of Delay/LOS values in *Table 9-1* presents a summary of existing AM and PM peak hour traffic conditions (which were also presented in *Tables 7-1* and *8-1*). The second column (2) presents forecast Year 2040 Without Project traffic conditions and the third column (3) identifies forecast Year 2040 With Project traffic conditions. The fourth column (4) indicates whether the traffic associated with the Project will have a significant impact based on the significant impact criteria mentioned in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended improvements, where needed, to achieve an acceptable level of service.

Project-specific improvements, which are discussed in more detail in *Section 10.0* of this report, have been assumed for the "With" Project scenarios for the intersections listed below:

- 9. Gold Buckle Road at Greenspot Road[34]

In addition to the above, the intersections listed below are being improved with the 5th Street/Greenspot Road Master Plan, which are discussed in more detail in *Section 10.0* of this report. These intersection planned improvements have been assumed for the Year 2019 traffic conditions.

- 1. SR-210 EB Ramps at 5th Street
- 2. SR-210 WB Ramps at Greenspot Road
- 3. Lowes Center at Greenspot Road
- 4. Shopping Center at Greenspot Road
- 5. Boulder Avenue at Greenspot Road
- 6. Orange Street at Greenspot Road

9.1 Year 2040 Without Project Traffic Conditions

Review of column (2) of *Table 9-1* indicates that for the Year 2040 Without Project traffic conditions, three (3) of the nine (9) key study intersections are forecast to operate at an unacceptable level of service during the AM and/or PM peak hours when compared to the LOS standards defined

[34] This intersection will be converted to a four-legged intersection in conjunction with the Project development and has been assumed in the background traffic conditions for the "With" Project scenarios.

in this report. The remaining six (6) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours.

9.2 Year 2040 With Project Traffic Conditions

Review of column (3) of *Table 9-1* indicates that for the Year 2040 With Project traffic conditions, five (5) of the nine (9) key study intersections are forecast to operate at unacceptable levels of service during the AM and/or PM peak hours when compared to the LOS standards defined in this report. The remaining four (4) key study intersections are forecast to operate at acceptable levels of service during the AM and PM peak hours.

Review of column (4) of *Table 9-1* indicates that five (5) of the nine (9) key study intersections will have a significant impact under the Year 2040 With Project traffic conditions when compared to the LOS criteria defined in this report. However, as shown in column (5) of *Table 9-1*, the implementation of recommended mitigation measures at the impacted intersections mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted intersections are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Appendix H contains the Delay/LOS calculation worksheets for the Year 2040 Traffic Conditions.

TABLE 9-1

YEAR 2040 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[35]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Without Project Traffic Conditions		(3) Year 2040 With Project Traffic Conditions		(4) Significant Impact	(5) Year 2040 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
1. SR-210 EB Ramps at	D	AM	19.5	B	21.2	C	21.4	C	No	20.4	C
5th Street		PM	23.2	C	**56.1**	**E**	**60.0**	**E**	**Yes**	39.4	D
2. SR-210 WB Ramps at	D	AM	17.2	B	18.5	B	19.4	B	No	--	--
Greenspot Road		PM	18.0	B	46.8	D	50.7	D	No	--	--
3. Lowes Center at	D	AM	4.2	A	14.3	B	14.7	B	No	--	--
Greenspot Road		PM	7.6	A	32.2	C	35.7	D	No	--	--
4. Shopping Center at	D	AM	5.4	A	14.8	B	15.1	B	No	--	--
Greenspot Road		PM	9.1	A	34.7	C	39.2	D	No	--	--
5. Boulder Avenue at	D	AM	30.2	C	45.7	D	48.7	D	No	--	--
Greenspot Road		PM	39.7	D	45.0	D	48.4	D	No	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[35] *Appendices F* and *H* contain the Delay/LOS calculation worksheets for all study intersections.

TABLE 9-1 (CONTINUED)

YEAR 2040 CONDITIONS PEAK HOUR INTERSECTION CAPACITY ANALYSIS SUMMARY[36]

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Without Project Traffic Conditions		(3) Year 2040 With Project Traffic Conditions		(4) Significant Impact	(5) Year 2040 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS	Delay (s/v)	LOS	Yes/No	Delay (s/v)	LOS
6. Orange Street at Greenspot Road	D	AM	39.4	D	**147.3**	**F**	**163.0**	**F**	**Yes**	31.6	C
		PM	11.0	B	25.0	C	32.3	C	No	28.2	C
7. Church Street at Greenspot Road	D	AM	23.4	C	53.3	D	**62.3**	**E**	**Yes**	37.0	D
		PM	17.5	B	26.2	C	29.2	C	No	20.9	C
8. Club View Drive/Merris Street at Greenspot Road	D	AM	24.8	C	**10,000.0**	**F**	**10,000.0**	**F**	**Yes**	24.9	C
		PM	11.7	B	**339.4**	**F**	**8,297.4**	**F**	**Yes**	14.0	B
9. Gold Buckle Road at Greenspot Road[37]	D	AM	13.2	B	33.2	D	**1,788.9**	**F**	**Yes**	7.0	A
		PM	9.8	A	18.2	C	**5,317.5**	**F**	**Yes**	4.7	A

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[36] *Appendices F* and *H* contain the Delay/LOS calculation worksheets for all study intersections.

[37] This intersection will be converted to a four-legged intersection in conjunction with the Project development and has been assumed in the background traffic conditions for the "With" Project scenarios.

10.0 PLANNED AND RECOMMENDED IMPROVEMENTS

For those intersections where projected traffic volumes are expected to result in significant impacts, this report recommends improvements that change the intersection geometry to increase capacity. These capacity improvements involve roadway widening and/or re-striping to reconfigure (add lanes) roadways to specific approaches of a key intersection. The identified improvements are expected to:

- Address the impact of existing traffic, Project traffic and future non-project (ambient traffic growth and related projects) traffic, and
- Improve Levels of Service to an acceptable range and/or to pre-project conditions.

Figures 10-1, ***10-2***, and ***10-3*** present the planned and recommended improvements and intersection controls at the key study intersections for the Existing With Project, Year 2019, and Year 2040 respectively. These are discussed in more detail in the sections below.

10.1 Project-Specific Improvements

10.1.1 *Existing With Project, Year 2019 With Project, and Year 2040 With Project Traffic Conditions*

The Project-specific improvements listed below are anticipated to be completed in conjunction with the Project development and have been assumed in the Existing With Project, Year 2019 With Project, and Year 2040 With Project traffic conditions:

- Intersection 9. Gold Buckle Road at Greenspot Road: Add a south leg with a shared northbound left-thru-right-turn outbound lane and one inbound lane to provide Project access. Restripe the westbound approach on Greenspot Road to provide an exclusive left-turn lane.
- Intersection 10. Project Driveway 2 at Greenspot Road: This intersection is proposed to be a one-way stop-controlled three-legged intersection with no north leg. The northbound movement will consist of a right-turn only lane. The eastbound movement will consist of a through lane and a shared through-right-turn lane. The westbound movement will consist of an exclusive left-turn lane and two (2) through lanes.

10.2 5th Street/Greenspot Road Master Plan Planned Improvements

10.2.1 *Year 2019 Without Project, Year 2019 With Project, Year 2040 Without Project, and Year 2040 With Project Traffic Conditions*

The planned improvements listed below are anticipated to be completed in conjunction with the 5th Street/Greenspot Road Master Plan and have been assumed in the Year 2019 Without Project, Year 2019 With Project, Year 2040 Without Project, and Year 2040 With Project traffic conditions:

- Intersection 1. SR-210 EB Ramps at 5th Street: Widen and/or restripe the SR-210 EB off-ramp to provide an exclusive left-turn lane. Convert the existing shared through-left-turn lane to a shared left-through-right-turn lane. Widen and/or restripe the south leg to provide a third on-ramp lane. Widen and/or restripe the eastbound approach of

5th Street to provide two (2) additional through lanes and a second exclusive right-turn lane. Provide a third westbound departure lane. Widen and/or restripe to provide two additional eastbound departure lanes. Remove the crosswalks on the north and south legs. Modify the existing traffic signal.

- Intersection 2. SR-210 WB Ramps at Greenspot Road: Widen and/or restripe the north leg to provide a third on-ramp lane. Widen and/or restripe the eastbound approach of Greenspot Road to provide a third through lane. Provide a fourth westbound departure lane. Restripe the westbound approach to provide a fourth through lane. Modify the existing traffic signal.
- Intersection 3. Lowes Center at Greenspot Road: Add a north leg and provide the southbound approach with an exclusive left-turn lane and a shared through-right-turn lane. Provide two northbound departure lanes. Restripe the northbound approach to convert the northbound right-turn lane to a shared through-right-turn lane. Stripe a crosswalk across the north leg. Modify the existing traffic signal to provide an eight phase signal.
- Intersection 4. Shopping Center at Greenspot Road: Add a north leg and provide the southbound approach with an exclusive left-turn lane, a through lane, and an exclusive right-turn lane. Provide two northbound departure lanes. Restripe the northbound approach to convert the second exclusive left-turn lane to a through lane and to convert the shared through-right turn lane to an exclusive right-turn lane. Restripe the eastbound approach on Greenspot Road to provide a second exclusive left-turn lane. Stripe a crosswalk across the north leg and remove the crosswalk on the west leg. Modify the existing traffic signal to provide an eight phase signal.
- Intersection 5. Boulder Avenue at Greenspot Road: Widen and/or restripe the northbound approach on Boulder Avenue to convert the shared through-right-turn lane to a through lane and an unsignalized exclusive right-turn lane. Restripe the southbound approach to provide a second exclusive left-turn lane. Restripe the eastbound approach on Greenspot Road to provide a third through lane. Widen and/or restripe the westbound approach to provide a second exclusive left-turn lane and a third through lane. Provide a third eastbound departure lane. Modify the existing traffic signal.
- Intersection 6. Orange Street at Greenspot Road: Widen and/or restripe the eastbound approach on Greenspot Road to provide an exclusive right-turn lane. Provide the westbound departure with a third lane. Widen and/or restripe the westbound approach to provide an exclusive right-turn lane. Modify the existing traffic signal.

10.3 Recommended Improvements

10.3.1 *Existing With Project Traffic Conditions*

The results of the Existing With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact two (2) of the of nine (9) key study intersections. The

remaining seven (7) key study intersections are forecast to operate at acceptable levels of service under the Existing With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Existing With Project traffic:

- Intersection 8. Club View Drive/Merris Street at Greenspot Road: Install a traffic signal and design for five-phase operation with protected left-turn phasing on Greenspot Road.
- Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation.

Figure 10-1 presents the planned and recommended improvements and intersection controls at the key study intersections for the Existing With Project traffic conditions.

10.3.2 *Year 2019 With Project Traffic Conditions*

The results of the Year 2019 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact three (3) of the of nine (9) key study intersections. The remaining six (6) key study intersections are forecast to operate at acceptable levels of service under the Year 2019 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Year 2019 With Project traffic:

- Intersection 6. Orange Street at Greenspot Road: Restripe the southbound through lane on Orange Street to a shared through-right-turn lane. Modify the existing traffic signal as needed.
- Intersection 8. Club View Drive/Merris Street at Greenspot Road: Install a traffic signal and design for five-phase operation with protected left-turn phasing on Greenspot Road.
- Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation.

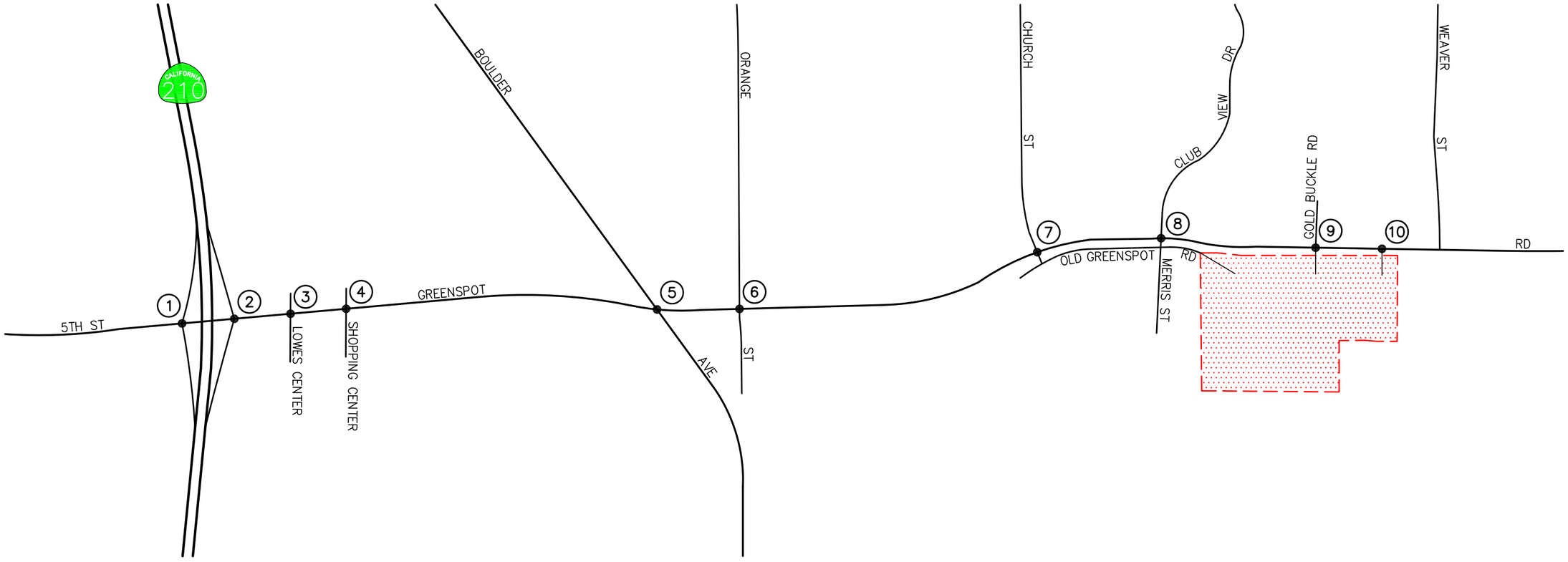
Figures 10-2 presents the planned and recommended improvements and intersection controls at the key study intersections for the Year 2019 traffic conditions.

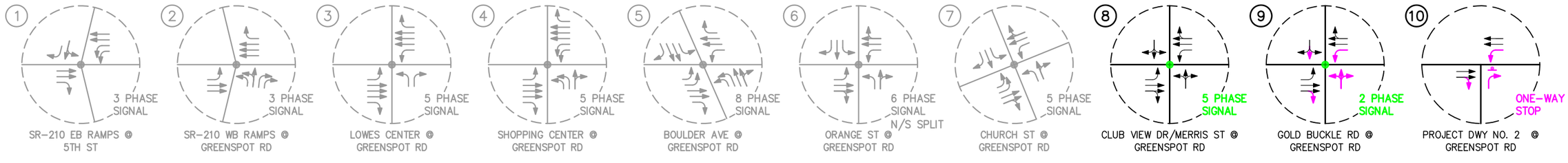
10.3.3 *Year 2040 With Project Traffic Conditions*

The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact five (5) of the of nine (9) key study intersections. The remaining four (4) key study intersections are forecast to operate at acceptable levels of service under the Year 2040 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersections significantly impacted by the Year 2040 With Project traffic:

- Intersection 1. SR-210 EB Ramps at 5th Street: Widen and/or restripe the southbound off-ramp to provide a second exclusive left-turn lane. Modify the existing traffic signal as needed.
- Intersection 6. Orange Street at Greenspot Road: Restripe the southbound through lane on Orange Street to a shared through-right-turn lane. Restripe the westbound right-turn lane on Greenspot Road to a shared through-right-turn lane. Modify the existing traffic signal as needed.
- Intersection 7. Church Street at Greenspot Road: Restripe the southbound through lane on Church Street to a shared through-right-turn lane. Modify the existing traffic signal as needed.
- Intersection 8. Club View Drive/Merris Street at Greenspot Road: Install a traffic signal and design for five-phase operation with protected left-turn phasing on Greenspot Road.
- Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation.

Figures 10-3 presents the planned and recommended improvements and intersection controls at the key study intersections for the Year 2040 traffic conditions.





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N NO SCALE

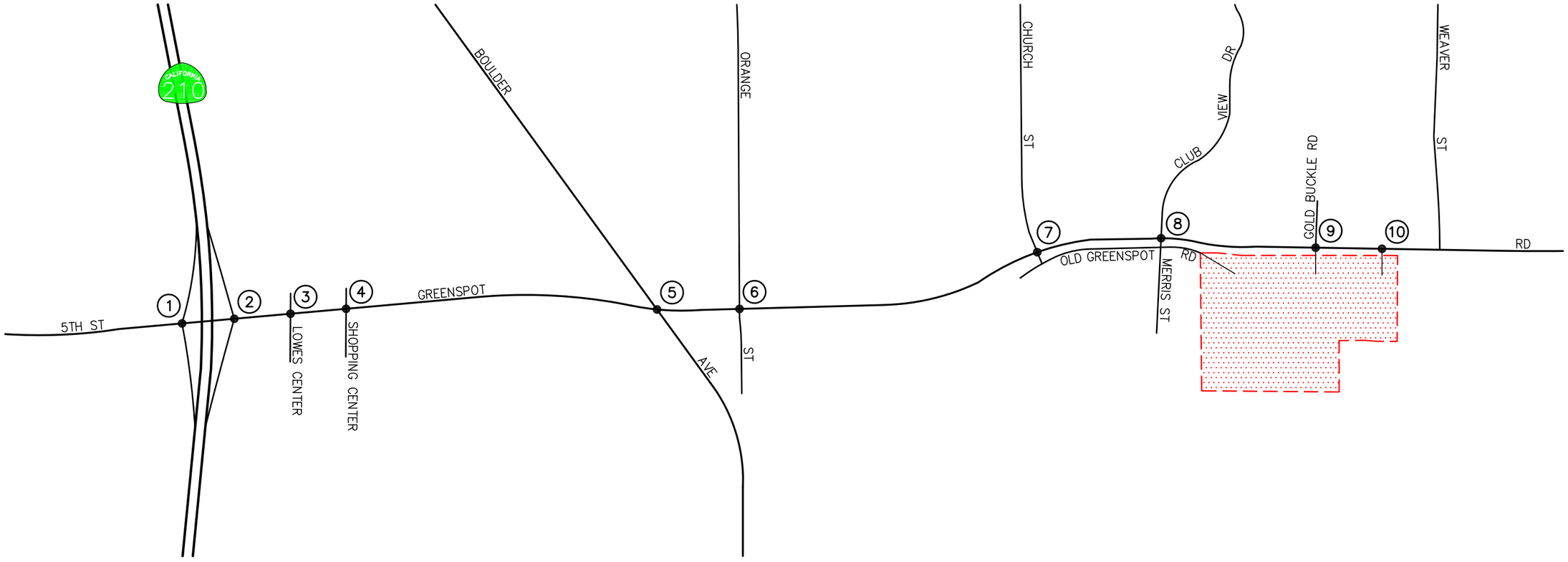
KEY

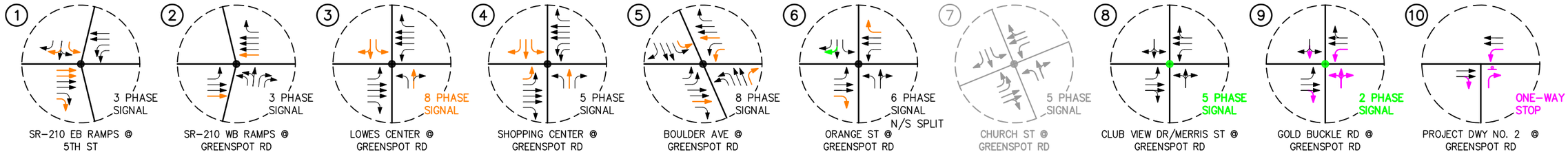
= APPROACH LANE ASSIGNMENT
= PROJECT SPECIFIC IMPROVEMENT
= EXISTING PLUS PROJECT RECOMMENDED IMPROVEMENT
= PROJECT SITE

FIGURE 10-1

EXISTING WITH PROJECT CONDITIONS PLANNED AND RECOMMENDED IMPROVEMENTS

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

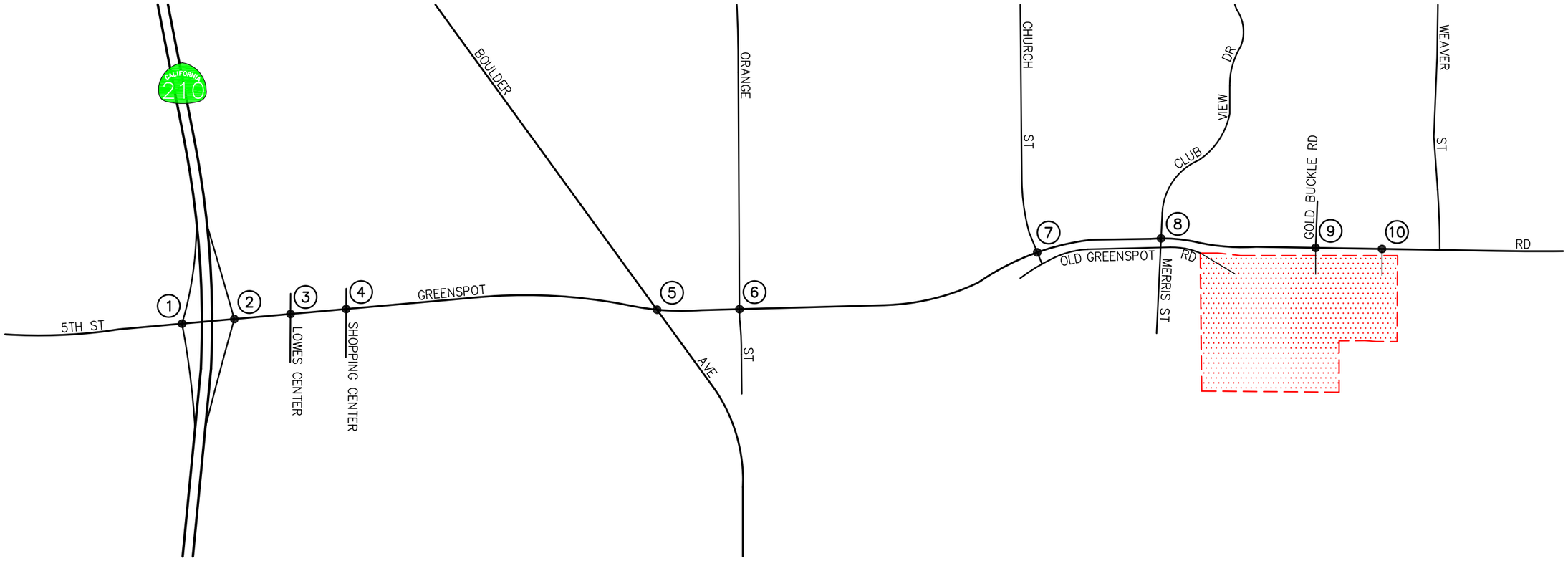
KEY

- = APPROACH LANE ASSIGNMENT
- = PROJECT SPECIFIC IMPROVEMENT
- = YEAR 2019 PLANNED IMPROVEMENT
- = YEAR 2019 PLUS PROJECT RECOMMENDED IMPROVEMENT
- = PROJECT SITE

FIGURE 10-2

YEAR 2019 CONDITIONS PLANNED AND RECOMMENDED IMPROVEMENTS

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND



1. 3 PHASE SIGNAL — SR-210 EB RAMPS @ 5TH ST
2. 3 PHASE SIGNAL — SR-210 WB RAMPS @ GREENSPOT RD
3. 8 PHASE SIGNAL — LOWES CENTER @ GREENSPOT RD
4. 5 PHASE SIGNAL — SHOPPING CENTER @ GREENSPOT RD
5. 8 PHASE SIGNAL — BOULDER AVE @ GREENSPOT RD
6. 6 PHASE SIGNAL N/S SPLIT — ORANGE ST @ GREENSPOT RD
7. 5 PHASE SIGNAL — CHURCH ST @ GREENSPOT RD
8. 5 PHASE SIGNAL — CLUB VIEW DR/MERRIS ST @ GREENSPOT RD
9. 2 PHASE SIGNAL — GOLD BUCKLE RD @ GREENSPOT RD
10. ONE-WAY STOP — PROJECT DWY NO. 2 @ GREENSPOT RD

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KEY

- = APPROACH LANE ASSIGNMENT
- = PROJECT SPECIFIC IMPROVEMENT
- = YEAR 2040 PLANNED IMPROVEMENT
- = YEAR 2040 PLUS PROJECT RECOMMENDED IMPROVEMENT
- = PROJECT SITE

FIGURE 10-3

YEAR 2040 CONDITIONS PLANNED AND RECOMMENDED IMPROVEMENTS

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

10.4 Improvement Costs

This section of the report summarizes the improvements and associated costs required to meet City of Highland and Caltrans level of service requirements for the Year 2019 and Year 2040 analyses. The improvement costs have been estimated using cost guidelines contained in *Appendix G of the San Bernardino County CMP, 2009 Update*. The project's fair share contribution for the improvements at each location is identified in *Section 12.0* of this report.

Table 10-1 identifies the incremental intersection improvements needed by the relevant study years to maintain, where possible, acceptable service levels based on the LOS standards defined in this report. The improvements listed in *Table 10-1* are comprised of striping and installation of signals. *Table 10-1* provides order of magnitude cost estimates for these improvements and are subject to change based on future detailed engineering estimates.

10.4.1 *Year 2019 With Project Improvement Costs*

As presented in column (1) of *Table 10-1*, the cost to implement recommended intersection improvements identified in this report to mitigate the Year 2019 With Project traffic impacts is estimated to total ***$600,000.00***.

10.4.2 *Year 2040 With Project Improvement Costs*

As presented in column (2) of *Table 10-1*, the cost to implement recommended intersection improvements identified in this report to mitigate the Year 2040 With Project traffic impacts is estimated to total ***$325,000.00***.

TABLE 10-1

RECOMMENDED INTERSECTION IMPROVEMENTS AND COSTS[38]

Key Intersections	Improvement Description	Improvement Cost	Improvements by Scenario (1) Year 2019 With Project	Improvements by Scenario (2) Year 2040 With Project
1. SR-210 EB Ramps at 5th Street	- Widen to provide a second SB left-turn lane.	$50,000.00	--	✓
	- Modify existing traffic signal.	$75,000.00	--	✓
		Total:	$0.00	$125,000.00
6. Orange Street at Greenspot Road	- Restripe SB through lane to a shared through/right-turn lane.	$25,000.00	✓	X
	- Restripe WB right-turn lane to a shared through/right-turn lane.	$25,000.00	--	✓
	- Modify existing traffic signal.	$75,000.00	✓	✓
		Total:	$100,000.00	$100,000.00
7. Church Street at Greenspot Road	- Restripe SB through lane to a shared through/right-turn lane.	$25,000.00	--	✓
	- Modify existing traffic signal.	$75,000.00	--	✓
		Total:	$0.00	$100,000.00
8. Club View Drive/Merris Street at Greenspot Road	- Install five-phase traffic signal.	$250,000.00	✓	X
		Total:	$250,000.00	$0.00
9. Gold Buckle Road at Greenspot Road	- Install two-phase traffic signal.	$250,000.00	✓	X
		Total:	$250,000.00	$0.00
TOTAL ESTIMATED COST OF RECOMMENDED IMPROVEMENTS			$600,000.00	$325,000.00

Notes:

✓ = Denotes that the improvement is implemented in the scenario.

X = Denotes that the improvement carries over from the previous scenario and is assumed to be already implemented, and therefore is not considered in the cost.

[38] The improvement costs have been estimated using cost guidelines contained in *Appendix G of the San Bernardino County CMP, 2009 Update*.

11.0 TRAFFIC SIGNAL WARRANT ANALYSIS

The level of service analyses at the key unsignalized impacted study intersections that are recommended to be signalized are supplemented with an assessment of the need for signalization of the intersections. This assessment is made on the basis of signal warrant criteria adopted by Caltrans. For this study, the need for signalization is assessed on the basis of the peak-hour traffic signal warrant. Warrant #3 described in the *California Manual on Uniform Traffic Control Devices (MUTCD).* Warrant #3 has two parts: 1) Part A evaluates peak hour vehicle delay for traffic on the minor street approach with the highest delay and 2) Part B evaluates peak-hour traffic volumes on the major and minor streets. This method provides an indication of whether peak-hour traffic conditions or peak-hour traffic volume levels are, or would be, sufficient to justify installation of a traffic signal. Other traffic signal warrants are available, however, they cannot be checked under future conditions (Without Project/Build-out without and with Project) because they rely on data for which forecasts are not available (such as accidents, pedestrian volume, and four- or eight-hour vehicle volumes).

The decision to install a traffic signal should not be based purely on the warrants alone. Instead, the installation of a signal should be considered and further analysis performed when one or more of the warrants are satisfied. Additionally, engineering judgment is exercised on a case-by-case basis to evaluate the effect a traffic signal will have on certain types of accidents and traffic conditions at the subject intersection as well as at adjacent intersections.

11.1 Existing With Project Traffic Conditions

The results of the peak-hour traffic signal warrant analysis for the Existing and Existing With Project traffic conditions are summarized in ***Table 11-1***. The results indicate that the following two (2) key unsignalized impacted intersections have future traffic conditions that would exceed the volume thresholds of Warrant #3, Part B for the AM and/or PM peak hours:

- 8. Club View Drive/Merris Street at Greenspot Road
- 9. Gold Buckle Road at Greenspot Road

The analysis and the recommended improvements show that the above-mentioned two (2) intersections in the Existing With Project traffic conditions are recommended to be signalized. With signalization of these two (2) intersections, which are warranted, these intersections are forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded from *Table 11-1* that traffic signals are justified at the following locations.

The Existing With Project Traffic Conditions Traffic Signal Warrant Analysis worksheets are contained in ***Appendix I***.

11.2 Year 2019 With Project Traffic Conditions

The results of the peak-hour traffic signal warrant analysis for the Year 2019 With Project traffic conditions are summarized in ***Table 11-2***. The results indicate that the following two (2) key

unsignalized impacted intersections have future traffic conditions that would exceed the volume thresholds of Warrant #3, Part A and/or Part B for the AM and/or PM peak hours:

- 8. Club View Drive/Merris Street at Greenspot Road
- 9. Gold Buckle Road at Greenspot Road

The analysis and the recommended improvements show that the above-mentioned two (2) intersections in the Year 2019 With Project traffic conditions are recommended to be signalized. With signalization of these two (2) intersections, which are warranted, these intersections are forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded from *Table 11-2* that traffic signals are justified at the following locations.

The Year 2019 With Project Traffic Conditions Traffic Signal Warrant Analysis worksheets are contained in *Appendix I.*

11.3 Year 2040 With Project Traffic Conditions

The results of the peak-hour traffic signal warrant analysis for the Year 2040 With Project traffic conditions are summarized in ***Table 11-3***. The results indicate that the following two (2) key unsignalized impacted intersections have future traffic conditions that would exceed the volume thresholds of Warrant #3, Part A and/or Part B for the AM and/or PM peak hours:

- 8. Club View Drive/Merris Street at Greenspot Road
- 9. Gold Buckle Road at Greenspot Road

The analysis and the recommended improvements show that the above-mentioned two (2) intersections in the Year 2040 With Project traffic conditions are recommended to be signalized. With signalization of these two (2) intersections, which are warranted, these intersections are forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded from *Table 11-3* that traffic signals are justified at the following locations.

The Year 2040 With Project Traffic Conditions Traffic Signal Warrant Analysis worksheets are contained in *Appendix I.*

TABLE 11-1

EXISTING INTERSECTION TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY[39]

Key Intersection		Time Period	Existing Traffic Conditions		Existing With Project Traffic Conditions	
			Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?	Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?
8.	Club View Drive/Merris Street at Greenspot Road	AM	No	**Yes**	No	**Yes**
		PM	No	**Yes**	No	**Yes**
9.	Gold Buckle Road at Greenspot Road	AM	No	**Yes**	No	**Yes**
		PM	No	No	No	No

Notes:

- Signal warrant checks based on Warrant 3, Part A - Peak-Hour Delay Warrant and Part B - Peak-Hour Volume Warrant contained in the California MUTCD.

[39] *Appendix I* contains the traffic signal warrant analysis worksheets for the key unsignalized study intersections.

TABLE 11-2
YEAR 2019 INTERSECTION TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY[40]

Key Intersection		Time Period	Year 2019 Without Project Traffic Conditions		Year 2019 With Project Traffic Conditions	
			Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?	Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?
8.	Club View Drive/Merris Street at Greenspot Road	AM	**Yes**	**Yes**	**Yes**	**Yes**
		PM	No	**Yes**	No	**Yes**
9.	Gold Buckle Road at Greenspot Road	AM	No	**Yes**	No	**Yes**
		PM	No	No	No	No

Notes:

- Signal warrant checks based on Warrant 3, Part A - Peak-Hour Delay Warrant and Part B - Peak-Hour Volume Warrant contained in the California MUTCD.

[40] *Appendix I* contains the traffic signal warrant analysis worksheets for the key unsignalized study intersections.

TABLE 11-3
YEAR 2040 INTERSECTION TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY[41]

Key Intersection		Time Period	Year 2040 Without Project Traffic Conditions		Year 2040 With Project Traffic Conditions	
			Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?	Part A of Warrant 3 Satisfied?	Part B of Warrant 3 Satisfied?
8.	Club View Drive/Merris Street at Greenspot Road	AM	**Yes**	**Yes**	**Yes**	**Yes**
		PM	**Yes**	**Yes**	**Yes**	**Yes**
9.	Gold Buckle Road at Greenspot Road	AM	No	**Yes**	No	**Yes**
		PM	No	No	No	No

Notes:

- Signal warrant checks based on Warrant 3, Part A - Peak-Hour Delay Warrant and Part B - Peak-Hour Volume Warrant contained in the California MUTCD.

[41] *Appendix I* contains the traffic signal warrant analysis worksheets for the key unsignalized study intersections.

12.0 PROJECT FAIR SHARE ANALYSIS

The transportation impacts associated with the development of the proposed Project were determined based on the existing and future conditions analysis with and without the proposed Project. The key study locations forecast to operate at adverse levels of service are discussed below. As such, the proposed Project's "fair share" of the recommended improvements has been calculated for the key study locations that are forecast to operate at adverse levels of service in the Year 2019 With Project and Year 2040 With Project traffic conditions.

12.1 Year 2019 With Project Traffic Conditions

Table 12-1 presents the AM and PM peak hours Project fair share percentages at the key study intersections that are forecast to operate at adverse levels of service in the Year 2019 With Project traffic conditions. As presented in *Table 12-1*, the first column (1) presents a total of all intersection peak hour movements for Existing conditions. The second column (2) presents traffic associated with Year 2019 Without project conditions. The third column (3) presents Year 2019 With Project traffic. The fourth column (4) represents the Project fair share based on the following formula:

- Project Fair Share (4) = [Column (3) - Column (2)/[Column (3) - Column (1)]*100

Columns (5) and (6) present the cost of the recommended mitigation measures, and the Project's fair share contribution.

The Project fair share percentages (worse time period impacted) for the three (3) impacted intersections for the Year 2019 With Project traffic conditions are shown below:

- 6. Orange Street at Greenspot Road 14.86%
- 8. Club View Drive/Merris Street at Greenspot Road 21.71%
- 9. Gold Buckle Road at Greenspot Road 17.58%

Review of *Table 12-1* shows that the Project's fair share contribution to offset all Year 2019 With Project intersection Project impacts is ***$113,085.00***.

12.2 Year 2040 With Project Traffic Conditions

Table 12-2 presents the AM and PM peak hours Project fair share percentages at the key study intersections that are forecast to operate at adverse levels of service in the Year 2040 With Project traffic conditions. *Table 12-2* is similar in set up to *Table 12-1*.

The Project fair share percentages (worse time period impacted) for the five (5) impacted intersections for the Year 2040 With Project traffic conditions are shown below:

- 1. SR-210 EB Ramps at 5th Street 2.71%
- 6. Orange Street at Greenspot Road 7.73%
- 7. Church Street at Greenspot Road 8.81%
- 8. Club View Drive/Merris Street at Greenspot Road 8.97%

- 9. Gold Buckle Road at Greenspot Road 7.20%

Review of *Table 12-2* shows that the Project's fair share contribution to offset all Year 2040 With Project intersection Project impacts is ***$19,927.50***.

TABLE 12-1

YEAR 2019 WITH PROJECT TRAFFIC CONDITIONS INTERSECTION FAIR SHARE CONTRIBUTION

Key Intersection	Impacted Time Period	(1) Existing Traffic	(2) Year 2019 Without Project Traffic	(3) Year 2019 With Project Traffic	(4) Project Fair Share Responsibility	(5) Total Improvement Cost	(6) Project Fair Share Contribution[42]
6. Orange Street at Greenspot Road	AM	2,673	3,527	3,676	**14.86%**	$100,000.00	$14,860.00
	PM	--	--	--	--		
8. Club View Drive/Merris Street at Greenspot Road	AM	1,612	2,201	2,358	21.05%	$250,000.00	$54,275.00
	PM	1,442	2,203	2,414	**21.71%**		
9. Gold Buckle Road at Greenspot Road	AM	1,324	1,883	2,000	17.31%	$250,000.00	$43,950.00
	PM	1,142	1,878	2,035	**17.58%**		
Total Project Fair Share Contribution						**$600,000.00**	**$113,085.00**

Notes:

- Net Project Percent Increase (4) = [Column (3) – Column (2)] / [Column (3) – Column (1)]
- **Bold Project Fair Share Responsibility** is based on worse case

[42] Project fair-share calculated on "worse-case" net project percent increase.

TABLE 12-2

YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS INTERSECTION FAIR SHARE CONTRIBUTION

Key Intersection	Impacted Time Period	(1) Existing Traffic	(2) Year 2040 Without Project Traffic	(3) Year 2040 With Project Traffic	(4) Project Fair Share Responsibility	(5) Total Improvement Cost	(6) Project Fair Share Contribution[43]
1. SR-210 EB Ramps at 5th Street	AM	--	--	--	--	$125,000.00	$3,387.50
	PM	2,745	5,583	5,662	**2.71%**		
6. Orange Street at Greenspot Road	AM	2,673	4,452	4,601	**7.73%**	$100,000.00	$7,730.00
	PM	--	--	--	--		
7. Church Street at Greenspot Road	AM	2,201	3,837	3,995	**8.81%**	$100,000.00	$8,810.00
	PM	--	--	--	--		
8. Club View Drive/Merris Street at Greenspot Road	AM	1,612	3,206	3,363	**8.97%**	$0.00	$0.00
	PM	1,442	3,648	3,859	8.73%		
9. Gold Buckle Road at Greenspot Road	AM	1,324	2,832	2,949	**7.20%**	$0.00	$0.00
	PM	1,142	3,264	3,421	6.89%		
Total Project Fair Share Contribution						**$325,000.00**	**$19,927.50**

Notes:

- Net Project Percent Increase (4) = [Column (3) – Column (2)] / [Column (3) – Column (1)]
- **Bold Project Fair Share Responsibility** is based on worse case

[43] Project fair-share calculated on "worse-case" net project percent increase.

13.0 SITE ACCESS AND INTERNAL CIRCULATION EVALUATION

13.1 Site Access

Access for the proposed Project will be provided via the extension of Old Greenspot Road and one (1) full-movement access driveway and one (1) left/right-turn in and right-turn out driveway on Greenspot Road. The full access driveway will be located at the existing intersection of Gold Buckle Road at Greenspot Road and the limited access driveway will be located east of Gold Buckle Road.

The proposed Project will also connect to the existing Abbey Way in the southwest corner of the site to provide emergency access only.

13.1.1 *Existing With Project Traffic Conditions*

Table 13-1 summarizes the levels of service at the two (2) Project driveways for Existing With Project traffic conditions. Please note that Gold Buckle Road at Greenspot Road level of service has also been presented in *Table 7-1*.

As shown in column (1) of *Table 13-1* the Gold Buckle Road at Greenspot Road is forecast to operate at an unacceptable LOS E during the PM peak hour. Project Driveway 2 at Greenspot Road is forecast to operate at an acceptable LOS B during the AM and PM peak hours under the Existing With Project traffic conditions. However, as shown in column (2), after implementation of the recommended mitigation measures, the impacted intersection is forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Appendix J contains the Delay/LOS calculation worksheets for the Project driveways for Existing traffic conditions.

13.1.2 *Year 2019 With Project Traffic Conditions*

Table 13-2 summarizes the levels of service at the two (2) Project driveways for Year 2019 With Project traffic conditions. Please note that Gold Buckle Road at Greenspot Road level of service has also been presented in *Table 8-1*.

As shown in column (1) of *Table 13-2* the Gold Buckle Road at Greenspot Road is forecast to operate at an unacceptable LOS F during the AM and PM peak hours. Project Driveway 2 at Greenspot Road is forecast to operate at an acceptable LOS C or better during the AM and PM peak hours under the Year 2019 With Project traffic conditions. However, as shown in column (2), after implementation of the recommended mitigation measures, the impacted intersection is forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Appendix J contains the Delay/LOS calculation worksheets for the Project driveways for Year 2019 traffic conditions.

13.1.3 *Year 2040 With Project Traffic Conditions*

Table 13-3 summarizes the levels of service at the two (2) Project driveways for Year 2040 With Project traffic conditions. Please note that Gold Buckle Road at Greenspot Road level of service has also been presented in *Table 9-1*.

As shown in column (1) of *Table 13-3* the Gold Buckle Road at Greenspot Road is forecast to operate at an unacceptable LOS F during the AM and PM peak hours. Project Driveway 2 at Greenspot Road is forecast to operate at an acceptable LOS C or better during the AM and PM peak hours under the Year 2040 With Project traffic conditions. However, as shown in column (2), after implementation of the recommended mitigation measures, the impacted intersection is forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

Appendix J contains the Delay/LOS calculation worksheets for the Project driveways for Year 2040 traffic conditions.

TABLE 13-1
EXISTING PEAK HOUR PROJECT DRIVEWAY CAPACITY ANALYSIS SUMMARY[44]

Key Intersection	Time Period	(1) Existing With Project Traffic Conditions		(2) Existing With Project With Mitigation	
		Delay (s/v)	**LOS**	**Delay (s/v)**	**LOS**
9. Gold Buckle Road at Greenspot Road[45]	AM	34.5	D	7.2	A
	PM	**37.1**	**E**	4.8	A
10. Project Driveway 2 at Greenspot Road	AM	9.2	A	--	--
	PM	10.7	B	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[44] *Appendix J* contains the Delay/LOS calculation worksheets for the Project driveways.

[45] This intersection will be converted to a four-legged intersection in conjunction with the Project development and has been assumed in the background traffic conditions for the "With" Project scenarios.

TABLE 13-2
YEAR 2019 PEAK HOUR PROJECT DRIVEWAY CAPACITY ANALYSIS SUMMARY[46]

Key Intersection		Time Period	(1) Year 2019 With Project Traffic Conditions		(2) Year 2019 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS
9.	Gold Buckle Road at Greenspot Road[47]	AM	**167.0**	**F**	6.5	A
		PM	**301.7**	**F**	4.2	A
10.	Project Driveway 2 at Greenspot Road	AM	9.7	A	--	--
		PM	13.1	B	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[46] *Appendix J* contains the Delay/LOS calculation worksheets for the Project driveways.

[47] This intersection will be converted to a four-legged intersection in conjunction with the Project development and has been assumed in the background traffic conditions for the "With" Project scenarios.

TABLE 13-3
YEAR 2040 PEAK HOUR PROJECT DRIVEWAY CAPACITY ANALYSIS SUMMARY[48]

Key Intersection		Time Period	(1) Year 2040 With Project Traffic Conditions		(2) Year 2040 With Project With Mitigation	
			Delay (s/v)	LOS	Delay (s/v)	LOS
9.	Gold Buckle Road at Greenspot Road[49]	AM	**1,788.9**	**F**	7.0	A
		PM	**5,317.5**	**F**	4.7	A
10.	Project Driveway 2 at Greenspot Road	AM	11.0	B	--	--
		PM	21.1	C	--	--

Notes:

- s/v = seconds per vehicle (delay)
- LOS = Level of Service, please refer to *Tables 3-1* and *3-2* for the LOS definitions
- **Bold Delay/LOS values** indicate adverse service levels based on the LOS standards mentioned in this report

[48] *Appendix J* contains the Delay/LOS calculation worksheets for the Project driveways.

[49] This intersection will be converted to a four-legged intersection in conjunction with the Project development and has been assumed in the background traffic conditions for the "With" Project scenarios.

13.2 Recommended Improvements

13.2.1 *Existing With Project Traffic Conditions*

The results of the Existing With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact one (1) of the two (2) Project driveways. The remaining Project driveway is forecast to operate at acceptable levels of service under the Existing With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersection significantly impacted by the Existing With Project traffic:

- Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation. This recommendation is also presented in *Section 10.3.1*.

13.2.2 *Year 2019 With Project Traffic Conditions*

The results of the Year 2019 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact one (1) of the two (2) Project driveways. The remaining Project driveway is forecast to operate at acceptable levels of service under the Year 2019 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersection significantly impacted by the Year 2019 With Project traffic:

- Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation. This recommendation is also presented in *Section 10.3.2.*

13.2.3 *Year 2040 With Project Traffic Conditions*

The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will significantly impact one (1) of the two (2) Project driveways. The remaining Project driveway is forecast to operate at acceptable levels of service under the Year 2040 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the intersection significantly impacted by the Year 2040 With Project traffic:

- Intersection 9. Gold Buckle Road at Greenspot Road: Install crosswalks on all four legs. Install a traffic signal and design for two-phase operation. This recommendation is also presented in *Section 10.3.3.*

Review of *Table 12-1* shows that the Project's fair share contribution to offset the Project impacts at the intersection of Gold Buckle Road at Greenspot Road (#9) is ***$19,927.50***. This has also been previously discussed in detail in *Section 12*.

13.3 Traffic Signal Warrant Analysis

13.3.1 *Existing With Project Traffic Conditions*

The results of the peak-hour traffic signal warrant analysis for the Existing With Project traffic conditions are summarized in column (1) of ***Table 13-4***. The results indicate that the following Project driveway has future traffic conditions that would exceed the volume thresholds of Warrant #3, Part B for the AM peak hour:

- 9. Gold Buckle Road at Greenspot Road

The analysis and the recommended improvements show that the above-mentioned driveway in the Existing With Project traffic conditions is recommended to be signalized. With signalization of this intersection, which is warranted, this intersection is forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded from *Table 13-4* that a traffic signal is justified at the following location.

The Existing With Project Traffic Conditions Traffic Signal Warrant Analysis worksheets are contained in *Appendix I.*

13.3.2 *Year 2019 With Project Traffic Conditions*

The results of the peak-hour traffic signal warrant analysis for the Year 2019 With Project traffic conditions are summarized in column (2) of *Table 13-4*. The results indicate that the following Project driveway has future traffic conditions that would exceed the volume thresholds of Warrant #3, Part B for the AM peak hour:

- 9. Gold Buckle Road at Greenspot Road

The analysis and the recommended improvements show that the above-mentioned driveway in the Year 2019 With Project traffic conditions is recommended to be signalized. With signalization of this intersection, which is warranted, this intersection is forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded from *Table 13-4* that a traffic signal is justified at the following location.

The Year 2019 With Project Traffic Conditions Traffic Signal Warrant Analysis worksheets are contained in *Appendix I.*

13.3.3 *Year 2040 With Project Traffic Conditions*

The results of the peak-hour traffic signal warrant analysis for the Year 2040 With Project traffic conditions are summarized in column (3) of *Table 13-4*. The results indicate that the following Project driveway has future traffic conditions that would exceed the volume thresholds of Warrant #3, Part B for the AM peak hour:

- 9. Gold Buckle Road at Greenspot Road

The analysis and the recommended improvements show that the above-mentioned driveway in the Year 2040 With Project traffic conditions is recommended to be signalized. With signalization of this intersection, which is warranted, this intersection is forecast to operate at acceptable service levels during the AM and PM peak hours. Thus, it is concluded from *Table 13-4* that a traffic signal is justified at the following location.

The Year 2040 With Project Traffic Conditions Traffic Signal Warrant Analysis worksheets are contained in *Appendix I.*

TABLE 13-4
PROJECT DRIVEWAY TRAFFIC SIGNAL WARRANT ANALYSIS SUMMARY[50]

Key Intersection	Time Period	(1) Existing With Project Traffic Conditions		(2) Year 2019 With Project Traffic Conditions		(3) Year 2040 With Project Traffic Conditions	
		Part A of Warrant 3 Satisfied?	**Part B of Warrant 3 Satisfied?**	**Part A of Warrant 3 Satisfied?**	**Part B of Warrant 3 Satisfied?**	**Part A of Warrant 3 Satisfied?**	**Part B of Warrant 3 Satisfied?**
9. Gold Buckle Road at Greenspot Road	AM	No	**Yes**	No	**Yes**	No	**Yes**
	PM	No	No	No	No	No	No

Notes:

- Signal Warrant checks based on Warrant 3, Part A - Peak-Hour Delay Warrant and Part B - Peak-Hour Volume Warrant contained in the *California MUTCD.*

[50] *Appendix I* contains the Traffic Signal Warrant Analysis worksheets for the key unsignalized impacted study intersections.

13.4 Internal Circulation Evaluation

The on-site and off-site circulation was evaluated in terms of vehicle-pedestrian conflicts. Based on our review of the preliminary site plan, the overall layout does not create significant vehicle-pedestrian conflict points and the driveway throat lengths are sufficient such that access is not impacted by internal vehicle queuing/stacking. Project traffic is not anticipated to cause significant queuing/stacking on the Project driveway. The on-site circulation is acceptable based on our review of the proposed site plan. The alignment, spacing and throat length of the Project driveways are also deemed adequate. As such, motorists entering and exiting the Project site from this driveway will be able to do so comfortably, safely, and without undue congestion.

Figure 13-1 presents the Recommended Traffic Control Plan for the Project based on our evaluation of the internal circulation design that will be implemented when the Project is developed. As presented in *Figure 13-1*, "STOP" signs, bars and pavement messages are recommended at the intersection approaches from each of the cul-de-sacs and where the "loaded" local streets intersect with "unloaded" local streets. Please note that "loaded" streets refer to the internal streets that have homes on its frontage. "Unloaded" streets refer to the internal streets that do not include homes on its frontage. In addition, the proposed roundabout will include appropriate signing and striping improvements. It should be noted that all traffic control devices must comply with the current Manual of Uniform Traffic Control Devices (MUTCD) standards.

On-street parking will be available along the internal roadways within the Project.

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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: ALBERT A. WEBB ASSOCIATES

KEY

— = STOP CONTROL

Y = YIELD CONTROL

FIGURE 13–1

RECOMMENDED TRAFFIC CONTROL PLAN

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

14.0 EXISTING CONDITIONS CALTRANS FACILITIES ANALYSIS

Caltrans requires the use of methods provided in the *HCM 2010* for the analysis of basic freeway segments and freeway merge and diverge segments. Based on the *Caltrans Traffic Impact Study Guidelines,* dated December 2002, Caltrans endeavors to maintain a target LOS at the transition between LOS C and D on State highway facilities and *Caltrans District 8* has typically established that LOS D is the operating standard for all Caltrans facilities. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than appropriate target LOS, the existing service level should be maintained.

It should be noted that Caltrans is currently in the process of improving the SR-210 Freeway with the Mixed Flow Lane Addition Project. Following the public review period of the Draft EIR/EIS, and considering public input, this project would widen SR-210 from Sterling Avenue to San Bernardino Avenue in the cities of Highland, San Bernardino, and Redlands, as well as a portion of unincorporated San Bernardino County. This project would add a mixed flow lane along the study corridor, add an auxiliary lane in each direction between the Baseline and 5th Street/Greenspot Road interchanges, and extend the acceleration lane at the 5th Street eastbound on-ramp. The anticipated start of construction is Fall 2019.

Basic Freeway Segment Analysis for freeway mainlines was conducted for the following four (4) Caltrans freeway segments:

1. SR-210 WB *south* of 5th Street/Greenspot Road
2. SR-210 WB *north* of 5th Street/Greenspot Road
3. SR-210 EB *north* of 5th Street/Greenspot Road
4. SR-210 EB *south* of 5th Street/Greenspot Road

Additionally, Freeway Merge And Diverge Segment Analysis for ramp junctions was conducted for the following four (4) Caltrans freeway merge and diverge segments:

1. SR-210 WB Off-Ramp *to* 5th Street/Greenspot Road
2. SR-210 WB On-Ramp *from* 5th Street/Greenspot Road
3. SR-210 EB Off-Ramp *to* 5th Street/Greenspot Road
4. SR-210 EB On-Ramp *from* 5th Street/Greenspot Road

14.1 Existing Conditions Basic Freeway Segment Capacity Analysis

Table 14-1 summarizes the peak hour Level of Service results at the four (4) basic freeway segments for the Existing traffic conditions. The first column (1) lists Existing traffic conditions. The second column (2) lists Existing With Project traffic conditions. The third column (3) shows whether the traffic associated with the Project will have a significant impact based on the LOS standards and the

significance impact criteria defined in this report. The fourth column (4) presents the Level of Service with the implementation of improvements, if necessary.

14.1.1 *Existing Traffic Conditions*

Review of column (1) of *Table 14-1* indicates that one (1) basic freeway segment currently operates at an adverse level of service under the Existing traffic conditions based on the LOS standards defined in this report. The remaining three (3) basic freeway segments are forecast to operate at acceptable LOS D or better during the AM and PM peak hours under the Existing traffic conditions.

14.1.2 *Existing With Project Traffic Conditions*

Review of column (2) of *Table 14-1* indicates that one (1) basic freeway segment is forecast to operate at an adverse level of service under the Existing With Project traffic conditions based on the LOS standards defined in this report. The remaining three (3) basic freeway segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Existing With Project traffic conditions.

However, the addition of Project trips is not anticipated to result in any new deficient service levels at this location and is forecast to remain an unacceptable LOS E. In compliance with Caltrans impact criteria, the Project's contribution to the SR-210 Eastbound *south of* 5th Street/Greenspot Road can be considered insignificant under this traffic impact analysis scenario.

Appendix K contains the Basic Freeway Segments Analysis Calculation Worksheets for the Existing Traffic Conditions.

TABLE 14-1

EXISTING CONDITIONS PEAK HOUR BASIC FREEWAY SEGMENTS CAPACITY ANALYSIS SUMMARY[51]

Key Basic Freeway Segment	Time Period	(1) Existing Traffic Conditions			(2) Existing With Project Traffic Conditions			(3) Significant Impact	(4) Existing With Project With Mitigation		
		Peak Hour Volume	Density (pc/mi/ln)	LOS	Peak Hour Volume	Density (pc/mi/ln)	LOS	Yes/No	Peak Hour Volume	Density (pc/mi/ln)	LOS
1. SR-210 Westbound *south of* 5th Street/Greenspot Road	AM	3,296	27.7	D	3,311	27.9	D	No	--	--	--
	PM	3,738	33.1	D	3,789	33.8	D	No	--	--	--
2. SR-210 Westbound *north of* 5th Street/Greenspot Road	AM	2,974	24.5	C	2,998	24.7	C	No	--	--	--
	PM	3,613	31.4	D	3,629	31.6	D	No	--	--	--
3. SR-210 Eastbound *north of* 5th Street/Greenspot Road	AM	3,164	26.3	D	3,172	26.4	D	No	--	--	--
	PM	3,205	26.8	D	3,232	27.0	D	No	--	--	--
4. SR-210 Eastbound *south of* 5th Street/Greenspot Road	AM	**4,108**	**38.8**	**E**	**4,154**	**39.6**	**E**	No	--	--	--
	PM	3,549	30.6	D	3,579	31.0	D	No	--	--	--

Notes:

- pc/mi/ln = Passenger cars per mile per lane (density)
- LOS = Level of Service, please refer to *Table 3-3* for the LOS definitions
- **Bold Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria

[51] *Appendix K* contains the Density/LOS calculation worksheets for all study basic freeway segments.

14.2 Existing Conditions Freeway Merge And Diverge Segments Capacity Analysis

Table 14-2 summarizes the peak hour Level of Service results at the four (4) freeway merge and diverge segments for the Existing traffic conditions. The first column (1) of *Table 14-2* identifies the type of analysis, i.e., merge or diverge analysis. The second column (2) lists time period. The third column (3) lists Existing traffic conditions. The fourth column (4) lists Existing With Project traffic conditions. The fifth column (5) of *Table 14-2* shows whether the traffic associated with the Project will have a significant impact based on the LOS standards and the significance impact criteria defined in this report. The sixth column (6) presents the Level of Service with the implementation of improvements, if necessary.

14.2.1 *Existing Traffic Conditions*

Review of column (3) of *Table 14-2* indicates that one (1) freeway diverge segment and one (1) freeway merge segment currently operate at adverse levels of service under the Existing traffic conditions based on the LOS standards defined in this report. The remaining two (2) freeway merge and diverge segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Existing traffic conditions.

14.2.2 *Existing With Project Traffic Conditions*

Review of column (4) of *Table 14-2* indicates that one (1) freeway diverge segment and one (1) freeway merge segment are forecast to operate at adverse levels of service under the Existing With Project traffic conditions based on the LOS standards defined in this report. The remaining two (2) freeway merge and diverge segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Existing With Project traffic conditions.

However, the addition of Project trips is not anticipated to result in any new deficient service levels at these locations and is forecast to remain an unacceptable LOS E. In compliance with Caltrans impact criteria, the Project's contribution to the SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road and the SR-210 Eastbound On-Ramp *from* 5th Street/Greenspot Road can be considered insignificant under this traffic impact analysis scenario.

Appendix L contains the Freeway Merge and Diverge Segments Analysis Calculation Worksheets for the Existing Traffic Conditions.

TABLE 14-2

EXISTING CONDITIONS PEAK HOUR FREEWAY MERGE AND DIVERGE SEGMENTS CAPACITY ANALYSIS SUMMARY[52]

Key Freeway Merge or Diverge Segment	(1) Analysis Type	(2) Time Period	(3) Existing Traffic Conditions: Freeway Pk Hr Volume	(3) Ramp Pk Hr Volume	(3) Density (pc/mi/ln)	(3) LOS	(4) Existing With Project Traffic Conditions: Freeway Pk Hr Volume	(4) Ramp Pk Hr Volume	(4) Density (pc/mi/ln)	(4) LOS	(5) Significant Impact: Yes/No	(6) Existing With Project With Mitigation: Freeway Pk Hr Volume	(6) Ramp Pk Hr Volume	(6) Density (pc/mi/ln)	(6) LOS
1. SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road	Diverge Analysis	AM	3,296	704	33.0	D	3,311	719	33.2	D	No	--	--	--	--
		PM	**3,738**	**658**	**37.1**	**E**	**3,789**	**709**	**37.5**	**E**	No	--	--	--	--
2. SR-210 Westbound On-Ramp *from* 5th Street/Greenspot Road	Merge Analysis	AM	2,592	382	24.9	C	2,592	406	25.1	C	No	--	--	--	--
		PM	3,080	533	30.2	D	3,080	549	30.3	D	No	--	--	--	--
3. SR-210 Eastbound Off-Ramp *to* 5th Street/Greenspot Road	Diverge Analysis	AM	3,164	255	31.2	D	3,172	263	31.3	D	No	--	--	--	--
		PM	3,205	500	31.6	D	3,232	527	31.8	D	No	--	--	--	--
4. SR-210 Eastbound On-Ramp *from* 5th Street/Greenspot Road	Merge Analysis	AM	**2,909**	**1,199**	**35.2**	**E**	**2,909**	**1,245**	**35.6**	**E**	No	--	--	--	--
		PM	2,705	844	30.7	D	2,705	874	31.0	D	No	--	--	--	--

Notes:

- Pk Hr = Peak Hour
- pc/mi/ln = Passenger cars per mile per lane (density)
- LOS = Level of Service, please refer to *Table 3-4* for the LOS definitions
- **Bold Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria

[52] *Appendix L* contains the Density/LOS calculation worksheets for all study freeway merge and diverge segments.

15.0 YEAR 2019 CONDITIONS CALTRANS FACILITIES ANALYSIS

Caltrans requires the use of methods provided in the *HCM 2010* for the analysis of basic freeway segments and freeway merge and diverge segments. Based on the *Caltrans Traffic Impact Study Guidelines,* dated December 2002, Caltrans endeavors to maintain a target LOS at the transition between LOS C and D on State highway facilities and *Caltrans District 8* has typically established that LOS D is the operating standard for all Caltrans facilities. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than appropriate target LOS, the existing service level should be maintained.

Basic Freeway Segment Analysis for freeway mainlines was conducted for the following four (4) Caltrans freeway segments:

1. SR-210 WB *south* of 5th Street/Greenspot Road
2. SR-210 WB *north* of 5th Street/Greenspot Road
3. SR-210 EB *north* of 5th Street/Greenspot Road
4. SR-210 EB *south* of 5th Street/Greenspot Road

Additionally, Freeway Merge And Diverge Segment Analysis for ramp junctions was conducted for the following four (4) Caltrans freeway merge and diverge segments:

1. SR-210 WB Off-Ramp *to* 5th Street/Greenspot Road
2. SR-210 WB On-Ramp *from* 5th Street/Greenspot Road
3. SR-210 EB Off-Ramp *to* 5th Street/Greenspot Road
4. SR-210 EB On-Ramp *from* 5th Street/Greenspot Road

The Year 2019 Without Project and Year 2019 With Project freeway mainline volumes were created using the methodology used to create the near-term horizon year traffic growth for the key study intersection volumes. Ambient traffic growth and traffic from the ten (10) related projects were applied to the baseline year along the freeway mainline. Please also note that, per direction of the City, only 20% of the Greenspot Village & Marketplace and the Harmony Specific Plan was assumed to be completed by the Year 2019.

It should be noted that Caltrans is currently in the process of improving the SR-210 Freeway with the Mixed Flow Lane Addition Project. Following the public review period of the Draft EIR/EIS, and considering public input, this project would widen SR-210 from Sterling Avenue to San Bernardino Avenue in the cities of Highland, San Bernardino, and Redlands, as well as a portion of unincorporated San Bernardino County. This project would add a mixed flow lane along the study corridor, add an auxiliary lane in each direction between the Baseline and 5th Street/Greenspot Road interchanges, and extend the acceleration lane at the 5th Street eastbound on-ramp. The anticipated start of construction is Fall 2019.

15.1 Year 2019 Conditions Basic Freeway Segment Capacity Analysis

Table 15-1 summarizes the peak hour Level of Service results at the four (4) basic freeway segments for the Year 2019 traffic conditions. The first column (1) lists Existing traffic conditions. The second column (2) lists Year 2019 Without Project traffic conditions and the third column (3) lists Year 2019 With Project traffic conditions. The fourth column (4) shows whether the traffic associated with the Project will have a significant impact based on the LOS standards and the significance impact criteria defined in this report. The fifth column (5) presents the Level of Service with the implementation of improvements, if necessary.

15.1.1 *Year 2019 Without Project Traffic Conditions*

Review of column (2) of *Table 15-1* indicates that three (3) basic freeway segments are forecast to operate at adverse levels of service under the Year 2019 Without Project traffic conditions based on the LOS standards defined in this report. The remaining one (1) basic freeway segment is forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Year 2019 Without Project traffic conditions.

15.1.2 *Year 2019 With Project Traffic Conditions*

Review of column (3) of *Table 15-1* indicates that three (3) basic freeway segments are forecast to operate at adverse levels of service under the Year 2019 With Project traffic conditions based on the LOS standards defined in this report. The remaining one (1) basic freeway segment is forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Year 2019 With Project traffic conditions.

Review of column (4) of *Table 15-1* indicates that three (3) of the four (4) basic freeway segments will have a significant cumulative impact under the Year 2019 With Project traffic conditions when compared to the LOS criteria defined in this report. However, as shown in column (5) of *Table 15-1*, the implementation of recommended mitigation measures at the impacted basic freeway segments mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, all the impacted basic freeway segments are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

It should be noted that the above Freeway recommended mitigation measures are consistent with the planned improvements for the SR-210 Mixed Flow Lane Addition Project and the anticipated start of construction is Fall 2019. As such, the Project is not responsible for these improvements and thus no fair-share has been calculated.

Appendix M contains the Basic Freeway Segments Analysis Calculation Worksheets for the Year 2019 Traffic Conditions.

TABLE 15-1

YEAR 2019 CONDITIONS PEAK HOUR BASIC FREEWAY SEGMENTS CAPACITY ANALYSIS SUMMARY[53]

Key Basic Freeway Segment	Time Period	(1) Existing Traffic Conditions			(2) Year 2019 Without Project Traffic Conditions			(3) Year 2019 With Project Traffic Conditions			(4) Significant Impact	(5) Year 2019 With Project With Mitigation		
		Peak Hour Volume	Density (pc/mi/ln)	LOS	Peak Hour Volume	Density (pc/mi/ln)	LOS	Peak Hour Volume	Density (pc/mi/ln)	LOS	Yes/No	Peak Hour Volume	Density (pc/mi/ln)	LOS
1. SR-210 Westbound *south of*	AM	3,296	27.7	D	3,609	31.3	D	3,624	31.5	D	No	3,624	19.8	C
5th Street/Greenspot Road	PM	3,738	33.1	D	**4,201**	**40.5**	**E**	**4,252**	**41.5**	**E**	**Yes**	4,252	23.2	C
2. SR-210 Westbound *north of*	AM	2,974	24.5	C	3,363	28.4	D	3,387	28.7	D	No	3,387	18.5	C
5th Street/Greenspot Road	PM	3,613	31.4	D	**4,003**	**37.0**	**E**	**4,019**	**37.3**	**E**	**Yes**	4,019	21.9	C
3. SR-210 Eastbound *north of*	AM	3,164	26.3	D	3,464	29.6	D	3,472	29.7	D	No	3,472	18.9	C[54]
5th Street/Greenspot Road	PM	3,205	26.8	D	3,642	31.8	D	3,669	32.1	D	No	3,669	20.0	C[54]
4. SR-210 Eastbound *south of*	AM	**4,108**	**38.8**	**E**	**4,551**	**48.1**	**F**	**4,597**	**49.3**	**F**	**Yes**	4,597	25.4	C
5th Street/Greenspot Road	PM	3,549	30.6	D	**3,937**	**36.0**	**E**	**3,967**	**36.4**	**E**	**Yes**	3,967	21.6	C

Notes:

- pc/mi/ln = Passenger cars per mile per lane (density)
- LOS = Level of Service, please refer to *Table 3-3* for the LOS definitions
- **Bold Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria

[53] *Appendices K* and *M* contain the Density/LOS calculation worksheets for all study basic freeway segments.

[54] Although this mainline basic freeway segment is forecast to operate at an acceptable level of service, the freeway diverge segment on this mainline segment requires mitigation.

15.2 Year 2019 Conditions Freeway Merge And Diverge Segments Capacity Analysis

Table 15-2 summarizes the peak hour Level of Service results at the four (4) freeway merge and diverge segments for the Year 2019 traffic conditions. The first column (1) of *Table 15-2* identifies the type of analysis, i.e., merge or diverge analysis. The second column (2) lists time period. The third column (3) lists Existing traffic conditions and the fourth column (4) lists Year 2019 Without Project traffic conditions. The fifth column (5) lists Year 2019 With Project traffic conditions. The sixth column (6) of *Table 15-2* shows whether the traffic associated with the Project will have a significant impact based on the LOS standards and the significance impact criteria defined in this report. The seventh column (7) presents the Level of Service with the implementation of improvements, if necessary.

15.2.1 *Year 2019 Without Project Traffic Conditions*

Review of column (4) of *Table 15-2* indicates that three (3) of the freeway merge and diverge segments are forecast operate at adverse levels of service under the Year 2019 Without Project traffic conditions based on the LOS standards defined in this report. The remaining one (1) freeway diverge segment is forecast to operate at an acceptable LOS D during the AM and PM peak hours under the Year 2019 Without Project traffic conditions.

15.2.2 *Year 2019 With Project Traffic Conditions*

Review of column (5) of *Table 15-2* indicates that three (3) of the freeway merge and diverge segments are forecast to operate at adverse levels of service under the Year 2019 With Project traffic conditions based on the LOS standards defined in this report. The remaining one (1) freeway diverge segment is forecast to operate at an acceptable LOS D during the AM and PM peak hours under the Year 2019 With Project traffic conditions.

Review of column (6) of *Table 15-2* indicates that three (3) of the four (4) freeway merge and diverge segments will have a significant cumulative impact under the Year 2019 With Project traffic conditions when compared to the LOS criteria defined in this report. However, as shown in column (7) of *Table 15-2*, the implementation of recommended mitigation measures at the impacted freeway merge and diverge segments mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, the impacted freeway merge and diverge segments are forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

It should be noted that the above Freeway recommended mitigation measures are consistent with the planned improvements for the SR-210 Mixed Flow Lane Addition Project and the anticipated start of construction is Fall 2019. As such, the Project is not responsible for these improvements and thus no fair-share has been calculated.

Appendix N contains the Freeway Merge And Diverge Segments Analysis Calculation Worksheets for the Year 2019 Traffic Conditions.

TABLE 15-2

YEAR 2019 CONDITIONS PEAK HOUR FREEWAY MERGE AND DIVERGE SEGMENTS CAPACITY ANALYSIS SUMMARY[55]

Key Freeway Merge or Diverge Segment	(1) Analysis Type	(2) Time Period	(3) Existing Traffic Conditions: Freeway Pk Hr Volume	(3) Ramp Pk Hr Volume	(3) Density (pc/mi/ln)	(3) LOS	(4) Year 2019 Without Project Traffic Conditions: Freeway Pk Hr Volume	(4) Ramp Pk Hr Volume	(4) Density (pc/mi/ln)	(4) LOS	(5) Year 2019 With Project Traffic Conditions: Freeway Pk Hr Volume	(5) Ramp Pk Hr Volume	(5) Density (pc/mi/ln)	(5) LOS	(6) Significant Impact	(7) Year 2019 With Project With Mitigation: Freeway Pk Hr Volume	(7) Ramp Pk Hr Volume	(7) Density (pc/mi/ln)	(7) LOS
1. SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road	Diverge Analysis	AM	3,296	704	33.0	D	**3,609**	**857**	**35.9**	**E**	**3,624**	**872**	**36.0**	**E**	**Yes**	3,624	872	26.5	C
		PM	**3,738**	**658**	**37.1**	**E**	**4,201**	**933**	**41.3**	**E**	**4,252**	**984**	**41.8**	**E**	No	4,252	984	29.8	D
2. SR-210 Westbound On-Ramp *from* 5th Street/Greenspot Road	Merge Analysis	AM	2,592	382	24.9	C	2,752	611	28.1	D	2,752	635	28.2	D	No	2,752	635	19.1	B[56]
		PM	3,080	533	30.2	D	3,268	735	33.3	D	3,268	751	33.4	D	No	3,268	751	22.6	C[56]
3. SR-210 Eastbound Off-Ramp *to* 5th Street/Greenspot Road	Diverge Analysis	AM	3,164	255	31.2	D	3,464	379	33.9	D	3,472	387	34.0	D	No	3,472	387	24.1	C
		PM	3,205	500	31.6	D	**3,642**	**769**	**35.6**	**E**	**3,669**	**796**	**35.8**	**E**	**Yes**	3,669	796	25.9	C
4. SR-210 Eastbound On-Ramp *from* 5th Street/Greenspot Road	Merge Analysis	AM	**2,909**	**1,199**	**35.2**	**E**	**3,085**	**1,466**	**38.7**	**F**	**3,085**	**1,512**	**39.1**	**F**	**Yes**	3,085	1,512	28.7	D
		PM	2,705	844	30.7	D	2,873	1,064	33.8	D	2,873	1,094	34.1	D	No	2,873	1,094	24.4	C

Notes:

- Pk Hr = Peak Hour
- pc/mi/ln = Passenger cars per mile per lane (density)
- LOS = Level of Service, please refer to *Table 3-4* for the LOS definitions
- **Bold Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria

[55] *Appendices L* and *N* contain the Density/LOS calculation worksheets for all study freeway merge and diverge segments.

[56] Although this freeway merge segment is forecast to operate at an acceptable level of service, the adjacent mainline segment requires mitigation.

16.0 YEAR 2040 CONDITIONS CALTRANS FACILITIES ANALYSIS

Caltrans requires the use of methods provided in the *HCM 2010* for the analysis of basic freeway segments and freeway merge and diverge segments. Based on the *Caltrans Traffic Impact Study Guidelines,* dated December 2002, Caltrans endeavors to maintain a target LOS at the transition between LOS C and D on State highway facilities and *Caltrans District 8* has typically established that LOS D is the operating standard for all Caltrans facilities. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than appropriate target LOS, the existing service level should be maintained.

Basic Freeway Segment Analysis for freeway mainlines was conducted for the following four (4) Caltrans freeway segments:

1. SR-210 WB *south* of 5th Street/Greenspot Road
2. SR-210 WB *north* of 5th Street/Greenspot Road
3. SR-210 EB *north* of 5th Street/Greenspot Road
4. SR-210 EB *south* of 5th Street/Greenspot Road

Additionally, Freeway Merge And Diverge Segment Analysis for ramp junctions was conducted for the following four (4) Caltrans freeway merge and diverge segments:

1. SR-210 WB Off-Ramp *to* 5th Street/Greenspot Road
2. SR-210 WB On-Ramp *from* 5th Street/Greenspot Road
3. SR-210 EB Off-Ramp *to* 5th Street/Greenspot Road
4. SR-210 EB On-Ramp *from* 5th Street/Greenspot Road

The Year 2040 Without Project and Year 2040 With Project freeway mainline volumes were created using the methodology used to create the long-term horizon year traffic growth for the key study intersection volumes. The Year 2040 traffic volumes were obtained by post-processing the peak hour traffic volumes of the freeway mainline based on the base year validation model run output to the base year ground traffic counts and represent the General Plan Buildout traffic conditions. Please note that the remaining 80% of the Greenspot Village & Marketplace and the Harmony Specific Plan was manually assigned to the Year 2040 traffic volumes after these volumes were post-processed from the model runs.

Caltrans is currently in the process of improving the SR-210 Freeway with the Mixed Flow Lane Addition Project. Following the public review period of the Draft EIR/EIS, and considering public input, this project would widen SR-210 from Sterling Avenue to San Bernardino Avenue in the cities of Highland, San Bernardino, and Redlands, as well as a portion of unincorporated San Bernardino County. This project would add a mixed flow lane along the study corridor, add an auxiliary lane in

each direction between the Baseline and 5th Street/Greenspot Road interchanges, and extend the acceleration lane at the 5th Street eastbound on-ramp.

It should be noted that the Basic Freeway Segment and Freeway Merge and Diverge Segment analyses include the planned improvements from the SR-210 Mixed Flow Lane Addition Project in the Year 2040 background traffic conditions.

16.1 Year 2040 Conditions Basic Freeway Segment Capacity Analysis

Table 16-1 summarizes the peak hour Level of Service results at the four (4) basic freeway segments for the Year 2040 traffic conditions. The first column (1) lists Existing traffic conditions. The second column (2) lists Year 2040 Without Project traffic conditions and the third column (3) lists Year 2040 With Project traffic conditions. The fourth column (4) shows whether the traffic associated with the Project will have a significant impact based on the LOS standards and the significance impact criteria defined in this report. The fifth column (5) presents the Level of Service with the implementation of improvements, if necessary.

It should be noted that the Basic Freeway Segment analysis includes the planned improvements from the SR-210 Mixed Flow Lane Addition Project in the Year 2040 background traffic conditions.

16.1.1 *Year 2040 Without Project Traffic Conditions*

Review of column (2) of *Table 16-1* indicates that all four (4) basic freeway segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Year 2040 Without Project traffic conditions.

16.1.2 *Year 2040 With Project Traffic Conditions*

Review of column (3) of *Table 16-1* indicates that all four (4) basic freeway segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Year 2040 With Project traffic conditions.

Appendix O contains the Basic Freeway Segments Analysis Calculation Worksheets for the Year 2040 Traffic Conditions.

TABLE 16-1

YEAR 2040 CONDITIONS PEAK HOUR BASIC FREEWAY SEGMENTS CAPACITY ANALYSIS SUMMARY[57,58]

Key Basic Freeway Segment	Time Period	(1) Existing Traffic Conditions			(2) Year 2040 Without Project Traffic Conditions			(3) Year 2040 With Project Traffic Conditions			(4) Significant Impact	(5) Year 2040 With Project With Mitigation		
		Peak Hour Volume	Density (pc/mi/ln)	LOS	Peak Hour Volume	Density (pc/mi/ln)	LOS	Peak Hour Volume	Density (pc/mi/ln)	LOS	Yes/No	Peak Hour Volume	Density (pc/mi/ln)	LOS
1. SR-210 Westbound *south of* 5th Street/Greenspot Road	AM	3,296	27.7	D	4,910	27.5	D	4,925	27.6	D	No	--	--	--
	PM	3,738	33.1	D	5,180	29.5	D	5,231	29.9	D	No	--	--	--
2. SR-210 Westbound *north of* 5th Street/Greenspot Road	AM	2,974	24.5	C	4,730	19.3	C	4,754	19.4	C	No	--	--	--
	PM	3,613	31.4	D	4,942	20.2	C	4,958	20.3	C	No	--	--	--
3. SR-210 Eastbound *north of* 5th Street/Greenspot Road	AM	3,164	26.3	D	4,278	17.5	B	4,286	17.5	B	No	--	--	--
	PM	3,205	26.8	D	4,277	17.5	B	4,304	17.6	B	No	--	--	--
4. SR-210 Eastbound *south of* 5th Street/Greenspot Road	AM	**4,108**	**38.8**	**E**	5,429	31.5	D	5,475	31.9	D	No	--	--	--
	PM	3,549	30.6	D	4,332	23.7	C	4,362	23.9	C	No	--	--	--

Notes:

- pc/mi/ln = Passenger cars per mile per lane (density)
- LOS = Level of Service, please refer to *Table 3-3* for the LOS definitions
- **Bold Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria

[57] *Appendices K* and *O* contain the Density/LOS calculation worksheets for all study basic freeway segments.

[58] The Basic Freeway Segment analyses include the planned improvements from the Mixed Flow Lane Addition Project in the Year 2040 background traffic conditions.

16.2 Year 2040 Conditions Freeway Merge And Diverge Segments Capacity Analysis

Table 16-2 summarizes the peak hour Level of Service results at the four (4) freeway merge and diverge segments for the Year 2040 traffic conditions. The first column (1) of *Table 16-2* identifies the type of analysis, i.e., merge or diverge analysis. The second column (2) lists time period. The third column (3) lists Existing traffic conditions and the fourth column (4) lists Year 2040 Without Project traffic conditions. The fifth column (5) lists Year 2040 With Project traffic conditions. The sixth column (6) of *Table 16-2* shows whether the traffic associated with the Project will have a significant impact based on the LOS standards and the significance impact criteria defined in this report. The seventh column (7) presents the Level of Service with the implementation of improvements, if necessary.

It should be noted that the Freeway Merge and Diverge Segment analysis includes the planned improvements from the SR-210 Mixed Flow Lane Addition Project in the Year 2040 background traffic conditions.

16.2.1 *Year 2040 Without Project Traffic Conditions*

Review of column (4) of *Table 16-2* indicates that all four (4) freeway merge and diverge segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Year 2040 Without Project traffic conditions.

16.2.2 *Year 2040 With Project Traffic Conditions*

Review of column (5) of *Table 16-2* indicates that one (1) of the freeway merge and diverge segments are forecast to operate at adverse levels of service under the Year 2040 With Project traffic conditions based on the LOS standards defined in this report. The remaining three (3) freeway merge and diverge segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under the Year 2040 With Project traffic conditions.

Review of column (6) of *Table 16-2* indicates that one (1) of the four (4) freeway merge and diverge segments will have a significant cumulative impact under the Year 2040 With Project traffic conditions when compared to the LOS criteria defined in this report. However, as shown in column (7) of *Table 16-2*, the implementation of recommended mitigation measures at the impacted freeway merge and diverge segments mitigates the impacts of the proposed Project. After implementation of the recommended mitigation measures, the impacted freeway merge and diverge segment is forecast to operate at an acceptable LOS based on the LOS standards outlined in this report.

It should be noted that the Project's fair share contribution to offset all Year 2040 With Project freeway diverge Project impacts is ***$23,625.50***.

Appendix P contains the Freeway Merge and Diverge Segments Analysis Calculation Worksheets for the Year 2040 Traffic Conditions.

TABLE 16-2

YEAR 2040 CONDITIONS PEAK HOUR FREEWAY MERGE AND DIVERGE SEGMENTS CAPACITY ANALYSIS SUMMARY[59,60]

Key Freeway Merge or Diverge Segment	(1) Analysis Type	(2) Time Period	(3) Existing Traffic Conditions: Freeway Pk Hr Volume	(3) Ramp Pk Hr Volume	(3) Density (pc/mi/ln)	(3) LOS	(4) Year 2040 Without Project Traffic Conditions: Freeway Pk Hr Volume	(4) Ramp Pk Hr Volume	(4) Density (pc/mi/ln)	(4) LOS	(5) Year 2040 With Project Traffic Conditions: Freeway Pk Hr Volume	(5) Ramp Pk Hr Volume	(5) Density (pc/mi/ln)	(5) LOS	(6) Significant Impact	(7) Year 2040 With Project With Mitigation: Freeway Pk Hr Volume	(7) Ramp Pk Hr Volume	(7) Density (pc/mi/ln)	(7) LOS
1. SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road	Diverge Analysis	AM	3,296	704	33.0	D	4,910	1,061	32.9	D	4,925	1,076	33.0	D	No	4,925	1,076	22.8	C
		PM	**3,738**	**658**	**37.1**	**E**	5,180	1,363	34.8	D	**5,231**	**1,414**	**35.1**	**E**	**Yes**	5,231	1,414	25.7	C
2. SR-210 Westbound On-Ramp *from* 5th Street/Greenspot Road	Merge Analysis	AM	2,592	382	24.9	C	3,849	881	6.2	A	3,849	905	15.9	B	No	--	--	--	--
		PM	3,080	533	30.2	D	3,817	1,125	7.0	A	3,817	1,141	7.1	A	No	--	--	--	--
3. SR-210 Eastbound Off-Ramp *to* 5th Street/Greenspot Road	Diverge Analysis	AM	3,164	255	31.2	D	4,278	604	10.9	B	4,286	612	11.0	B	No	--	--	--	--
		PM	3,205	500	31.6	D	4,277	1,368	14.9	B	4,304	1,395	15.1	B	No	--	--	--	--
4. SR-210 Eastbound On-Ramp *from* 5th Street/Greenspot Road	Merge Analysis	AM	**2,909**	**1,199**	**35.2**	**E**	3,674	1,755	28.6	D	3,674	1,801	29.0	D	No	--	--	--	--
		PM	2,705	844	30.7	D	2,909	1,423	22.1	C	2,909	1,453	22.4	C	No	--	--	--	--

Notes:

- Pk Hr = Peak Hour
- pc/mi/ln = Passenger cars per mile per lane (density)
- LOS = Level of Service, please refer to *Table 3-4* for the LOS definitions
- **Bold Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria

[59] *Appendices L* and *P* contain the Density/LOS calculation worksheets for all study freeway merge and diverge segments.

[60] The Basic Freeway Segment analyses include the planned improvements from the Mixed Flow Lane Addition Project in the Year 2040 background traffic conditions.

17.0 CALTRANS FACILITIES PLANNED AND RECOMMENDED IMPROVEMENTS

For those basic freeway segments as well freeway merge and diverge segments where projected traffic volumes are expected to result in significant impacts, this report recommends improvements that change the basic freeway segments and/or freeway merge and diverge segments' geometry to increase capacity. These capacity improvements involve freeway widening and/or re-striping to reconfigure (add lanes) freeway. The identified improvements are expected to:

- Address the impact of existing traffic, Project traffic and future non-project (ambient traffic growth and related projects) traffic, and
- Improve Levels of Service to an acceptable range and/or to pre-project conditions.

17.1 SR-210 Mixed Flow Lane Addition Project

Caltrans is currently in the process of improving the SR-210 Freeway with the Mixed Flow Lane Addition Project. Following the public review period of the Draft EIR/EIS, and considering public input, this project would widen SR-210 from Sterling Avenue to San Bernardino Avenue in the cities of Highland, San Bernardino, and Redlands, as well as a portion of unincorporated San Bernardino County. This project would add a mixed flow lane along the study corridor, add an auxiliary lane in each direction between the Baseline and 5th Street/Greenspot Road interchanges, and extend the acceleration lane at the 5th Street eastbound on-ramp. The anticipated start of construction is Fall 2019

17.1.1 *Basic Freeway Segments*

17.1.1.1 Year 2040 Without Project and Year 2040 With Project Traffic Conditions

The planned improvements listed below are anticipated to be completed in conjunction with the SR-210 Mixed Flow Lane Addition Project and have been assumed in the Year 2040 Without Project and Year 2040 With Project traffic conditions:

- 1. SR-210 Westbound *south of* 5th Street/Greenspot Road: Add one (1) mixed flow lane in the westbound direction.
- 2. SR-210 Westbound *north of* 5th Street/Greenspot Road: Add one (1) mixed flow lane and one (1) auxiliary lane in the westbound direction.
- 3. SR-210 Eastbound *north of* 5th Street/Greenspot Road: Add one (1) mixed flow lane and one (1) auxiliary lane in the eastbound direction.
- 4. SR-210 Eastbound *south of* 5th Street/Greenspot Road: Add one (1) mixed flow lane in the eastbound direction.

17.1.2 *Freeway Merge And Diverge Segments*

17.1.2.1 Year 2040 Without Project and Year 2040 With Project Traffic Conditions

The planned improvements listed below are anticipated to be completed in conjunction with the SR-210 Mixed Flow Lane Addition Project and have been assumed in the Year 2040 Without Project and Year 2040 With Project traffic conditions:

- 1. SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) mixed flow lane in the westbound direction.
- 2. SR-210 Westbound On-Ramp *from* 5th Street/Greenspot Road: Add one (1) mixed flow lane and one (1) auxiliary lane in the westbound direction.
- 3. SR-210 Eastbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) mixed flow lane and one (1) auxiliary lane in the eastbound direction.
- 4. SR-210 Eastbound On-Ramp *from* 5th Street/Greenspot Road: Add one (1) mixed flow lane in the eastbound direction. Extend the existing acceleration lane.

17.2 Recommended Improvements

17.2.1 *Basic Freeway Segments*

17.2.1.1 Existing With Project Traffic Conditions

The results of the Existing With Project traffic conditions level of service analyses indicate that one (1) of the four (4) basic freeway segments is forecast to have an unacceptable LOS. However, the addition of Project trips is not anticipated to result in any new deficient service levels at this location and is forecast to remain an unacceptable LOS E. In compliance with Caltrans impact criteria, the Project's contribution to the SR-210 Eastbound *south of* 5th Street/Greenspot Road can be considered insignificant under this traffic impact analysis scenario. The remaining three (3) basic freeway segments are forecast to operate at acceptable levels of service under the Existing With Project traffic conditions.

17.2.1.2 Year 2019 With Project Traffic Conditions

The results of the Year 2019 With Project traffic conditions level of service analyses indicate that the proposed Project will have significant cumulative impacts at three (3) of the four (4) basic freeway segments. The remaining one (1) basic freeway segment is forecast to operate at acceptable levels of service under the Year 2019 With Project traffic conditions. However, please note that mitigation is included for the SR-210 Westbound *north of* 5th Street/Greenspot Road freeway segment due to the unacceptable level of service at the adjacent freeway diverge segment. The improvements listed below have been identified to address the traffic impacts at the basic freeway segments cumulatively impacted by the Year 2019 With Project traffic:

- 1. SR-210 Westbound *south of* 5th Street/Greenspot Road: Add one (1) general purpose lane in the westbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.
- 2. SR-210 Westbound *north of* 5th Street/Greenspot Road: Add one (1) general purpose lane in the westbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.
- 3. SR-210 Eastbound *north of* 5th Street/Greenspot Road: Add one (1) general purpose lane in the eastbound direction. It should be noted that this improvement is

consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.

- 4. SR-210 Eastbound *south of* 5th Street/Greenspot Road: Add one (1) general purpose lane in the eastbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.

17.2.1.3 Year 2040 With Project Traffic Conditions

The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will not have significant cumulative impacts at any of the four (4) basic freeway segments. No improvements are recommended.

17.2.2 *Freeway Merge And Diverge Segments*

17.2.2.1 Existing With Project Traffic Conditions

The results of the Existing With Project traffic conditions level of service analyses indicate that two (2) of the four (4) freeway merge and diverge segments are forecast to have an unacceptable LOS. However, the addition of Project trips is not anticipated to result in any new deficient service levels at these locations and is forecast to remain an unacceptable LOS E. In compliance with Caltrans impact criteria, the Project's contribution to the SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road and the SR-210 Eastbound On-Ramp *from* 5th Street/Greenspot Road can be considered insignificant under this traffic impact analysis scenario. The remaining two (2) freeway merge and diverge segments are forecast to operate at acceptable levels of service under the Existing With Project traffic conditions.

17.2.2.2 Year 2019 With Project Traffic Conditions

The results of the Year 2019 With Project traffic conditions level of service analyses indicate that the proposed Project will have significant cumulative impacts at three (3) of the four (4) freeway merge and diverge segments. The remaining one (1) basic freeway segment is forecast to operate at acceptable levels of service under the Year 2019 With Project traffic conditions. However, please note that mitigation is included for the SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road freeway merge segment due to the unacceptable level of service at the adjacent basic freeway segment. The improvements listed below have been identified to address the traffic impacts at the freeway merge and diverge segments cumulatively impacted by the Year 2019 With Project traffic:

- 1. SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) general purpose lane in the westbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.

- 2. SR-210 Westbound On-Ramp *from* 5th Street/Greenspot Road: Add one (1) general purpose lane in the westbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.

- 3. SR-210 Eastbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) general purpose lane in the eastbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.
- 4. SR-210 Eastbound On-Ramp *to* 5th Street/Greenspot Road: Add one (1) general purpose lane in the eastbound direction. It should be noted that this improvement is consistent with the SR-210 Mixed Flow Lane Addition Project. As such, the Project is not responsible for this improvement and thus no fair-share has been calculated.

17.2.2.3 Year 2040 With Project Traffic Conditions

The results of the Year 2040 With Project traffic conditions level of service analyses indicate that the proposed Project will have significant cumulative impacts at one (1) of the four (4) freeway merge and diverge segments. The remaining three (3) freeway merge and diverge segments are forecast to operate at acceptable levels of service under the Year 2040 With Project traffic conditions. The improvements listed below have been identified to address the traffic impacts at the basic freeway segments cumulatively impacted by the Year 2040 With Project traffic:

- 1. SR-210 Westbound Off-Ramp *to* 5th Street/Greenspot Road: Add one (1) off-ramp lane. It should be noted that the Project's fair share contribution to offset all Year 2040 With Project freeway diverge Project impacts is ***$23,625.50***.

18.0 CALTRANS PROJECT FAIR SHARE ANALYSIS

The transportation impacts associated with the development of the proposed Project were determined based on the existing and future conditions analysis with and without the proposed Project. The key study locations forecast to operate at adverse levels of service are discussed below. As such, the proposed Project's "fair share" of the recommended improvements (beyond planned improvements) has been calculated for the key study locations that are forecast to operate at adverse levels of service in the Year 2019 With Project and Year 2040 With Project traffic conditions.

18.1 Basic Freeway Segment Fair Share

18.1.1 *Year 2019 With Project Traffic Conditions*

It should be noted that the Freeway improvements are consistent with the SR-210 Mixed Flow Lane Addition Project and the anticipated start of construction is Fall 2019. As such, the Project is not responsible for these improvements and thus no fair-share has been calculated.

18.1.2 *Year 2040 With Project Traffic Conditions*

All four (4) of the basic freeway segments are forecast to operate at acceptable LOS in the Year 2040 With Project traffic conditions. As such, no fair share calculations are needed.

18.2 Freeway Merge and Diverge Segment Fair Share

18.2.1 *Year 2019 With Project Traffic Conditions*

It should be noted that the Freeway improvements are consistent with the SR-210 Mixed Flow Lane Addition Project and the anticipated start of construction is Fall 2019. As such, the Project is not responsible for these improvements and thus no fair-share has been calculated.

18.2.2 *Year 2040 With Project Traffic Conditions*

Table 18-1 presents the PM peak hour (worse case) Project fair share percentage at the key freeway diverge segment that is forecast to operate at adverse levels of service in the Year 2040 With Project traffic conditions. As presented in *Table 18-1*, the first column (1) presents a total of ramp peak hour movements for Existing conditions. The second column (2) presents traffic associated with Year 2040 Without Project conditions. The third column (3) presents Year 2040 With Project traffic. The fourth column (4) represents the Project fair share based on the following formula:

- Project Fair Share (4) = [Column (3) - Column (2)/[Column (3) - Column (1)]*100

Columns (5) and (6) present the cost of the recommended mitigation measures and the Project's fair share contribution, respectively.

The Project fair share percentage (worse time period impacted) for the one (1) impacted diverge segment for the Year 2040 With Project traffic conditions is shown below:

- 1. SR-210 WB Off Ramp to 5th Street/Greenspot Road 6.75%

Review of *Table 18-1* shows that the Project's fair share contribution to offset all Year 2040 With Project freeway diverge Project impacts is ***$23,625.50***.

TABLE 18-1

YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS FREEWAY MERGE AND DIVERGE FAIR SHARE CONTRIBUTION

Freeway Merge/Diverge Segment	Impacted Time Period	(1) Existing Traffic	(2) Year 2040 Without Project Traffic	(3) Year 2040 With Project Traffic	(4) Project Fair Share Responsibility	(5) Total Improvement Cost	(6) Project Fair Share Contribution
1 SR-210 WB Off-Ramp to 5th Street/Greenspot Road	AM	--	--	--	--	$350,000.00	$23,625.00
	PM	658	1,363	1,414	**6.75%**		
Total Project Fair Share Contribution						**$350,000.00**	**$23,625.00**

Notes:

- Project Fair Share (4) = [Column (3) - Column (2)/[Column (3) - Column (1)]*100

APPENDIX A

APPROVED TRAFFIC IMPACT STUDY SCOPE OF WORK

MEMORANDUM

To:	Mr. Ernest Wong Public Works Director City of Highland	Date:	December 13, 2016
From:	Keil D. Maberry, P.E., Principal Zawwar Saiyed, P.E., Senior Transportation Engineer Linscott, Law & Greenspan, Engineers	LLG Ref:	2.16.3773.1
Subject:	*Traffic Impact Analysis (TIA) Revised Scope of Work for the Heatherglen Residential Project – Highland, California*		

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit the following Traffic Impact Analysis (TIA) Revised Scope of Work (SOW) for the Heatherglen Residential Project (herein referred to as the "Project") located in the City of Highland. The work plan summarized below is proposed for the preparation of a *Traffic Impact Analysis Report for the Heatherglen Residential Project.* The traffic impact analysis report will assess the potential traffic-related impacts. Please note that this revised SOW addresses the City of Highland comments in the letter dated December 5, 2016 (prepared by Hernandez, Kroone & Associates).

The work program provided herein is based on our prior work experience within the City of Highland and our understanding of the Project. The TIA will satisfy the traffic impact requirements of the City of Highland and will be consistent with the requirements of the most current *Congestion Management Program (CMP) for San Bernardino County.*

Traffic Impact Analysis (TIA) Scope of Work

1. **Project Description and Location**: The subject property is generally located on the south side of Greenspot Road, east of Merris Street, and west of the Creek Flood Control Channel City of Highland, San Bernardino County, California. The proposed Project will consist of the development of up to 215 single-family dwelling units (DU). The site will also include a community park and areas designated for conservation and a retention basin. ***Figure 1*** presents a Vicinity Map, which illustrates the general location of the subject property and depicts the study locations and surrounding street system. ***Figure 2*** presents the existing aerial photograph of the Project site.

   The proposed Project is expected to be completed by Year 2019 and this horizon year has been utilized to assess the Project's potential traffic impacts at full occupancy within a near-term cumulative traffic setting.

   Access for the proposed Project will be provided via the extension of Old Greenspot Road and two (2) full-movement access driveways on Greenspot Road.

LINSCOTT LAW & GREENSPAN engineers

Engineers & Planners
Traffic
Transportation
Parking

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Keil D. Maberry, PE

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The proposed Project will also connect to the existing Abbey Way in the southwest corner of the site to provide emergency access only.

Figure 3 presents the proposed site plan prepared by *Albert A. Webb Associates.* Please note that an updated site plan with the final housing tracts and emergency access on Abbey Way will be included in the Traffic Impact Analysis and this updated site plan will address all the City of Highland comments in the letter dated December 5, 2016.

2. **Project Trip Generation Forecast**: The trip generation potential of the proposed Project will be estimated using trip rates contained in the 9th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE), [Washington, D.C., 2012]. Specifically, trip rates for ITE Land Use 210: Single-Family Detached Housing. The upper half of ***Table 1*** summarizes the trip generation rates used in forecasting the vehicular trips generated by the Project.

   A review of the bottom portion of *Table 1* shows that the proposed Project is forecast to generate 2,047 weekday daily trips (one half arriving, one half departing), with 161 trips (40 inbound, 121 outbound) produced in the weekday AM peak hour and 215 trips (135 inbound, 80 outbound) produced in the weekday PM peak hour.

3. **Project Trip Distribution Pattern**: The directional trip distribution pattern for the Project is presented in ***Figure 4***. Project traffic volumes, both entering and exiting the site, have been distributed and assigned to the adjacent street system based on the following considerations:

   - the site's proximity to major traffic carriers (i.e. State Route 210, etc.),
   - expected localized traffic flow patterns based on adjacent street channelization and presence of traffic signals,
   - the traffic-carrying capacity and travel speed available on roadways serving the Project site, and
   - ingress/egress availability at the Project site.

4. **Year 2019 Cumulative Traffic**: Year 2019 background traffic volumes forecasts will be determined through the utilization of an ambient growth factor and the addition of related projects traffic. Please note that related projects that are within a 2-mile radius and generate 50 or more peak hour trips will be included in the analysis.

   - Project Completion: Year 2019
   - Ambient Growth Rate: 2% per year

- Research data at the City of Highland and adjacent jurisdictions in the Project vicinity regarding the status of other proposed developments (related projects) in the area that may contribute cumulative impacts to the adjacent street system and study locations in the vicinity of the proposed project.

5. **Year 2040 General Plan Buildout Traffic:** Year 2040 General Plan Buildout traffic volumes forecasts will be determined through utilization of the current SBTAM traffic model.

6. **Traffic Impact Analysis Scenarios:** The following scenarios are those for which AM and PM peak hour Delay and corresponding LOS calculations will be performed at the key intersections for existing, near-term, and long-term traffic conditions:

    1. Existing Traffic Conditions,
    2. Existing With Project Traffic Conditions,
    3. Scenario (2) with Recommended Improvements, if any,
    4. Year 2019 Without Project Traffic Conditions,
    5. Year 2019 With Project Traffic Conditions,
    6. Scenario (5) With Recommended Improvements, if any,
    7. Year 2040 Without Project Traffic Conditions,
    8. Year 2040 With Project Traffic Conditions, and
    9. Scenario (8) With Recommended Improvements, if any.

    The Level of Service (LOS) calculations will be based on Highway Capacity Manual (HCM) method of analysis for signalized intersections and unsignalized intersections. In addition CMP guidelines will be followed for HCM default values, costs, analysis, etc.

7. **Study Area:** The study intersections listed below are locations that could potentially be impacted by the proposed Project based on the City of Highland guidelines. Nine (9) key study intersections listed below were selected based on Project location, trip assignment, and a "50 trip" threshold criteria:

    1. SR-210 EB Ramps at 5th Street
    2. SR-210 WB Ramps at Greenspot Road
    3. Lowes Center at Greenspot Road
    4. Shopping Center at Greenspot Road

5. Boulder Avenue at Greenspot Road
6. Orange Street at Greenspot Road
7. Church Street at Greenspot Road
8. Club View Drive/Merris Street at Greenspot Road
9. Gold Buckle Road at Greenspot Road

Traffic data collection effort for the key study locations will be collected, inclusive of truck classifications (i.e. large 2-axle trucks, 3-axle trucks and 4+ axle trucks) will be collected. The truck traffic turning movements will be converted to passenger car equivalents (P.C.E.'s) using SANBAG approved factors. P.C.E. factors of 1.5, 2.0 and 3.0 were utilized for large 2-axle trucks, 3-axle trucks and 4+ axle trucks, respectively.

8. **Caltrans Freeway Mainline Analysis**: Conduct freeway mainline analysis as outlined in Caltrans' requirements for the following locations:

1. SR-210 EB north of 5th Street
2. SR-210 EB south of 5th Street
3. SR-210 WB south of Greenspot Road
4. SR-210 WB north of Greenspot Road

9. **Caltrans Merge/Diverge Analysis**: Conduct freeway merge/diverge analysis as outlined in Caltrans' requirements for the following locations:

1. SR-210 EB diverge to 5th Street
2. SR-210 EB merge from 5th Street
3. SR-210 WB diverge to Greenspot Road
4. SR-210 WB merge from Greenspot Road

10. **Mitigation, Fair-Share Contribution Percentage and Cost Estimate**: Conduct mitigation, calculate fair-share contribution percentage(s) and cost estimate(s) at the significantly impacted intersection(s) for the scenarios listed in **Task 6** above.

11. **Site Access and Internal Circulation:** Evaluate site access of the Project and internal circulation. For all Project driveways, analyze and make recommendations relative to the driveway width, curb return radii, adequacy of storage (throats) to accommodate all vehicular traffic.

LINSCOTT LAW & GREENSPAN engineers

* * * * * * * * * * *

We appreciate the opportunity to provide this Traffic Impact Analysis Scope of Work. Should you have any questions, please call us at (949) 825-6175. Thank You.

Approved by:

_____ _____

City of Highland, Department of Public Works Date

cc: File

Attachments

LINSCOTT LAW & GREENSPAN engineers

TABLE 1

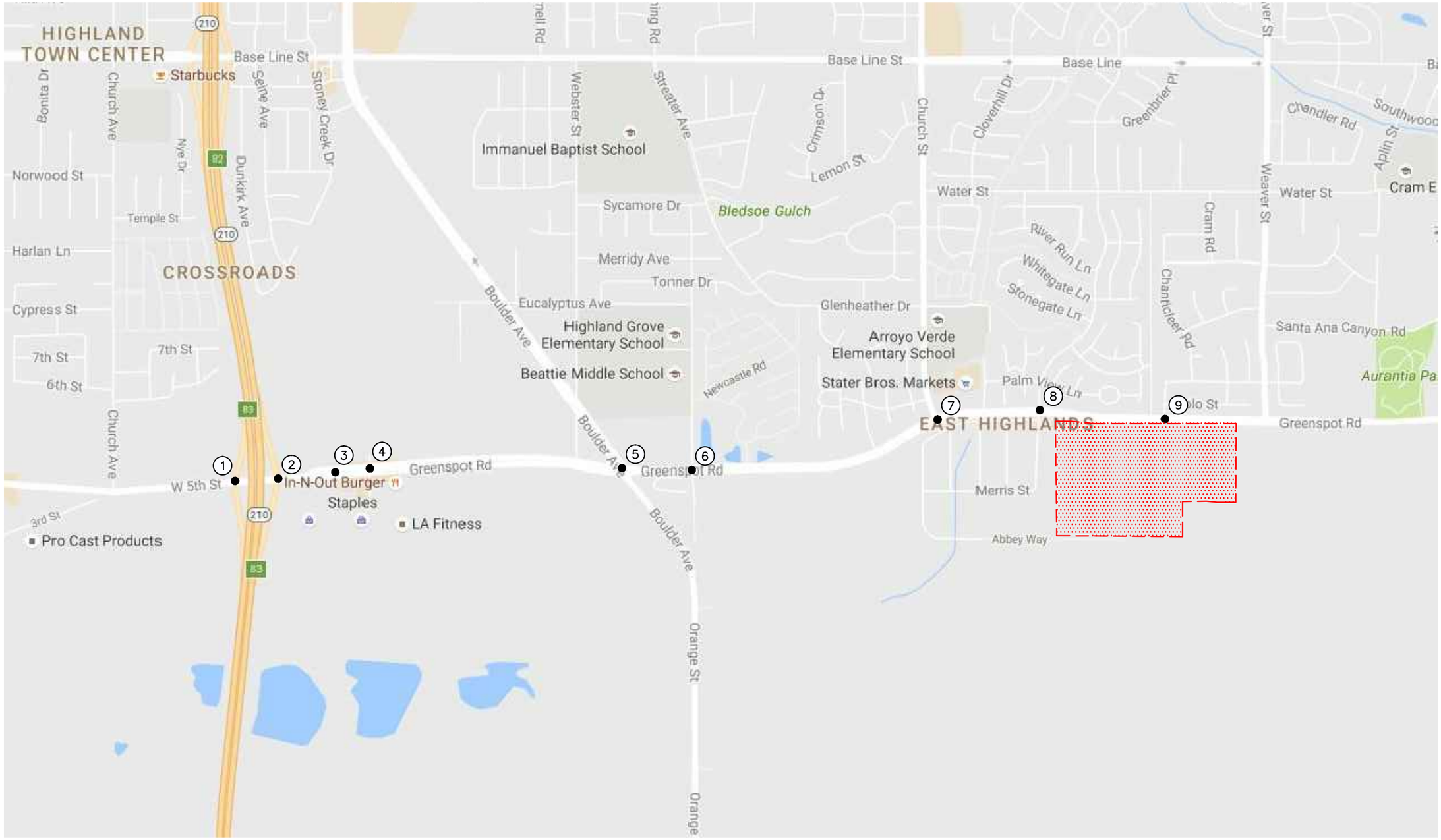
PROJECT TRIP GENERATION FORECAST[1]

ITE Land Use Code / Project Description	Daily 2-Way	AM Peak Hour			PM Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total
Trip Generation Rates:							
▪ 210: Single-Family Detached Housing (TE/DU)	9.52	25%	75%	0.75	63%	37%	1.00
Trip Generation Forecast:							
▪ 210: Single-Family Detached Housing (215 DU)	2,047	40	121	161	135	80	215

Notes:

- TE/TSF = Trip Ends per Dwelling Unit
- SF = Square-Feet

[1] Source*: Trip Generation, 9th Edition*, Institute of Transportation Engineers, (ITE) [Washington, D.C. (2012)]. Average rates used.



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LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

(#) = STUDY INTERSECTION

= PROJECT SITE

FIGURE 1

VICINITY MAP

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

n:\3700\2163773 – heatherglen residential project, highland\6 – dwg\3773f-2.dwg LDP 13:43:03 11-28-2016 besa

LINSCOTT LAW & GREENSPAN engineers

N NO SCALE

SOURCE: GOOGLE

KEY

= PROJECT SITE

FIGURE 2

EXISTING SITE AERIAL

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

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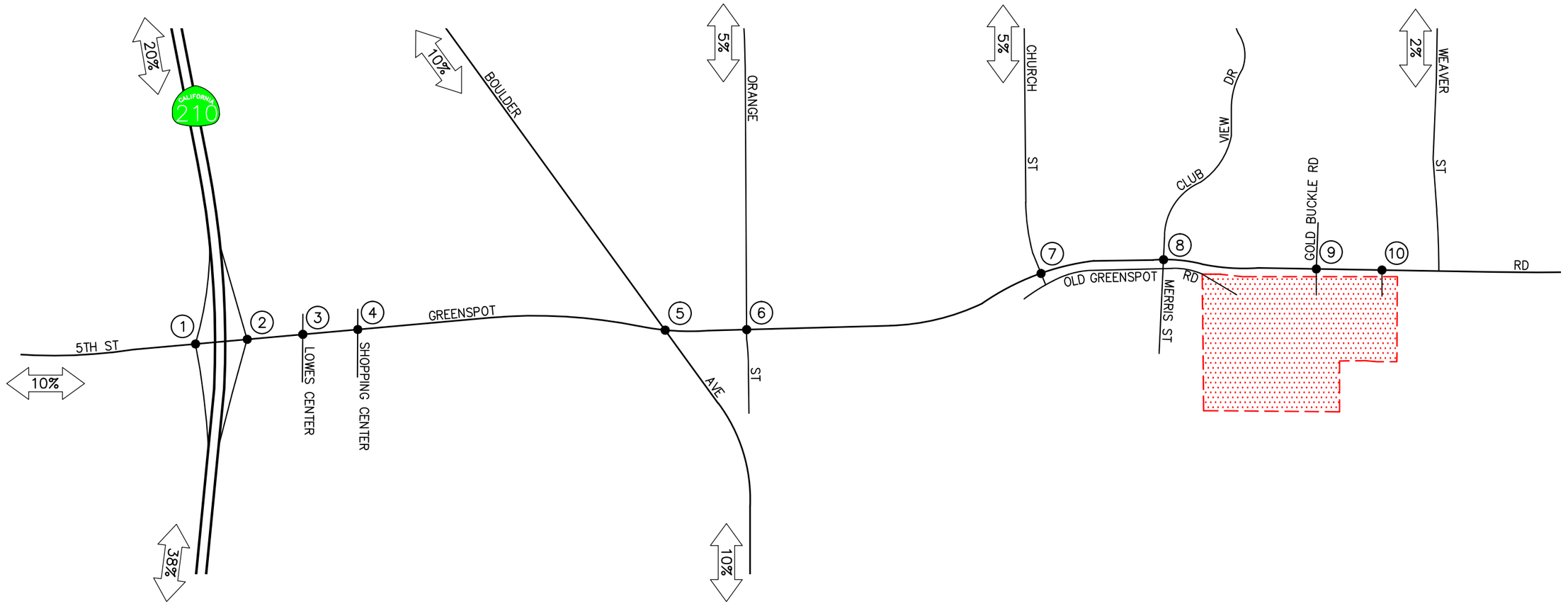
LINSCOTT LAW & GREENSPAN engineers

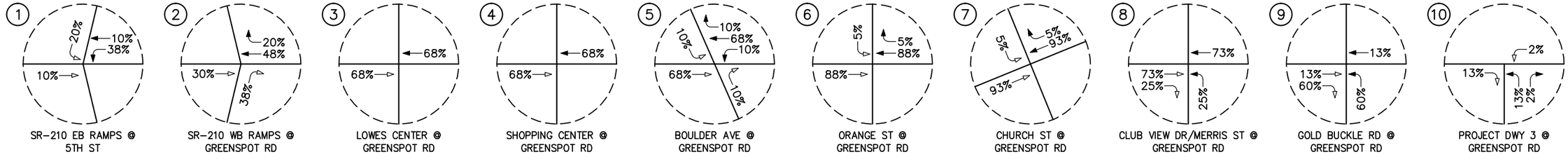
N NO SCALE

SOURCE: ALBERT A. WEBB ASSOCIATES

FIGURE 3

PROPOSED SITE PLAN
HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND





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N NO SCALE

KEY
= INBOUND PERCENTAGE
= OUTBOUND PERCENTAGE
= PROJECT SITE

FIGURE 4

PROJECT TRIP DISTRIBUTION PATTERN

HEATHERGLEN RESIDENTIAL PROJECT, HIGHLAND

APPENDIX B

PUBLIC TRANSIT ROUTES SCHEDULES AND MAPS

Passes-By-Mail Order Form

To order passes via mail, fill out the order form below and send payment to: Omnitrans, 1700 W. Fifth Street, San Bernardino, CA 92411. You may also purchase passes online at www.omnitrans.org, and at any location listed on page 2.

31-DAY PASSES	Price	Qty	Total
Full Fare	$55.00		
Senior (62+) /Disability/Medicare*	$27.50		
Veterans**	$27.50		
Youth Pass† (18 and older)	$41.00		
7-DAY PASSES			
Full Fare	$18.00		
Senior (62+) /Disability/Medicare*	$8.00		
Veterans**	$8.00		
Youth Pass† (18 and older)	$14.00		
1-DAY PASSES-10 PACK			
Full Fare	$45.00		
Senior (62+) /Disability/Medicare*	$20.00		
Veterans**	$20.00		
Sub Total			$
Shipping: $1 - $500	$1.00		
$500 - $999	$10.00		
$1,000 - $1,999	$15.00		
$2,000 - $9,999	$20.00		
over $10,000	$25.00		
TOTAL DUE:			$

**Proof of eligibility may be required at time of purchase or use.*

Print Name

Address, City, Zip

Phone

Visa Mastercard Discover Amex Check

Credit card # Exp. Date (mm/yy) CCV code

Signature

Checks must include a valid California Driver's License or Identification Card number with month/year of expiration date, and must be pre-printed with a name, street address (no P.O. boxes), city, state, zip and phone. Please allow 7 - 10 business days to process checks.

* If you are purchasing a Senior/Disability/Medicare Pass for the first time, you must send proof of your age or disability with your order. Please do not send original documents.

**A copy of your Veterans ID must accompany your order.

†A copy of your proof of age or high school student status must accompany your order.

Points of Interest

Colleges and Universities

Art Institute of Calfornia - Inland Empire sbX, 2
Cal State University sbX, 2, 5, 7, 11
Chaffey College - Rancho Cucamonga Campus 67,80, 81,85
Chaffey College - Fontana Campus 20, 61
Chaffey College - Chino Campus OmniGo 365, 83
Crafton Hills College 8, 19
Loma Linda University sbX, 2, 19, RTA 25
San Bernardino Valley College 1, 15

High Schools

A. B. Miller 10, 67
Alta Loma 80, 67
Aquinas 1, 3, 4
Arrowhead Christian Academy 8, 19
Arroyo Valley 3, 4, 10
Ayala 88, OmniGo 365
Bloomington 29
Cajon sbX, 2, 5, 7
Carter 22
Chaffey 83
Chino 81, 85
Chino Hills OmniGo 365
Citrus Valley 15
Colton 1, 19
Don Lugo 88
Eisenhower 10, 22
Etiwanda 67
Fontana 19, 20, 61
Fontana Adult School 82
Grand Terrace OmniGo 365
Indian Springs 15
Jurupa Hills 82
Kaiser 82
Loma Linda Academy sbX, 2, 8
Los Osos 85
Montclair 88
Ontario 83
Orangewood 8, 15, 19
Pacific 5
Rancho Cucamonga 67
Redlands 19
Redlands East Valley 8
Rialto 15
San Bernardino sbX, 2, 3, 4
San Bernardino Adult School sbX, 2, 11
San Gorgonio 1, 3, 4
Sierra 1, 5
Summit 82
Upland 66, 83
Valley View 80, 86
Yucaipa 19

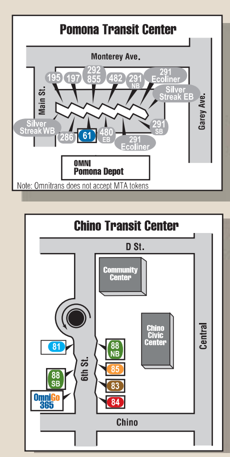
Hospitals

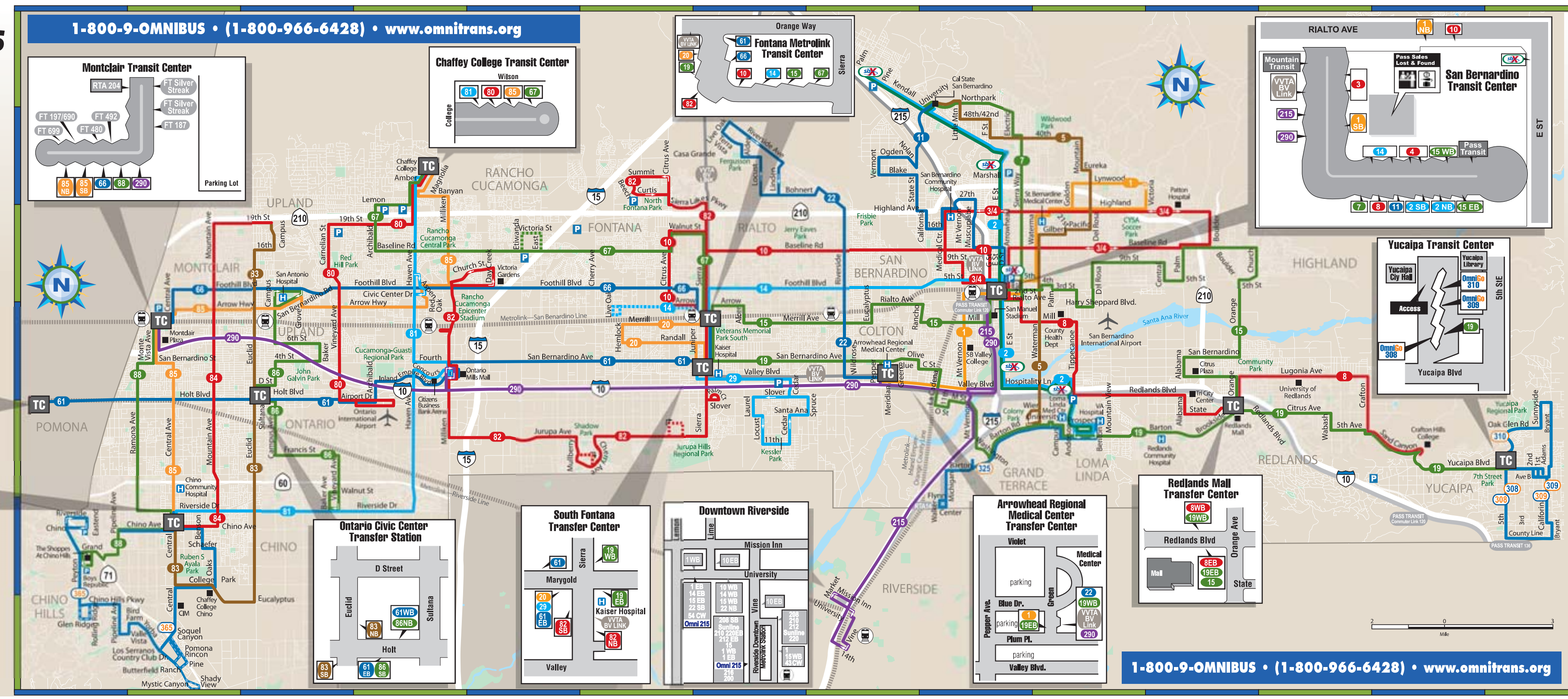
Arrowhead Regional Medical Center 1, 19, 22, 290, VVTA BV Link
Chino Valley Medical Center 88
Kaiser Fontana 19, 20, 29, 61, 82, VVTA BV Link
Loma Linda Univ. Med. Ctr. sbX, 2, 19, OmniGo 325, RTA 14
San Antonio 66, 85, 86
San Bernardino Community Hospital 3, 4, 11
St. Bernardine's 1, 3, 4
Doctor's Hospital Medical Center 85
VA Hospital sbX, 2, 19, OmniGo 325,RTA 14, Pass Transit

OmniTrans

Route Listing

Route	Route Name
61	Fontana - Ontario Mills - Pomona
66	Fontana - Foothill - Montclair
67	Chaffey College - Baseline - Fontana
80	Ontario - Vineyard Ave - Chaffey College
81	Chino - Haven - Chaffey College
82	Rancho Cucamonga - Fontana - Sierra Lakes
83	Chino - Euclid Ave - Upland
84	Chino - Mountain Ave - Upland
85	Chino - Montclair - Chaffey College
86	S. Ontario - Campus Ave - San Antonio Hospital
88	Chino Hills - Ramona Ave - Montclair
290	San Bernardino - ARMC - Ontario Mills - Montclair
365	OmniGo Chino/Chino Hills





OmniTrans

Route Listing

Route	Route Name
sbX	Palm/Kendall - CSUSB - VA Hospital
1	ARMC - San Bernardino - Del Rosa
2	Kendall/Palm - Cal State - E Street - Loma Linda
3/4	Baseline - Highland - San Bernardino
5	S. Waterman - Del Rosa - Cal State
7	Cal State - Sierra Way - San Bernardino
8	San Bernardino - Mentone - Crafton Hills College
10	Fontana - Baseline - San Bernardino
11	San Bernardino - Muscoy - Cal State
14	Fontana - Foothill - San Bernardino
15	Fontana - San Bernardino/Highland - Redlands
19	Fontana - Colton - Redlands - Yucaipa
20	Fontana Metrolink - Via Hemlock - Kaiser
22	North Rialto - Riverside Ave - ARMC
29	Bloomington - Valley Blvd - Kaiser
61	Fontana - Ontario Mills - Pomona
66	Fontana - Foothill Blvd - Montclair
67	Chaffey College - Baseline - Fontana
80	OIA - Vineyard Ave - Chaffey College
81	Chino - Haven - Chaffey College
82	Rancho Cucamonga - Fontana - Sierra Lakes
83	Chino - Euclid Ave - Upland
84	Chino - Mountain Ave - Upland
85	Chino - Montclair - Chaffey College
86	S. Ontario - Campus Ave - San Antonio Hospital
88	Chino Hills - Ramona Ave - Montclair
215	Riverside - San Bernardino
290	San Bernardino - ARMC - Ontario Mills - Montclair
308/309	OmniGo Yucaipa
310	OmniGo Yucaipa
325	OmniGo Grand Terrace
365	OmniGo Chino/Chino Hills

LEGEND

Bus Route	Landmark
Tripper Service	Hospital
Long-term Detour	Interstate
Metrolink	State Highway
Metrolink Station	Park and Ride
TransCenter (Timed Transfers)	sbX Bus Rapid Service Route

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Effective January 2017

Routes and schedules are subject to change without notice.

Important Phone Numbers

Text A Tip (909)368-7711
Send non-emergency text messages to Omnitrans Security

WE TIP (800)782-7463
National anonymous crime tip hotline

Omnitrans
Lost & Found (909)379-7100
Travel Training (909)379-7341
Volunteer Driver (909)379-7341

OTHER TRANSIT SERVICES

Amtrak (800)872-7245
Providing national passenger rail service

Foothill Transit (800)743-3463
Serving the San Gabriel and Pomona Valleys, and unincorporated Los Angeles County

Greyhound (800)231-2222
Providing national bus service

LAMetro (323)466-3876 or (323)466-3876
Serving Los Angeles County

Mountain Transit (909)878-5200
Serving Big Bear Valley, Rim of the World, including off-the-mountain service between San Bernardino and several mountain communities

Orange County Transportation Authority (OCTA) (714) 636-7433
Serving Orange County

Metrolink (800) 371-5465
Providing regional commuter rail service

Pass Transit (951)769-8530
Serving Banning, Beaumont, Cabazon and Cherry Valley

RTA (951)565-5002
Serving Western Riverside County

VVTA (760)948-3030
Serving Adelanto, Apple Valley, Hesperia, Victorville and portions of San Bernardino County

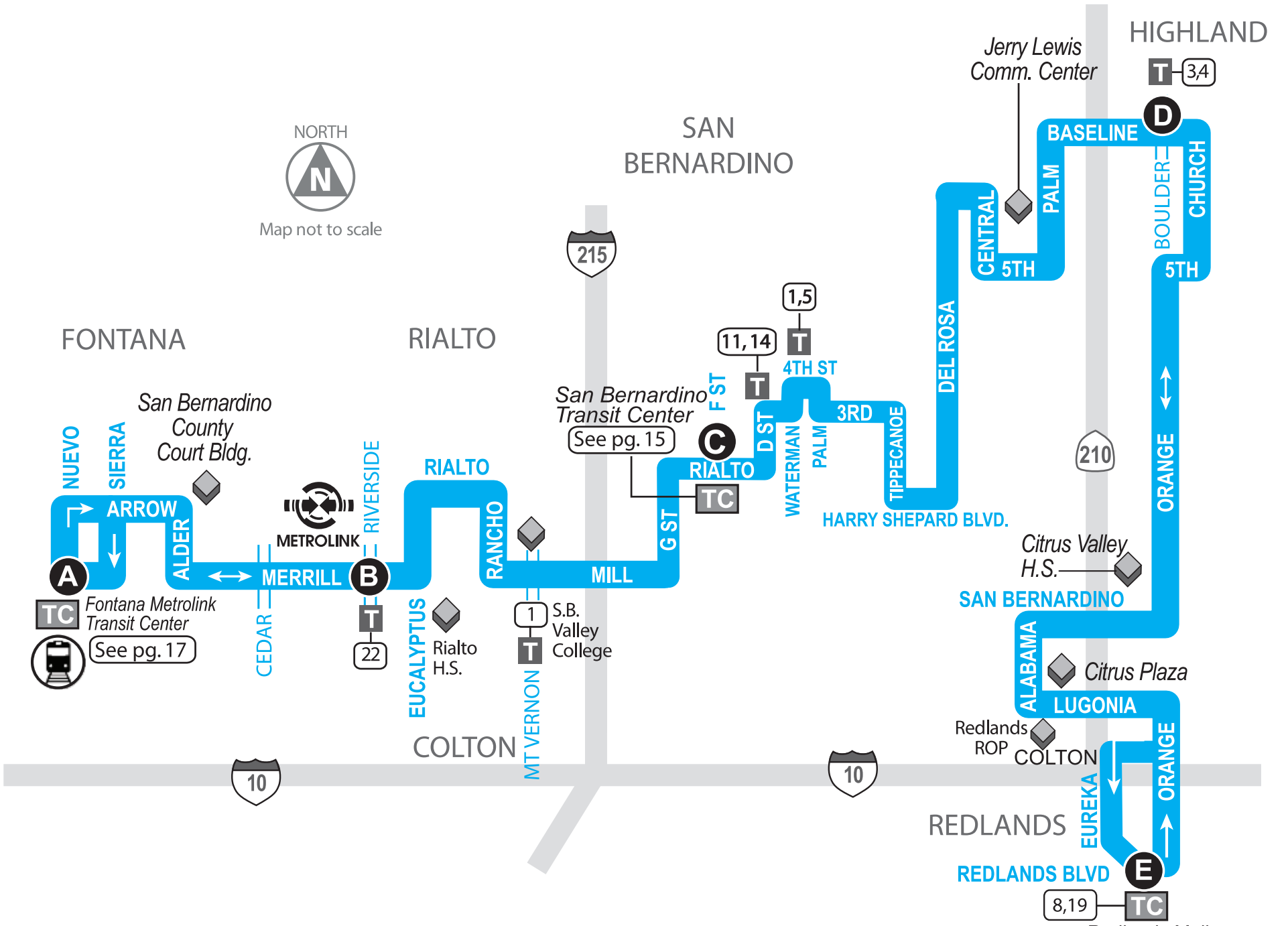
15 FONTANA - SAN BDNO/HIGHLAND - REDLANDS

Bus Route
Tripper Service
A Timepoint - Look for the matching symbol in the timetable section.
Metrolink Station
P Park-and-Ride
Point of interest
H Medical Center
T Transfer Point
1,2 Connection Route(s)
TC Transit/Transfer Center

FREQUENCY

WKDY	SAT	SUN
30	60	60

This route connects with sbX!



Redlands Mall Transfer Center
See Pg. 16

Transit Tip

Help keep us on time! Be ready with exact change, or have your bus pass ready, BEFORE you board. If paying with discounted fare, show the required ID to the driver.

ROUTE 15: MONDAY – FRIDAY

A	B	C	D	E	D	C	B	A
Fontana Metrolink	Merrill & Riverside	San Bernardino Transit Center	Baseline & Boulder	Redlands Mall	Baseline & Boulder	San Bernardino Transit Center	Merrill & Riverside	Fontana Metrolink
EASTBOUND					**WESTBOUND**			
							5:09	5:33	5:48
							5:39	6:03	6:18
					5:05	5:30	6:02	6:03	6:24	6:41
								6:45	7:09	7:24
					6:13	6:33	7:05	7:06	7:29	7:46
			5:23	5:54	6:18	6:38	7:08	7:45		8:09	8:26
			5:54	6:27	6:57	7:08	7:38	8:15	8:16	8:39	8:56
			6:14	6:47	7:17	7:38	8:08	8:45	8:46	9:09	9:26
6:07	6:25	6:50	6:55	7:28	8:00	8:08	8:38	9:15	9:16	9:39	9:56
6:37	6:55	7:20	7:25	7:58	8:30	8:38	9:08	9:45	9:46	10:09	10:26
7:07	7:25	7:50	7:55	8:28	9:00	9:08	9:38	10:15	10:16	10:39	10:56
7:37	7:55	8:20	8:25	8:58	9:30	9:38	10:08	10:45	10:46	11:09	11:26
8:07	8:25	8:50	8:55	9:28	10:00	10:08	10:38	11:15	11:16	11:39	11:56
8:37	8:55	9:20	9:25	9:58	10:30	10:38	11:08	11:45	11:46	**12:09**	**12:26**
9:07	9:25	9:50	9:55	10:28	11:00	11:05	11:35	**12:12**	**12:13**	**12:36**	**12:53**
9:37	9:55	10:20	10:25	10:58	11:30	11:38	**12:08**	**12:45**	**12:46**	**1:09**	**1:26**
10:07	10:25	10:50	10:55	11:28	**12:00**	**12:08**	**12:38**	**1:15**	**1:16**	**1:39**	**1:56**
10:37	10:55	11:20	11:25	11:58	**12:30**	**12:38**	**1:08**	**1:45**	**1:46**	**2:09**	**2:26**
11:09	11:27	11:52	11:57	**12:30**	**1:02**	**1:08**	**1:38**	**2:15**	**2:16**	**2:39**	**2:56**
11:41	11:59	**12:24**	**12:29**	**1:02**	**1:34**	**1:38**	**2:08**	**2:45**	**2:46**	**3:09**	**3:26**
12:08	**12:26**	**12:51**	**12:56**	**1:29**	**2:01**	**2:08**	**2:38**	**3:15**	**3:16**	**3:39**	**3:56**
12:39	**12:57**	**1:22**	**1:27**	**2:00**	**2:32**	**2:35**	**3:05**	**3:42**	**3:43**	**4:06**	**4:23**
1:07	**1:25**	**1:50**	**1:55**	**2:28**	**3:00**	**3:08**	**3:38**	**4:15**	**4:16**	**4:39**	**4:56**
1:37	**1:55**	**2:20**	**2:25**	**2:58**	**3:30**	**3:38**	**4:08**	**4:45**	**4:46**	**5:09**	**5:26**
2:07	**2:25**	**2:50**	**2:55**	**3:28**	**4:00**	**4:08**	**4:38**	**5:15**	**5:16**	**5:39**	**5:56**
2:37	**2:55**	**3:20**	**3:25**	**3:58**	**4:30**	**4:38**	**5:08**	**5:45**	**5:46**	**6:09**	**6:26**
3:07	**3:25**	**3:50**	**3:55**	**4:28**	**5:00**	**5:08**	**5:38**	**6:15**	**6:16**	**6:39**	**6:56**
3:37	**3:55**	**4:20**	**4:25**	**4:58**	**5:30**	**5:38**	**6:08**	**6:45**	**6:46**	**7:09**	**7:23**
4:07	**4:25**	**4:50**	**4:55**	**5:28**	**6:00**	**6:08**	**6:38**	**7:15**	**7:16**	**7:39**	**7:53**
4:37	**4:55**	**5:20**	**5:25**	**5:58**	**6:30**	**6:35**	**7:01**	**7:35**			
5:07	**5:25**	**5:50**	**5:55**	**6:28**	**7:00**	**7:13**	**7:39**	**8:08**			
5:37	**5:55**	**6:20**	**6:25**	**6:58**	**7:30**	**7:38**	**8:04**	**8:28**			
6:07	**6:25**	**6:50**	**6:55**	**7:26**	**7:56**	**8:12**	**8:38**	**9:02**			
6:37	**6:55**	**7:20**	**7:25**	**7:56**	**8:26**	**8:38**	**9:04**	**9:28**			
7:07	**7:25**	**7:50**	**7:55**	**8:26**	**8:56**						
7:38	**7:56**	**8:21**	**8:34**	**9:05**	**9:35**	**9:45**	**10:11**	**10:40**			
			9:39	**10:10**	**10:38**						

ROUTE 15: SATURDAY

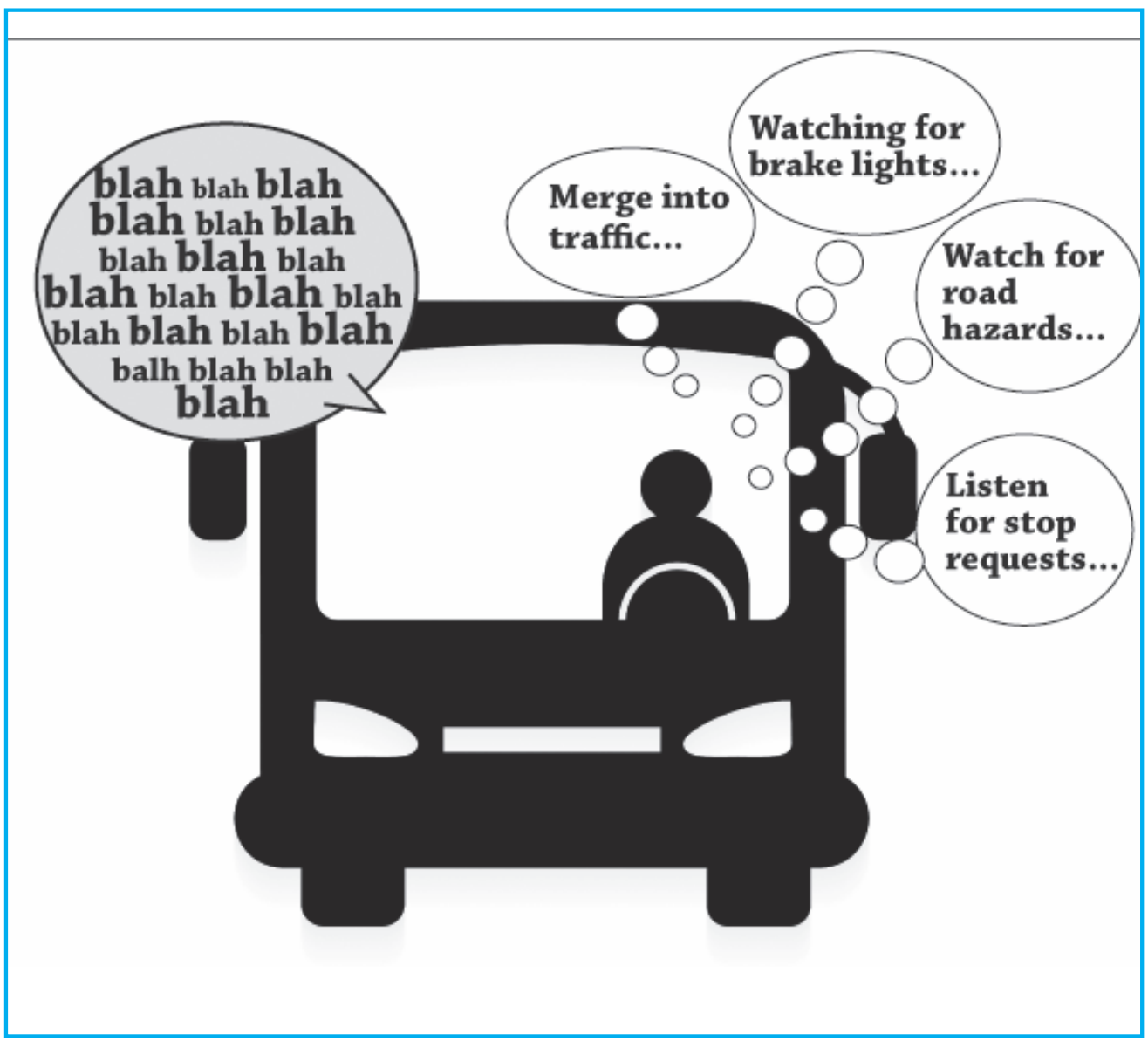
A	B	C	D	E	D	C	B	A
Fontana Metrolink	Merrill & Riverside	San Bernardino Transit Center	Baseline & Boulder	Redlands Mall	Baseline & Boulder	San Bernardino Transit Center	Merrill & Riverside	Fontana Metrolink
EASTBOUND					**WESTBOUND**			
							7:00	7:24	7:40
					6:36	7:06	7:45	7:48	8:12	8:28
					7:36	8:06	8:45	8:48	9:12	9:28
			7:25	7:57	8:23	8:36	9:06	9:45	9:48	10:12	10:28
7:42	8:00	8:26	8:31	9:03	9:33	9:36	10:06	10:45	10:48	11:12	11:28
8:42	9:00	9:26	9:31	10:03	10:33	10:36	11:06	11:45	11:48	**12:12**	**12:28**
9:42	10:00	10:26	10:31	11:03	11:33	11:36	**12:06**	**12:45**	**12:48**	**1:12**	**1:28**
10:42	11:00	11:26	11:31	**12:03**	**12:33**	**12:36**	**1:06**	**1:45**	**1:48**	**2:12**	**2:28**
11:42	**12:00**	**12:26**	**12:31**	**1:03**	**1:33**	**1:36**	**2:06**	**2:45**	**2:48**	**3:12**	**3:28**
12:42	**1:00**	**1:26**	**1:31**	**2:03**	**2:33**	**2:36**	**3:06**	**3:45**	**3:48**	**4:12**	**4:28**
1:42	**2:00**	**2:26**	**2:31**	**3:03**	**3:33**	**3:36**	**4:06**	**4:45**	**4:48**	**5:12**	**5:28**
2:42	**3:00**	**3:26**	**3:31**	**4:03**	**4:33**	**4:36**	**5:06**	**5:45**	**5:48**	**6:12**	**6:28**
3:42	**4:00**	**4:26**	**4:31**	**5:03**	**5:33**	**5:35**	**6:05**	**6:44**			
4:42	**5:00**	**5:26**	**5:31**	**6:03**	**6:33**						
5:42	**6:00**	**6:26**	**6:31**	**7:03**	**7:33**						
6:43	**7:00**	**7:20**									

ROUTE 15: SUNDAY

A Fontana Metrolink	B Merrill & Riverside	C San Bernardino Transit Center	D Baseline & Boulder	E Redlands Mall	D Baseline & Boulder	C San Bernardino Transit Center	B Merrill & Riverside	A Fontana Metrolink
EASTBOUND					**WESTBOUND**			
					6:37	7:07	7:44	7:47	8:11	8:28
					7:37	8:07	8:44	8:47	9:11	9:28
			7:26	7:57	8:23	8:37	9:07	9:44	9:47	10:11	10:28
7:44	8:01	8:25	8:30	9:01	9:30	9:37	10:07	10:44	10:47	11:11	11:28
8:44	9:01	9:25	9:30	10:01	10:30	10:37	11:07	11:44	11:47	**12:11**	**12:28**
9:44	10:01	10:25	10:30	11:01	11:30	11:37	**12:07**	**12:44**	**12:47**	**1:11**	**1:28**
10:44	**11:01**	**11:25**	**11:30**	**12:01**	**12:30**	**12:37**	**1:07**	**1:44**	**1:47**	**2:11**	**2:28**
11:44	**12:01**	**12:25**	**12:30**	**1:01**	**1:30**	**1:37**	**2:07**	**2:44**	**2:47**	**3:11**	**3:28**
12:44	**1:01**	**1:25**	**1:30**	**2:01**	**2:30**	**2:37**	**3:07**	**3:44**	**3:47**	**4:11**	**4:28**
1:44	**2:01**	**2:25**	**2:30**	**3:01**	**3:30**	**3:37**	**4:07**	**4:44**	**4:47**	**5:11**	**5:28**
2:44	**3:01**	**3:25**	**3:30**	**4:01**	**4:30**	**4:35**	**5:01**	**5:28**			
3:44	**4:01**	**4:25**	**4:30**	**5:01**	**5:30**	**5:35**	**6:01**	**6:28**			
4:44	**5:01**	**5:25**	**5:30**	**6:01**	**6:30**						
5:44	**6:01**	**6:25**	**6:30**	**7:01**	**7:30**						

Transit Tip

We love catching up with our drivers! However, they must stay focused. Please don't try to have a long conversation with your driver while the bus is in motion. Thank you!



APPENDIX C

EXISTING TRAFFIC COUNT DATA

APPENDIX C-I

EXISTING INTERSECTION TRAFFIC COUNTS

1

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

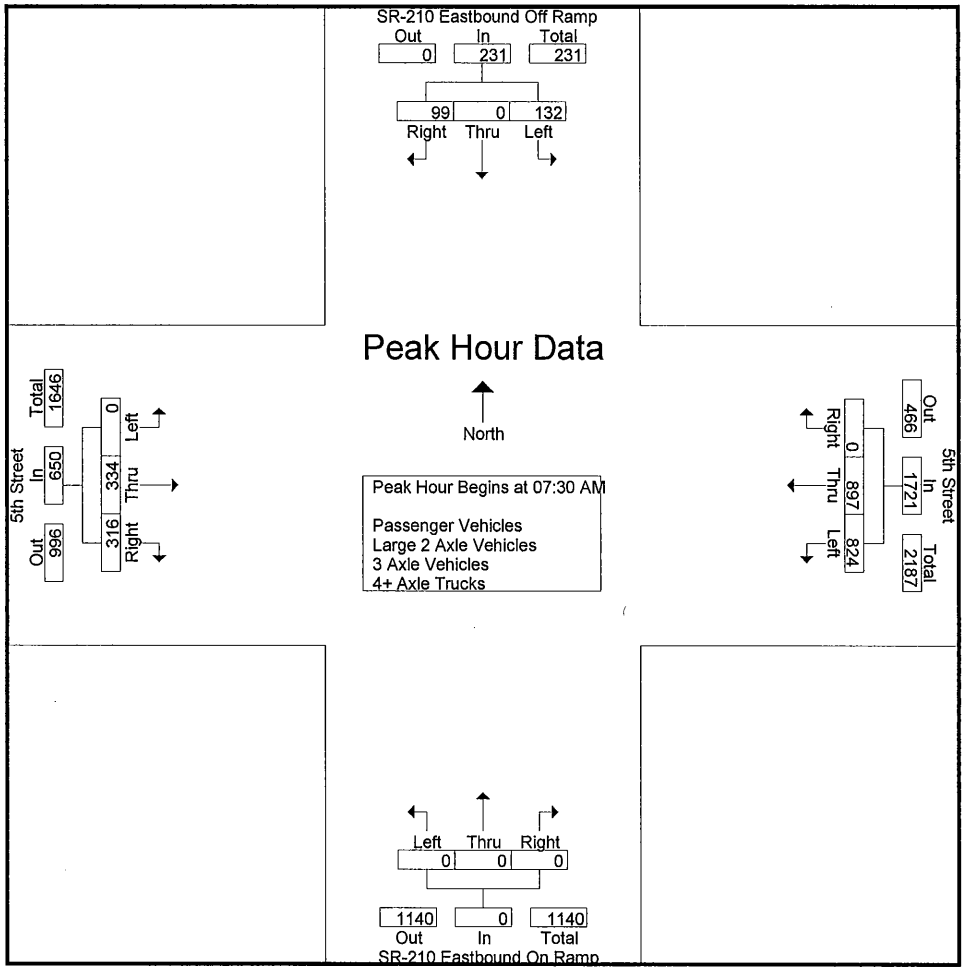
	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	23	0	24	47	169	162	0	331	0	0	0	0	0	40	75	115	493
07:15 AM	25	0	22	47	185	209	0	394	0	0	0	0	0	61	84	145	586
07:30 AM	31	0	20	51	216	213	0	429	0	0	0	0	0	74	77	151	631
07:45 AM	31	0	29	60	224	252	0	476	0	0	0	0	0	70	86	156	692
Total	110	0	95	205	794	836	0	1630	0	0	0	0	0	245	322	567	2402
08:00 AM	43	0	23	66	183	226	0	409	0	0	0	0	0	95	85	180	655
08:15 AM	27	0	27	54	201	206	0	407	0	0	0	0	0	95	68	163	624
08:30 AM	33	3	22	58	156	156	0	312	0	0	0	0	0	80	62	142	512
08:45 AM	32	0	25	57	124	119	0	243	0	0	0	0	0	62	80	142	442
Total	135	3	97	235	664	707	0	1371	0	0	0	0	0	332	295	627	2233
Grand Total	245	3	192	440	1458	1543	0	3001	0	0	0	0	0	577	617	1194	4635
Apprch %	55.7	0.7	43.6		48.6	51.4	0		0	0	0		0	48.3	51.7		
Total %	5.3	0.1	4.1	9.5	31.5	33.3	0	64.7	0	0	0	0	0	12.4	13.3	25.8	
Passenger Vehicles	234	3	174	411	1433	1488	0	2921	0	0	0	0	0	550	561	1111	4443
% Passenger Vehicles	95.5	100	90.6	93.4	98.3	96.4	0	97.3	0	0	0	0	0	95.3	90.9	93	95.9
Large 2 Axle Vehicles	5	0	2	7	10	21	0	31	0	0	0	0	0	8	21	29	67
% Large 2 Axle Vehicles	2	0	1	1.6	0.7	1.4	0	1	0	0	0	0	0	1.4	3.4	2.4	1.4
3 Axle Vehicles	5	0	1	6	1	10	0	11	0	0	0	0	0	8	17	25	42
% 3 Axle Vehicles	2	0	0.5	1.4	0.1	0.6	0	0.4	0	0	0	0	0	1.4	2.8	2.1	0.9
4+ Axle Trucks	1	0	15	16	14	24	0	38	0	0	0	0	0	11	18	29	83
% 4+ Axle Trucks	0.4	0	7.8	3.6	1	1.6	0	1.3	0	0	0	0	0	1.9	2.9	2.4	1.8

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	31	0	20	51	216	213	0	429	0	0	0	0	0	74	77	151	631
07:45 AM	31	0	**29**	60	**224**	**252**	0	**476**	0	0	0	0	0	70	**86**	156	**692**
08:00 AM	**43**	0	23	**66**	183	226	0	409	0	0	0	0	0	**95**	85	**180**	655
08:15 AM	27	0	27	54	201	206	0	407	0	0	0	0	0	95	68	163	624
Total Volume	132	0	99	231	824	897	0	1721	0	0	0	0	0	334	316	650	2602
% App. Total	57.1	0	42.9		47.9	52.1	0		0	0	0		0	51.4	48.6		
PHF	.767	.000	.853	.875	.920	.890	.000	.904	.000	.000	.000	.000	.000	.879	.919	.903	.940

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	31	0	**29**	60	216	213	0	429	0	0	0	0	0	74	77	151
+15 mins.	**43**	0	23	**66**	**224**	**252**	0	**476**	0	0	0	0	0	70	**86**	156
+30 mins.	27	0	27	54	183	226	0	409	0	0	0	0	0	**95**	85	**180**
+45 mins.	33	**3**	22	58	201	206	0	407	0	0	0	0	0	95	68	163
Total Volume	134	3	101	238	824	897	0	1721	0	0	0	0	0	334	316	650
% App. Total	56.3	1.3	42.4		47.9	52.1	0		0	0	0		0	51.4	48.6	
PHF	.779	.250	.871	.902	.920	.890	.000	.904	.000	.000	.000	.000	.000	.879	.919	.903

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	23	0	23	46	167	151	0	318	0	0	0	0	0	35	69	104	468
07:15 AM	24	0	20	44	181	205	0	386	0	0	0	0	0	60	77	137	567
07:30 AM	30	0	17	47	211	207	0	418	0	0	0	0	0	70	72	142	607
07:45 AM	31	0	27	58	221	245	0	466	0	0	0	0	0	64	83	147	671
Total	108	0	87	195	780	808	0	1588	0	0	0	0	0	229	301	530	2313
08:00 AM	40	0	19	59	181	216	0	397	0	0	0	0	0	93	72	165	621
08:15 AM	25	0	25	50	194	202	0	396	0	0	0	0	0	89	59	148	594
08:30 AM	32	3	20	55	154	150	0	304	0	0	0	0	0	78	56	134	493
08:45 AM	29	0	23	52	124	112	0	236	0	0	0	0	0	61	73	134	422
Total	126	3	87	216	653	680	0	1333	0	0	0	0	0	321	260	581	2130
Grand Total	234	3	174	411	1433	1488	0	2921	0	0	0	0	0	550	561	1111	4443
Apprch %	56.9	0.7	42.3		49.1	50.9	0		0	0	0		0	49.5	50.5		
Total %	5.3	0.1	3.9	9.3	32.3	33.5	0	65.7	0	0	0	0	0	12.4	12.6	25	

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	30	0	17	47	211	207	0	418	0	0	0	0	0	70	72	142	607
07:45 AM	31	0	**27**	58	**221**	**245**	0	**466**	0	0	0	0	0	64	**83**	147	**671**
08:00 AM	**40**	0	19	**59**	181	216	0	397	0	0	0	0	0	**93**	72	**165**	621
08:15 AM	25	0	25	50	194	202	0	396	0	0	0	0	0	89	59	148	594
Total Volume	126	0	88	214	807	870	0	1677	0	0	0	0	0	316	286	602	2493
% App. Total	58.9	0	41.1		48.1	51.9	0		0	0	0		0	52.5	47.5		
PHF	.788	.000	.815	.907	.913	.888	.000	.900	.000	.000	.000	.000	.000	.849	.861	.912	.929

Counts Unlimited
PO Box 1178
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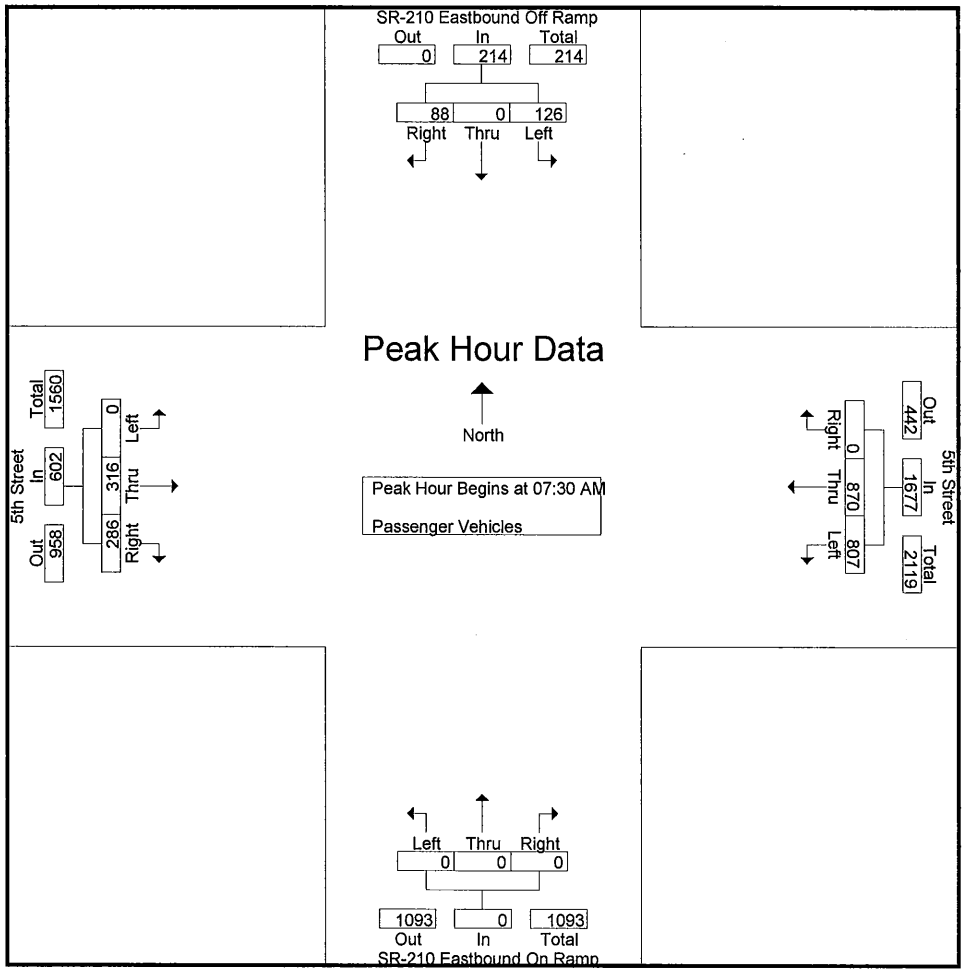
City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	30	0	17	47	211	207	0	418	0	0	0	0	0	70	72	142
+15 mins.	31	0	**27**	58	**221**	**245**	0	**466**	0	0	0	0	0	64	**83**	147
+30 mins.	**40**	0	19	**59**	181	216	0	397	0	0	0	0	0	**93**	72	**165**
+45 mins.	25	0	25	50	194	202	0	396	0	0	0	0	0	89	59	148
Total Volume	126	0	88	214	807	870	0	1677	0	0	0	0	0	316	286	602
% App. Total	58.9	0	41.1		48.1	51.9	0		0	0	0		0	52.5	47.5	
PHF	.788	.000	.815	.907	.913	.888	.000	.900	.000	.000	.000	.000	.000	.849	.861	.912

Counts Unlimited
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City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	1	6	0	7	0	0	0	0	0	1	3	4	11
07:15 AM	1	0	0	1	2	1	0	3	0	0	0	0	0	0	2	2	6
07:30 AM	1	0	0	1	3	5	0	8	0	0	0	0	0	0	2	2	11
07:45 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	3	0	3	7
Total	2	0	0	2	6	16	0	22	0	0	0	0	0	4	7	11	35
08:00 AM	1	0	1	2	1	3	0	4	0	0	0	0	0	1	6	7	13
08:15 AM	0	0	1	1	2	1	0	3	0	0	0	0	0	2	4	6	10
08:30 AM	0	0	0	0	1	1	0	2	0	0	0	0	0	1	2	3	5
08:45 AM	2	0	0	2	0	0	0	0	0	0	0	0	0	0	2	2	4
Total	3	0	2	5	4	5	0	9	0	0	0	0	0	4	14	18	32
Grand Total	5	0	2	7	10	21	0	31	0	0	0	0	0	8	21	29	67
Apprch %	71.4	0	28.6		32.3	67.7	0		0	0	0		0	27.6	72.4		
Total %	7.5	0	3	10.4	14.9	31.3	0	46.3	0	0	0	0	0	11.9	31.3	43.3	

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**1**	0	0	1	**3**	**5**	0	**8**	0	0	0	0	0	0	2	2	11
07:45 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	**3**	0	3	7
08:00 AM	1	0	**1**	**2**	1	3	0	4	0	0	0	0	0	1	**6**	**7**	**13**
08:15 AM	0	0	1	1	2	1	0	3	0	0	0	0	0	2	4	6	10
Total Volume	2	0	2	4	6	13	0	19	0	0	0	0	0	6	12	18	41
% App. Total	50	0	50		31.6	68.4	0		0	0	0		0	33.3	66.7		
PHF	.500	.000	.500	.500	.500	.650	.000	.594	.000	.000	.000	.000	.000	.500	.500	.643	.788

Counts Unlimited
PO Box 1178
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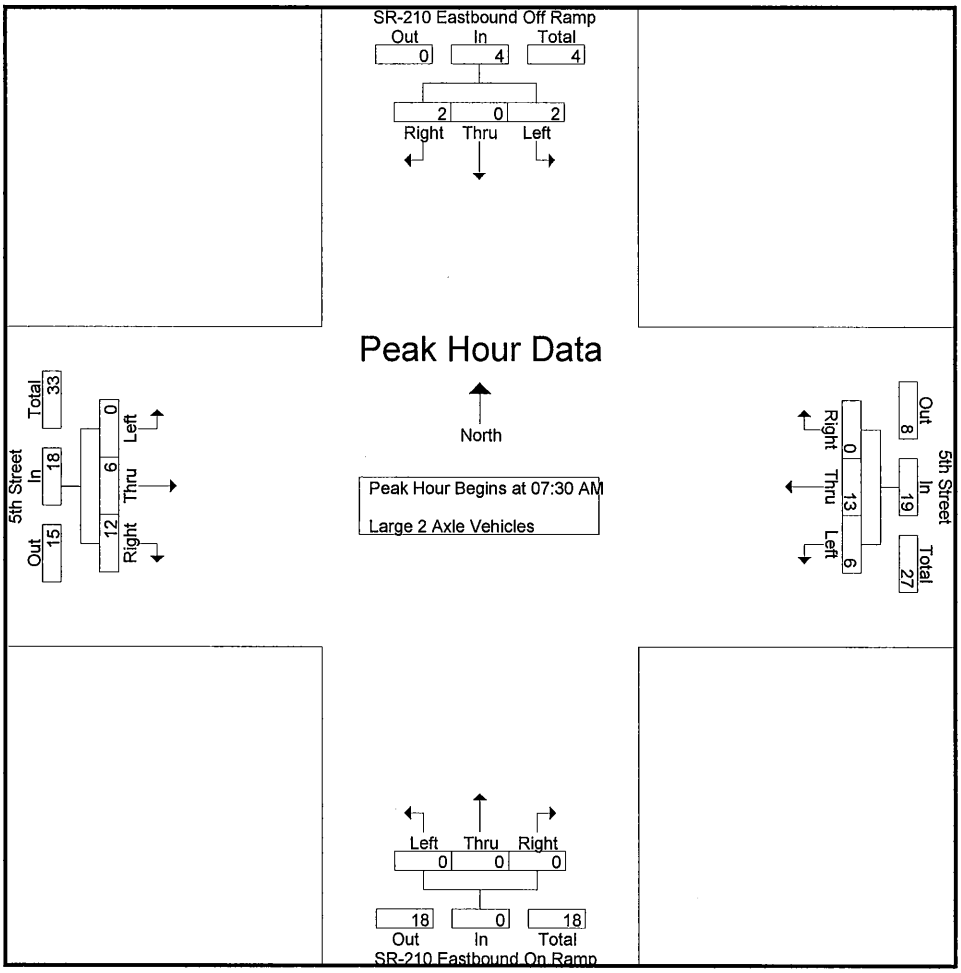
City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**1**	0	0	1	**3**	**5**	0	**8**	0	0	0	0	0	0	2	2
+15 mins.	0	0	0	0	0	4	0	4	0	0	0	0	0	**3**	0	3
+30 mins.	1	0	**1**	**2**	1	3	0	4	0	0	0	0	0	1	**6**	**7**
+45 mins.	0	0	1	1	2	1	0	3	0	0	0	0	0	2	4	6
Total Volume	2	0	2	4	6	13	0	19	0	0	0	0	0	6	12	18
% App. Total	50	0	50		31.6	68.4	0		0	0	0		0	33.3	66.7	
PHF	.500	.000	.500	.500	.500	.650	.000	.594	.000	.000	.000	.000	.000	.500	.500	.643

Counts Unlimited
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City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	2	3	4
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	2	3	4
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4	4
07:45 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	1	0	1	2
Total	0	0	0	0	1	2	0	3	0	0	0	0	0	5	6	11	14
08:00 AM	2	0	0	2	0	5	0	5	0	0	0	0	0	0	3	3	10
08:15 AM	2	0	0	2	0	0	0	0	0	0	0	0	0	2	2	4	6
08:30 AM	1	0	0	1	0	2	0	2	0	0	0	0	0	1	3	4	7
08:45 AM	0	0	1	1	0	1	0	1	0	0	0	0	0	0	3	3	5
Total	5	0	1	6	0	8	0	8	0	0	0	0	0	3	11	14	28
Grand Total	5	0	1	6	1	10	0	11	0	0	0	0	0	8	17	25	42
Apprch %	83.3	0	16.7		9.1	90.9	0		0	0	0		0	32	68		
Total %	11.9	0	2.4	14.3	2.4	23.8	0	26.2	0	0	0	0	0	19	40.5	59.5	

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	2	**4**	4
07:45 AM	0	0	0	0	**1**	0	0	1	0	0	0	0	0	**1**	0	1	2
08:00 AM	**2**	0	0	**2**	0	**5**	0	**5**	0	0	0	0	0	0	**3**	3	**10**
08:15 AM	2	0	0	2	0	0	0	0	0	0	0	0	0	2	2	4	6
Total Volume	4	0	0	4	1	5	0	6	0	0	0	0	0	5	7	12	22
% App. Total	100	0	0		16.7	83.3	0		0	0	0		0	41.7	58.3		
PHF	.500	.000	.000	.500	.250	.250	.000	.300	.000	.000	.000	.000	.000	.625	.583	.750	.550

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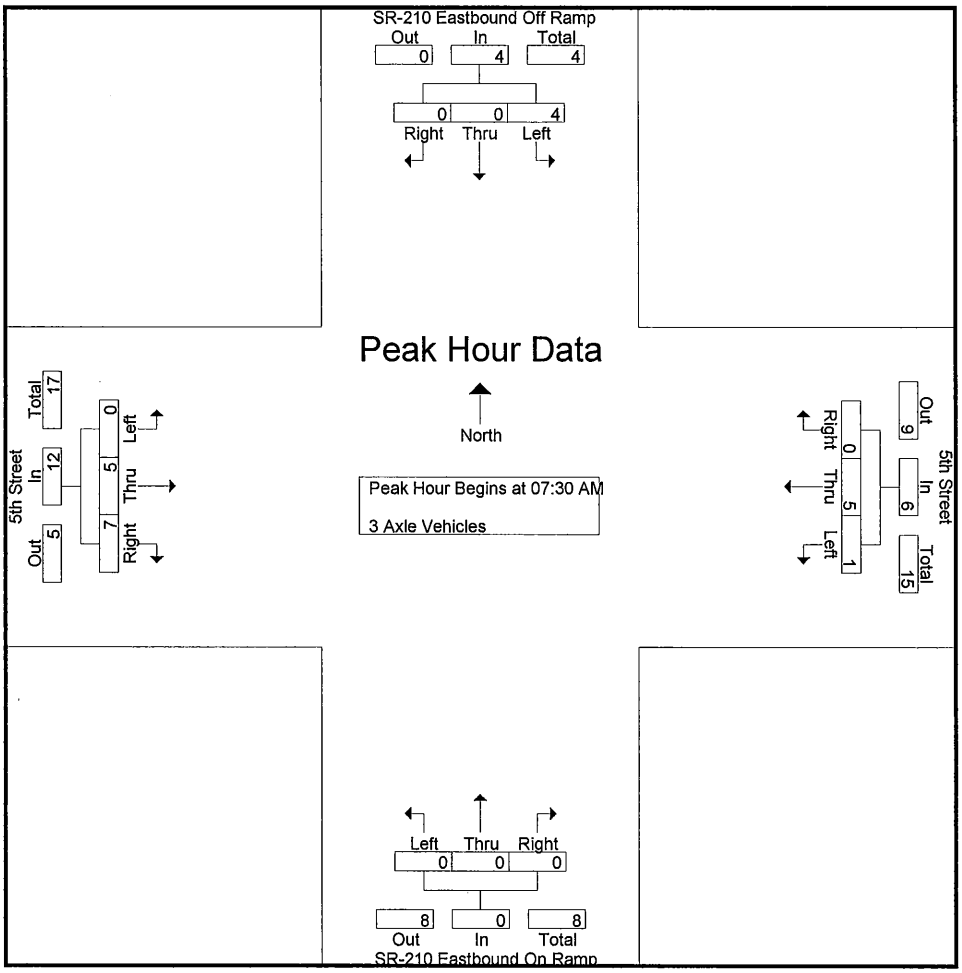
City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	2	**4**
+15 mins.	0	0	0	0	**1**	0	0	1	0	0	0	0	0	1	0	1
+30 mins.	**2**	0	0	**2**	0	**5**	0	**5**	0	0	0	0	0	0	**3**	3
+45 mins.	2	0	0	2	0	0	0	0	0	0	0	0	0	2	2	4
Total Volume	4	0	0	4	1	5	0	6	0	0	0	0	0	5	7	12
% App. Total	100	0	0		16.7	83.3	0		0	0	0		0	41.7	58.3	
PHF	.500	.000	.000	.500	.250	.250	.000	.300	.000	.000	.000	.000	.000	.625	.583	.750

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City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	1	1	1	4	0	5	0	0	0	0	0	3	1	4	10
07:15 AM	0	0	2	2	2	2	0	4	0	0	0	0	0	0	3	3	9
07:30 AM	0	0	3	3	2	1	0	3	0	0	0	0	0	2	1	3	9
07:45 AM	0	0	2	2	2	3	0	5	0	0	0	0	0	2	3	5	12
Total	0	0	8	8	7	10	0	17	0	0	0	0	0	7	8	15	40
08:00 AM	0	0	3	3	1	2	0	3	0	0	0	0	0	1	4	5	11
08:15 AM	0	0	1	1	5	3	0	8	0	0	0	0	0	2	3	5	14
08:30 AM	0	0	2	2	1	3	0	4	0	0	0	0	0	0	1	1	7
08:45 AM	1	0	1	2	0	6	0	6	0	0	0	0	0	1	2	3	11
Total	1	0	7	8	7	14	0	21	0	0	0	0	0	4	10	14	43
Grand Total	1	0	15	16	14	24	0	38	0	0	0	0	0	11	18	29	83
Apprch %	6.2	0	93.8		36.8	63.2	0		0	0	0		0	37.9	62.1		
Total %	1.2	0	18.1	19.3	16.9	28.9	0	45.8	0	0	0	0	0	13.3	21.7	34.9	

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	**3**	**3**	2	1	0	3	0	0	0	0	0	**2**	1	3	9
07:45 AM	0	0	2	2	2	**3**	0	5	0	0	0	0	0	2	3	**5**	12
08:00 AM	0	0	3	3	1	2	0	3	0	0	0	0	0	1	**4**	5	11
08:15 AM	0	0	1	1	**5**	3	0	**8**	0	0	0	0	0	2	3	5	**14**
Total Volume	0	0	9	9	10	9	0	19	0	0	0	0	0	7	11	18	46
% App. Total	0	0	100		52.6	47.4	0		0	0	0		0	38.9	61.1		
PHF	.000	.000	.750	.750	.500	.750	.000	.594	.000	.000	.000	.000	.000	.875	.688	.900	.821

Counts Unlimited
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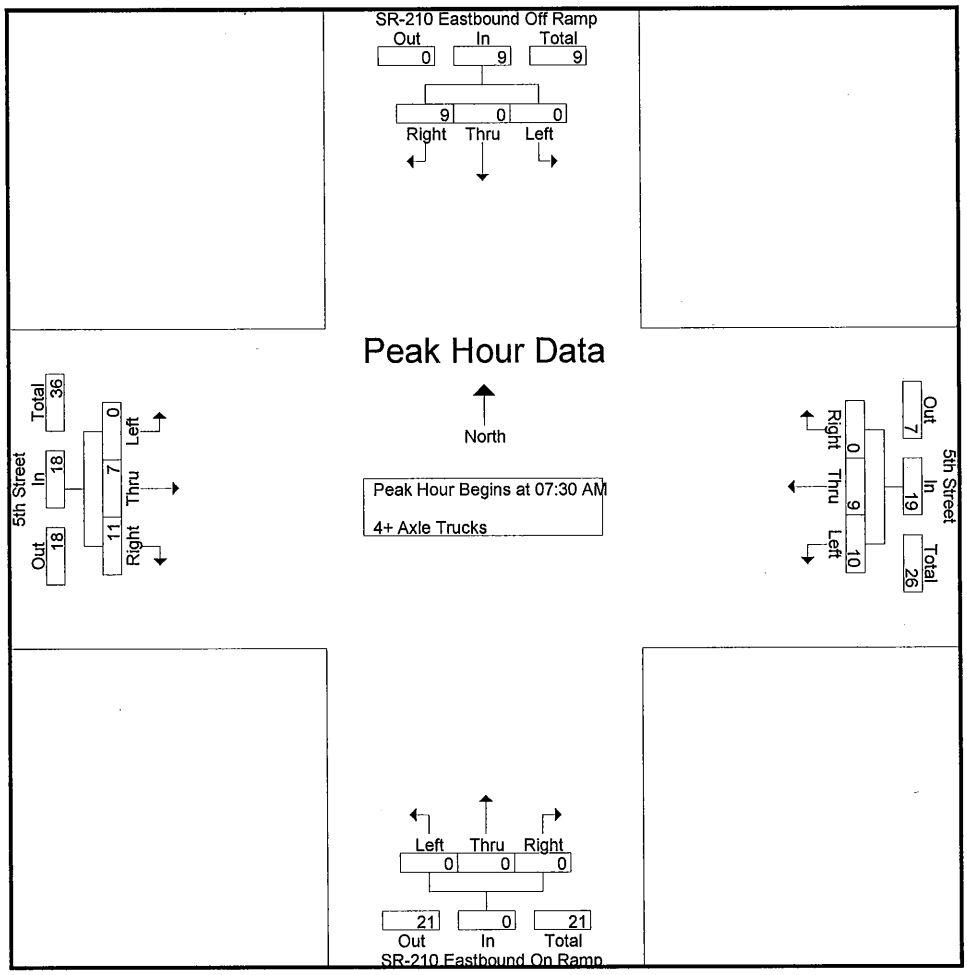
City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	**3**	**3**	2	1	0	3	0	0	0	0	0	**2**	1	3
+15 mins.	0	0	2	2	2	**3**	0	5	0	0	0	0	0	2	3	**5**
+30 mins.	0	0	3	3	1	2	0	3	0	0	0	0	0	1	**4**	5
+45 mins.	0	0	1	1	**5**	3	0	**8**	0	0	0	0	0	2	3	5
Total Volume	0	0	9	9	10	9	0	19	0	0	0	0	0	7	11	18
% App. Total	0	0	100		52.6	47.4	0		0	0	0		0	38.9	61.1	
PHF	.000	.000	.750	.750	.500	.750	.000	.594	.000	.000	.000	.000	.000	.875	.688	.900

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City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	93	3	34	130	98	140	0	238	0	0	0	0	0	152	116	268	636
04:15 PM	88	2	42	132	88	133	0	221	0	0	0	0	0	166	90	256	609
04:30 PM	66	1	43	110	87	111	0	198	0	0	0	0	0	223	123	346	654
04:45 PM	89	1	41	131	78	113	0	191	0	0	0	0	0	202	110	312	634
Total	336	7	160	503	351	497	0	848	0	0	0	0	0	743	439	1182	2533
05:00 PM	78	0	23	101	90	82	0	172	0	0	0	0	0	235	101	336	609
05:15 PM	90	0	25	115	80	122	0	202	0	0	0	0	0	273	140	413	730
05:30 PM	81	0	27	108	85	124	0	209	0	0	0	0	0	230	85	315	632
05:45 PM	94	1	25	120	87	101	0	188	0	0	0	0	0	167	95	262	570
Total	343	1	100	444	342	429	0	771	0	0	0	0	0	905	421	1326	2541
Grand Total	679	8	260	947	693	926	0	1619	0	0	0	0	0	1648	860	2508	5074
Apprch %	71.7	0.8	27.5		42.8	57.2	0		0	0	0		0	65.7	34.3		
Total %	13.4	0.2	5.1	18.7	13.7	18.2	0	31.9	0	0	0	0	0	32.5	16.9	49.4	
Passenger Vehicles	671	7	223	901	685	897	0	1582	0	0	0	0	0	1615	831	2446	4929
% Passenger Vehicles	98.8	87.5	85.8	95.1	98.8	96.9	0	97.7	0	0	0	0	0	98	96.6	97.5	97.1
Large 2 Axle Vehicles	7	0	4	11	7	15	0	22	0	0	0	0	0	11	4	15	48
% Large 2 Axle Vehicles	1	0	1.5	1.2	1	1.6	0	1.4	0	0	0	0	0	0.7	0.5	0.6	0.9
3 Axle Vehicles	0	0	3	3	0	5	0	5	0	0	0	0	0	4	0	4	12
% 3 Axle Vehicles	0	0	1.2	0.3	0	0.5	0	0.3	0	0	0	0	0	0.2	0	0.2	0.2
4+ Axle Trucks	1	1	30	32	1	9	0	10	0	0	0	0	0	18	25	43	85
% 4+ Axle Trucks	0.1	12.5	11.5	3.4	0.1	1	0	0.6	0	0	0	0	0	1.1	2.9	1.7	1.7

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	66	**1**	**43**	110	87	111	0	198	0	0	0	0	0	223	123	346	654
04:45 PM	89	1	41	**131**	78	113	0	191	0	0	0	0	0	202	110	312	634
05:00 PM	78	0	23	101	**90**	82	0	172	0	0	0	0	0	235	101	336	609
05:15 PM	**90**	0	25	115	80	**122**	0	**202**	0	0	0	0	0	**273**	**140**	**413**	**730**
Total Volume	323	2	132	457	335	428	0	763	0	0	0	0	0	933	474	1407	2627
% App. Total	70.7	0.4	28.9		43.9	56.1	0		0	0	0		0	66.3	33.7		
PHF	.897	.500	.767	.872	.931	.877	.000	.944	.000	.000	.000	.000	.000	.854	.846	.852	.900

Counts Unlimited
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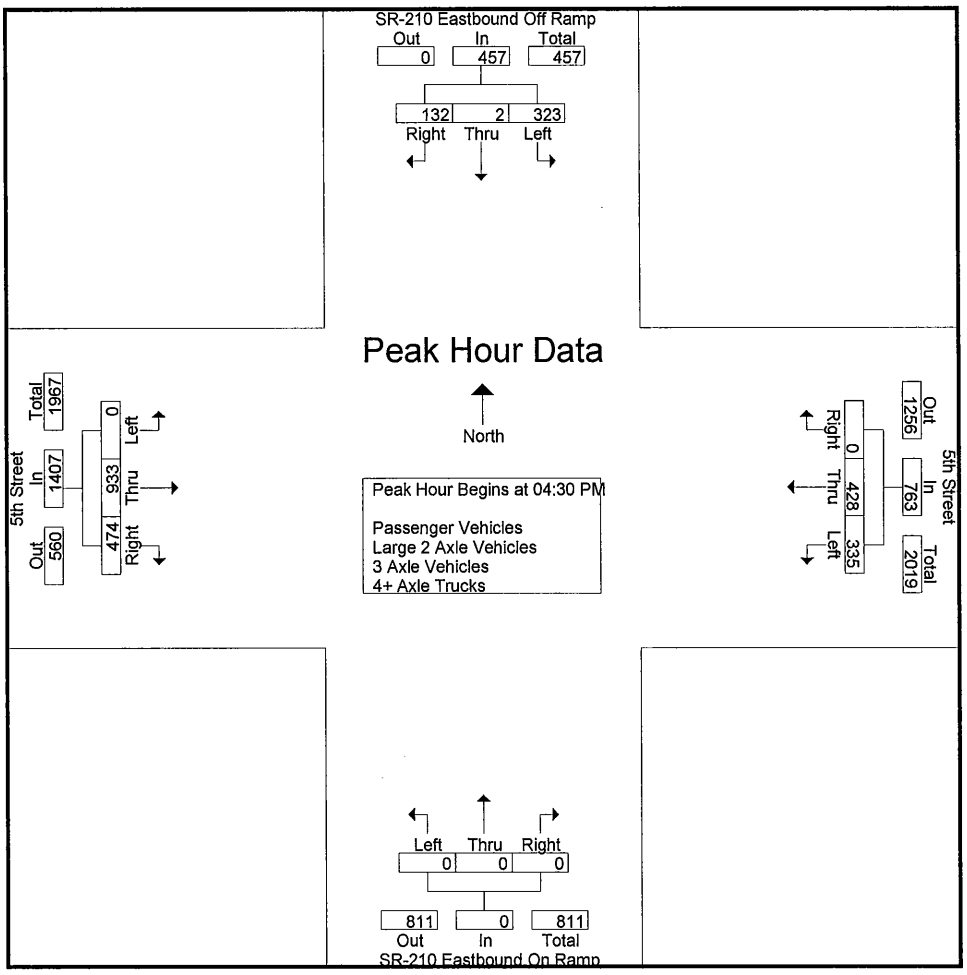
City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:30 PM			
+0 mins.	**93**	**3**	34	130	**98**	**140**	0	**238**	0	0	0	0	0	223	123	346
+15 mins.	88	2	42	**132**	88	133	0	221	0	0	0	0	0	202	110	312
+30 mins.	66	1	**43**	110	87	111	0	198	0	0	0	0	0	235	101	336
+45 mins.	89	1	41	131	78	113	0	191	0	0	0	0	0	**273**	**140**	**413**
Total Volume	336	7	160	503	351	497	0	848	0	0	0	0	0	933	474	1407
% App. Total	66.8	1.4	31.8		41.4	58.6	0		0	0	0		0	66.3	33.7	
PHF	.903	.583	.930	.953	.895	.888	.000	.891	.000	.000	.000	.000	.000	.854	.846	.852

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles

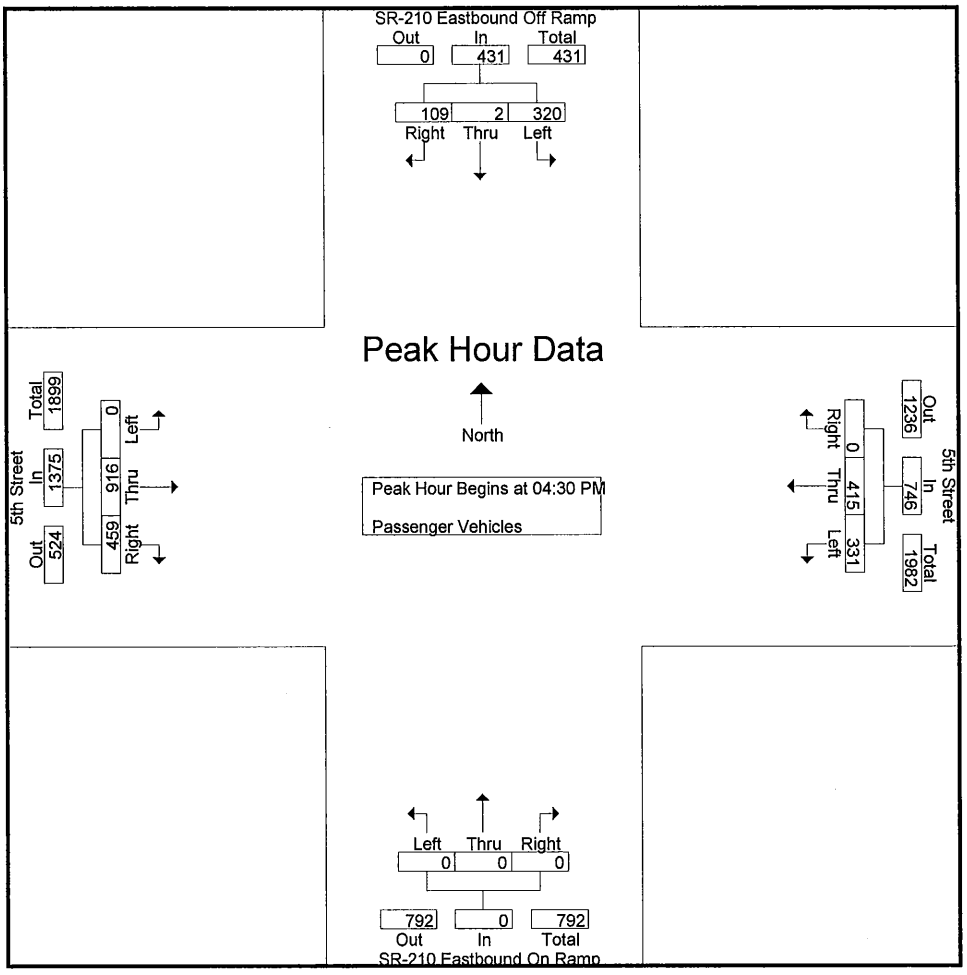
	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	91	3	28	122	97	133	0	230	0	0	0	0	0	146	113	259	611
04:15 PM	87	2	37	126	86	129	0	215	0	0	0	0	0	161	85	246	587
04:30 PM	65	1	36	102	85	110	0	195	0	0	0	0	0	219	119	338	635
04:45 PM	89	1	32	122	78	108	0	186	0	0	0	0	0	197	104	301	609
Total	332	7	133	472	346	480	0	826	0	0	0	0	0	723	421	1144	2442
05:00 PM	77	0	18	95	89	78	0	167	0	0	0	0	0	230	98	328	590
05:15 PM	89	0	23	112	79	119	0	198	0	0	0	0	0	270	138	408	718
05:30 PM	81	0	25	106	85	122	0	207	0	0	0	0	0	227	83	310	623
05:45 PM	92	0	24	116	86	98	0	184	0	0	0	0	0	165	91	256	556
Total	339	0	90	429	339	417	0	756	0	0	0	0	0	892	410	1302	2487
Grand Total	671	7	223	901	685	897	0	1582	0	0	0	0	0	1615	831	2446	4929
Apprch %	74.5	0.8	24.8		43.3	56.7	0		0	0	0		0	66	34		
Total %	13.6	0.1	4.5	18.3	13.9	18.2	0	32.1	0	0	0	0	0	32.8	16.9	49.6	

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	65	**1**	**36**	102	85	110	0	195	0	0	0	0	0	219	119	338	635
04:45 PM	**89**	1	32	**122**	78	108	0	186	0	0	0	0	0	197	104	301	609
05:00 PM	77	0	18	95	**89**	78	0	167	0	0	0	0	0	230	98	328	590
05:15 PM	89	0	23	112	79	**119**	0	**198**	0	0	0	0	0	**270**	**138**	**408**	**718**
Total Volume	320	2	109	431	331	415	0	746	0	0	0	0	0	916	459	1375	2552
% App. Total	74.2	0.5	25.3		44.4	55.6	0		0	0	0		0	66.6	33.4		
PHF	.899	.500	.757	.883	.930	.872	.000	.942	.000	.000	.000	.000	.000	.848	.832	.843	.889

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	65	**1**	**36**	102	85	110	0	195	0	0	0	0	0	219	119	338
+15 mins.	**89**	1	32	**122**	78	108	0	186	0	0	0	0	0	197	104	301
+30 mins.	77	0	18	95	**89**	78	0	167	0	0	0	0	0	230	98	328
+45 mins.	89	0	23	112	79	**119**	0	**198**	0	0	0	0	0	**270**	**138**	**408**
Total Volume	320	2	109	431	331	415	0	746	0	0	0	0	0	916	459	1375
% App. Total	74.2	0.5	25.3		44.4	55.6	0		0	0	0		0	66.6	33.4	
PHF	.899	.500	.757	.883	.930	.872	.000	.942	.000	.000	.000	.000	.000	.848	.832	.843

Counts Unlimited
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Corona, CA 92878
(951) 268-6268

City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	0	0	2	1	3	0	4	0	0	0	0	0	4	1	5	11
04:15 PM	0	0	0	0	2	3	0	5	0	0	0	0	0	0	1	1	6
04:30 PM	1	0	1	2	2	1	0	3	0	0	0	0	0	3	0	3	8
04:45 PM	0	0	2	2	0	3	0	3	0	0	0	0	0	0	0	0	5
Total	3	0	3	6	5	10	0	15	0	0	0	0	0	7	2	9	30
05:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	1	2	3
05:15 PM	1	0	0	1	1	1	0	2	0	0	0	0	0	1	0	1	4
05:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	1	2	4
05:45 PM	2	0	1	3	1	2	0	3	0	0	0	0	0	1	0	1	7
Total	4	0	1	5	2	5	0	7	0	0	0	0	0	4	2	6	18
Grand Total	7	0	4	11	7	15	0	22	0	0	0	0	0	11	4	15	48
Apprch %	63.6	0	36.4		31.8	68.2	0		0	0	0		0	73.3	26.7		
Total %	14.6	0	8.3	22.9	14.6	31.2	0	45.8	0	0	0	0	0	22.9	8.3	31.2	

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**1**	0	1	**2**	**2**	1	0	**3**	0	0	0	0	0	**3**	0	**3**	**8**
04:45 PM	0	0	**2**	2	0	**3**	0	3	0	0	0	0	0	0	0	0	5
05:00 PM	1	0	0	1	0	0	0	0	0	0	0	0	0	1	**1**	2	3
05:15 PM	1	0	0	1	1	1	0	2	0	0	0	0	0	1	0	1	4
Total Volume	3	0	3	6	3	5	0	8	0	0	0	0	0	5	1	6	20
% App. Total	50	0	50		37.5	62.5	0		0	0	0		0	83.3	16.7		
PHF	.750	.000	.375	.750	.375	.417	.000	.667	.000	.000	.000	.000	.000	.417	.250	.500	.625

Counts Unlimited
PO Box 1178
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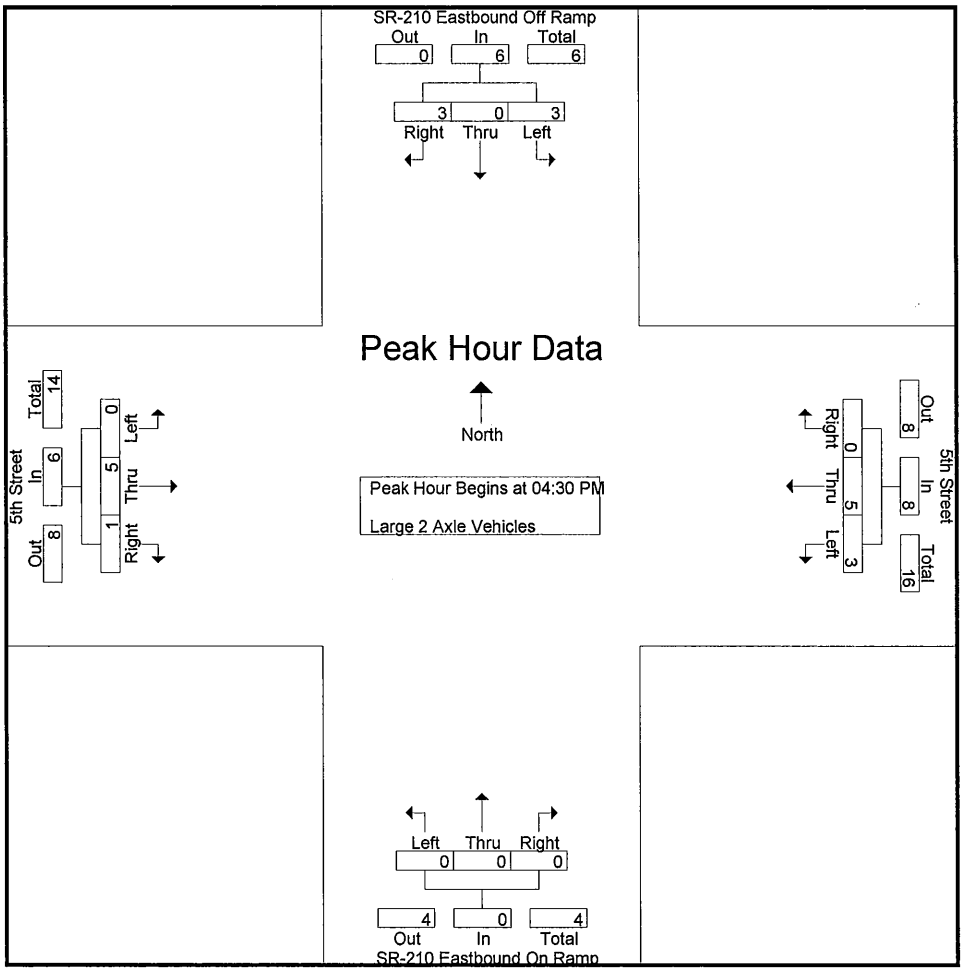
City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	**1**	0	1	**2**	**2**	1	0	**3**	0	0	0	0	0	**3**	0	**3**
+15 mins.	0	0	**2**	2	0	**3**	0	3	0	0	0	0	0	0	0	0
+30 mins.	1	0	0	1	0	0	0	0	0	0	0	0	0	1	**1**	2
+45 mins.	1	0	0	1	1	1	0	2	0	0	0	0	0	1	0	1
Total Volume	3	0	3	6	3	5	0	8	0	0	0	0	0	5	1	6
% App. Total	50	0	50		37.5	62.5	0		0	0	0		0	83.3	16.7	
PHF	.750	.000	.375	.750	.375	.417	.000	.667	.000	.000	.000	.000	.000	.417	.250	.500

Counts Unlimited
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City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	1	1	0	3	0	3	0	0	0	0	0	0	0	0	4
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total	0	0	2	2	0	4	0	4	0	0	0	0	0	3	0	3	9
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	1	1	0	1	0	1	0	0	0	0	0	1	0	1	3
Grand Total	0	0	3	3	0	5	0	5	0	0	0	0	0	4	0	4	12
Apprch %	0	0	100		0	100	0		0	0	0		0	100	0		
Total %	0	0	25	25	0	41.7	0	41.7	0	0	0	0	0	33.3	0	33.3	

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	2
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total Volume	0	0	1	1	0	2	0	2	0	0	0	0	0	2	0	2	5
% App. Total	0	0	100		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.250	.250	.000	.500	.000	.500	.000	.000	.000	.000	.000	.500	.000	.500	.625

Counts Unlimited
PO Box 1178
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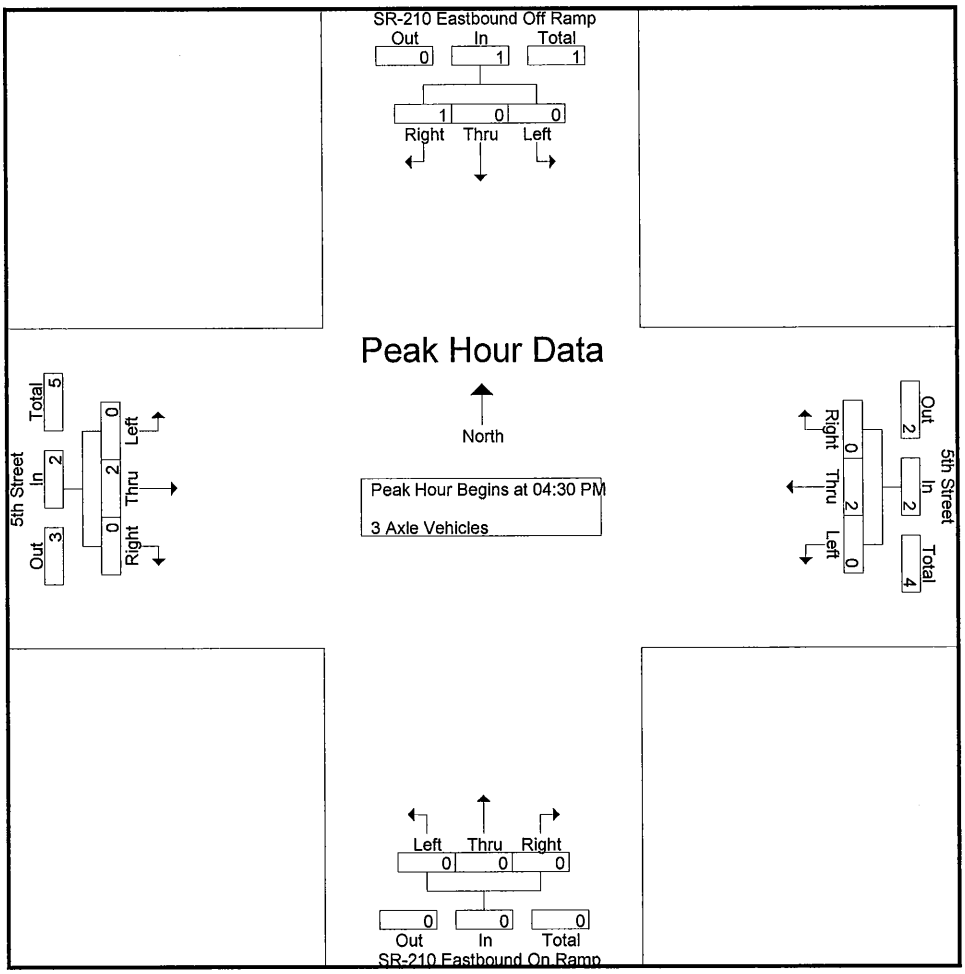
(951) 268-6268

City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	**1**	0	**1**
+15 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
Total Volume	0	0	1	1	0	2	0	2	0	0	0	0	0	2	0	2
% App. Total	0	0	100		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.250	.250	.000	.500	.000	.500	.000	.000	.000	.000	.000	.500	.000	.500

Counts Unlimited
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Corona, CA 92878
(951) 268-6268

City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	5	5	0	1	0	1	0	0	0	0	0	2	2	4	10
04:15 PM	1	0	5	6	0	1	0	1	0	0	0	0	0	4	4	8	15
04:30 PM	0	0	5	5	0	0	0	0	0	0	0	0	0	0	4	4	9
04:45 PM	0	0	7	7	0	1	0	1	0	0	0	0	0	4	6	10	18
Total	1	0	22	23	0	3	0	3	0	0	0	0	0	10	16	26	52
05:00 PM	0	0	5	5	1	4	0	5	0	0	0	0	0	4	2	6	16
05:15 PM	0	0	2	2	0	1	0	1	0	0	0	0	0	2	2	4	7
05:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	2	1	3	4
05:45 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	0	4	4	6
Total	0	1	8	9	1	6	0	7	0	0	0	0	0	8	9	17	33
Grand Total	1	1	30	32	1	9	0	10	0	0	0	0	0	18	25	43	85
Apprch %	3.1	3.1	93.8		10	90	0		0	0	0		0	41.9	58.1		
Total %	1.2	1.2	35.3	37.6	1.2	10.6	0	11.8	0	0	0	0	0	21.2	29.4	50.6	

	SR-210 Eastbound Off Ramp Southbound				5th Street Westbound				SR-210 Eastbound On Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	0	0	5	5	0	0	0	0	0	0	0	0	0	0	4	4	9
04:45 PM	0	0	**7**	**7**	0	1	0	1	0	0	0	0	0	**4**	**6**	**10**	**18**
05:00 PM	0	0	5	5	**1**	**4**	0	**5**	0	0	0	0	0	4	2	6	16
05:15 PM	0	0	2	2	0	1	0	1	0	0	0	0	0	2	2	4	7
Total Volume	0	0	19	19	1	6	0	7	0	0	0	0	0	10	14	24	50
% App. Total	0	0	100		14.3	85.7	0		0	0	0		0	41.7	58.3		
PHF	.000	.000	.679	.679	.250	.375	.000	.350	.000	.000	.000	.000	.000	.625	.583	.600	.694

Counts Unlimited
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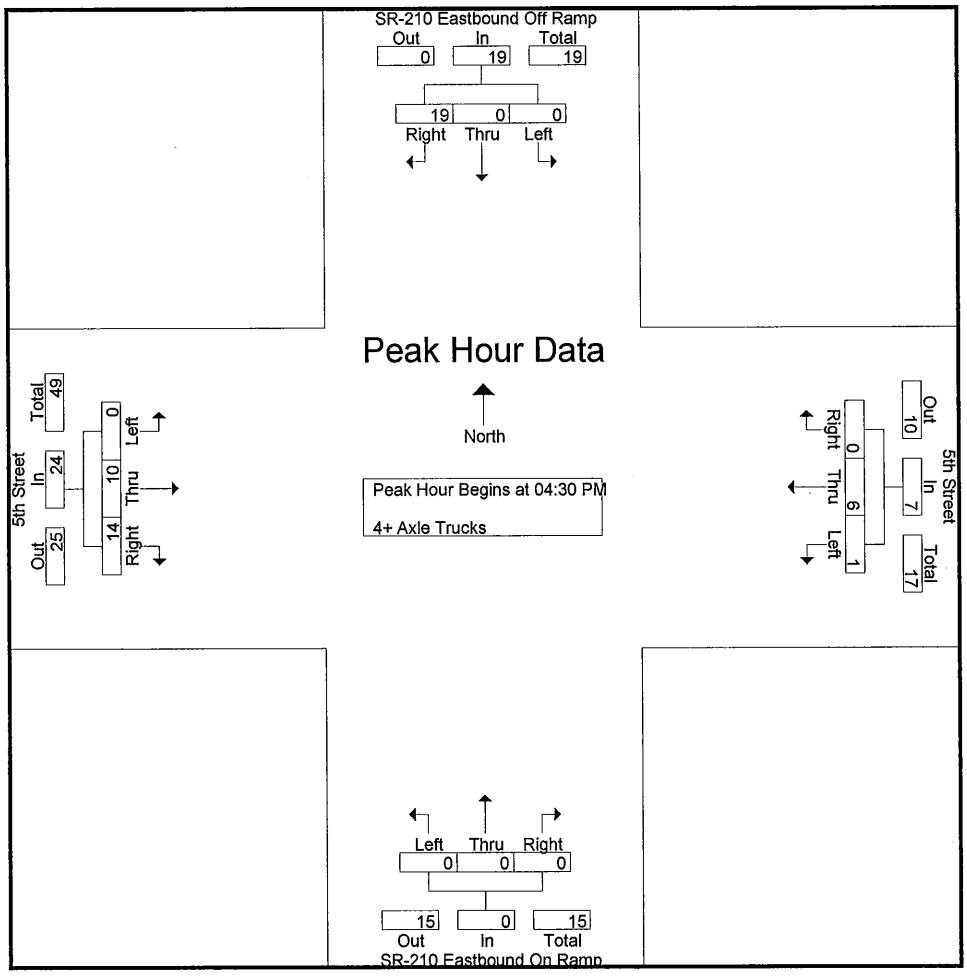
City of Highland
N/S: SR-210 Eastbound Ramps
E/W: 5th Street
Weather: Clear

File Name : HLD210E5TPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:30 PM to 05:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:30 PM				04:30 PM				04:30 PM			
+0 mins.	0	0	5	5	0	0	0	0	0	0	0	0	0	0	4	4
+15 mins.	0	0	**7**	**7**	0	1	0	1	0	0	0	0	0	**4**	**6**	**10**
+30 mins.	0	0	5	5	**1**	**4**	0	**5**	0	0	0	0	0	4	2	6
+45 mins.	0	0	2	2	0	1	0	1	0	0	0	0	0	2	2	4
Total Volume	0	0	19	19	1	6	0	7	0	0	0	0	0	10	14	24
% App. Total	0	0	100		14.3	85.7	0		0	0	0		0	41.7	58.3	
PHF	.000	.000	.679	.679	.250	.375	.000	.350	.000	.000	.000	.000	.000	.625	.583	.600

2

Counts Unlimited
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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

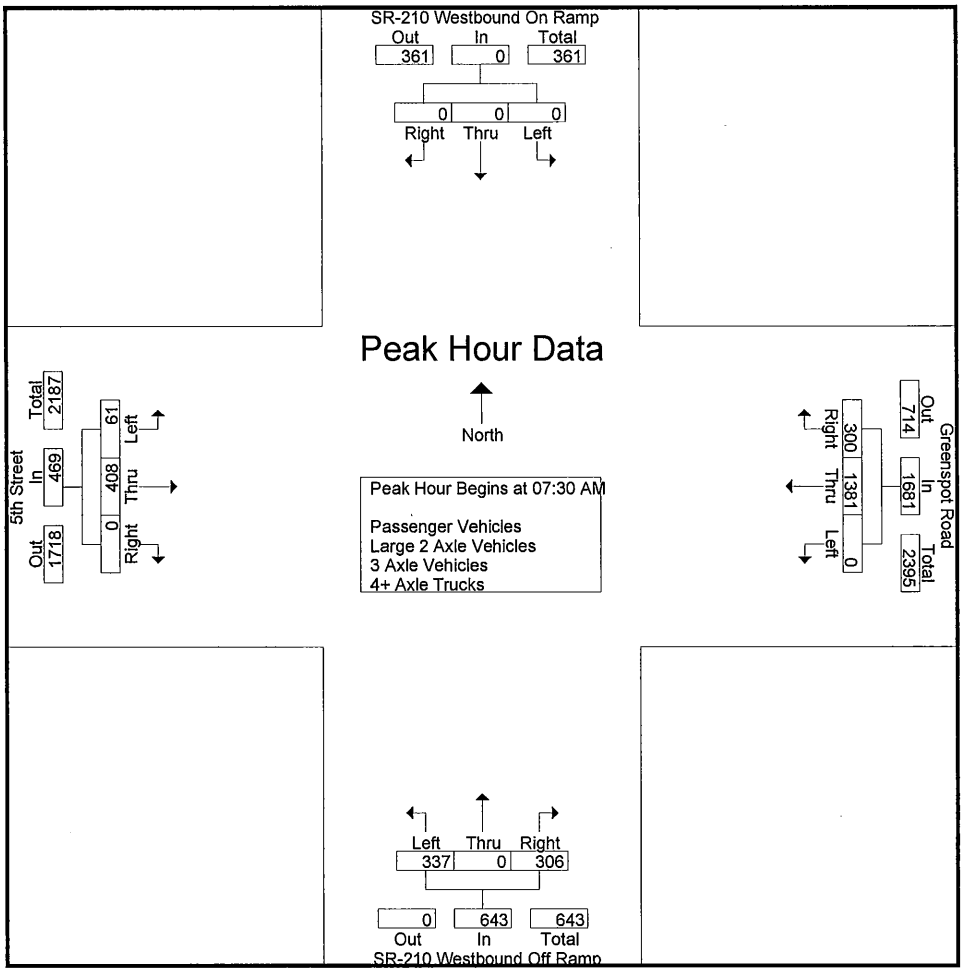
	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	241	79	320	83	0	64	147	8	53	0	61	528
07:15 AM	0	0	0	0	0	314	83	397	80	0	92	172	12	77	0	89	658
07:30 AM	0	0	0	0	0	340	82	422	80	0	70	150	14	96	0	110	682
07:45 AM	0	0	0	0	0	378	81	459	102	0	70	172	11	87	0	98	729
Total	0	0	0	0	0	1273	325	1598	345	0	296	641	45	313	0	358	2597
08:00 AM	0	0	0	0	0	336	62	398	73	0	72	145	16	119	0	135	678
08:15 AM	0	0	0	0	0	327	75	402	82	0	94	176	20	106	0	126	704
08:30 AM	0	0	0	0	0	242	52	294	62	0	126	188	15	98	0	113	595
08:45 AM	0	0	0	0	0	183	32	215	59	0	75	134	13	81	0	94	443
Total	0	0	0	0	0	1088	221	1309	276	0	367	643	64	404	0	468	2420
Grand Total	0	0	0	0	0	2361	546	2907	621	0	663	1284	109	717	0	826	5017
Apprch %	0	0	0		0	81.2	18.8		48.4	0	51.6		13.2	86.8	0		
Total %	0	0	0	0	0	47.1	10.9	57.9	12.4	0	13.2	25.6	2.2	14.3	0	16.5	
Passenger Vehicles	0	0	0	0	0	2327	541	2868	575	0	611	1186	87	700	0	787	4841
% Passenger Vehicles	0	0	0	0	0	98.6	99.1	98.7	92.6	0	92.2	92.4	79.8	97.6	0	95.3	96.5
Large 2 Axle Vehicles	0	0	0	0	0	15	5	20	19	0	29	48	7	9	0	16	84
% Large 2 Axle Vehicles	0	0	0	0	0	0.6	0.9	0.7	3.1	0	4.4	3.7	6.4	1.3	0	1.9	1.7
3 Axle Vehicles	0	0	0	0	0	4	0	4	5	0	5	10	4	7	0	11	25
% 3 Axle Vehicles	0	0	0	0	0	0.2	0	0.1	0.8	0	0.8	0.8	3.7	1	0	1.3	0.5
4+ Axle Trucks	0	0	0	0	0	15	0	15	22	0	18	40	11	1	0	12	67
% 4+ Axle Trucks	0	0	0	0	0	0.6	0	0.5	3.5	0	2.7	3.1	10.1	0.1	0	1.5	1.3

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	340	**82**	422	80	0	70	150	14	96	0	110	682
07:45 AM	0	0	0	0	0	**378**	81	**459**	**102**	0	70	172	11	87	0	98	**729**
08:00 AM	0	0	0	0	0	336	62	398	73	0	72	145	16	**119**	0	**135**	678
08:15 AM	0	0	0	0	0	327	75	402	82	0	**94**	**176**	**20**	106	0	126	704
Total Volume	0	0	0	0	0	1381	300	1681	337	0	306	643	61	408	0	469	2793
% App. Total	0	0	0		0	82.2	17.8		52.4	0	47.6		13	87	0		
PHF	.000	.000	.000	.000	.000	.913	.915	.916	.826	.000	.814	.913	.763	.857	.000	.869	.958

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:30 AM				07:45 AM				07:45 AM			
+0 mins.	0	0	0	0	0	340	**82**	422	**102**	0	70	172	11	87	0	98
+15 mins.	0	0	0	0	0	**378**	81	**459**	73	0	72	145	16	**119**	0	**135**
+30 mins.	0	0	0	0	0	336	62	398	82	0	94	176	**20**	106	0	126
+45 mins.	0	0	0	0	0	327	75	402	62	0	**126**	**188**	15	98	0	113
Total Volume	0	0	0	0	0	1381	300	1681	319	0	362	681	62	410	0	472
% App. Total	0	0	0		0	82.2	17.8		46.8	0	53.2		13.1	86.9	0	
PHF	.000	.000	.000	.000	.000	.913	.915	.916	.782	.000	.718	.906	.775	.861	.000	.874

Counts Unlimited
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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	238	79	317	72	0	57	129	5	52	0	57	503
07:15 AM	0	0	0	0	0	309	83	392	77	0	86	163	10	75	0	85	640
07:30 AM	0	0	0	0	0	334	81	415	76	0	67	143	9	96	0	105	663
07:45 AM	0	0	0	0	0	375	80	455	95	0	66	161	7	86	0	93	709
Total	0	0	0	0	0	1256	323	1579	320	0	276	596	31	309	0	340	2515
08:00 AM	0	0	0	0	0	331	60	391	66	0	62	128	13	116	0	129	648
08:15 AM	0	0	0	0	0	319	75	394	78	0	85	163	17	100	0	117	674
08:30 AM	0	0	0	0	0	238	51	289	60	0	115	175	14	96	0	110	574
08:45 AM	0	0	0	0	0	183	32	215	51	0	73	124	12	79	0	91	430
Total	0	0	0	0	0	1071	218	1289	255	0	335	590	56	391	0	447	2326
Grand Total	0	0	0	0	0	2327	541	2868	575	0	611	1186	87	700	0	787	4841
Apprch %	0	0	0		0	81.1	18.9		48.5	0	51.5		11.1	88.9	0		
Total %	0	0	0	0	0	48.1	11.2	59.2	11.9	0	12.6	24.5	1.8	14.5	0	16.3	

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	334	**81**	415	76	0	67	143	9	96	0	105	663
07:45 AM	0	0	0	0	0	**375**	80	**455**	**95**	0	66	161	7	86	0	93	**709**
08:00 AM	0	0	0	0	0	331	60	391	66	0	62	128	13	**116**	0	**129**	648
08:15 AM	0	0	0	0	0	319	75	394	78	0	**85**	**163**	**17**	100	0	117	674
Total Volume	0	0	0	0	0	1359	296	1655	315	0	280	595	46	398	0	444	2694
% App. Total	0	0	0		0	82.1	17.9		52.9	0	47.1		10.4	89.6	0		
PHF	.000	.000	.000	.000	.000	.906	.914	.909	.829	.000	.824	.913	.676	.858	.000	.860	.950

Counts Unlimited
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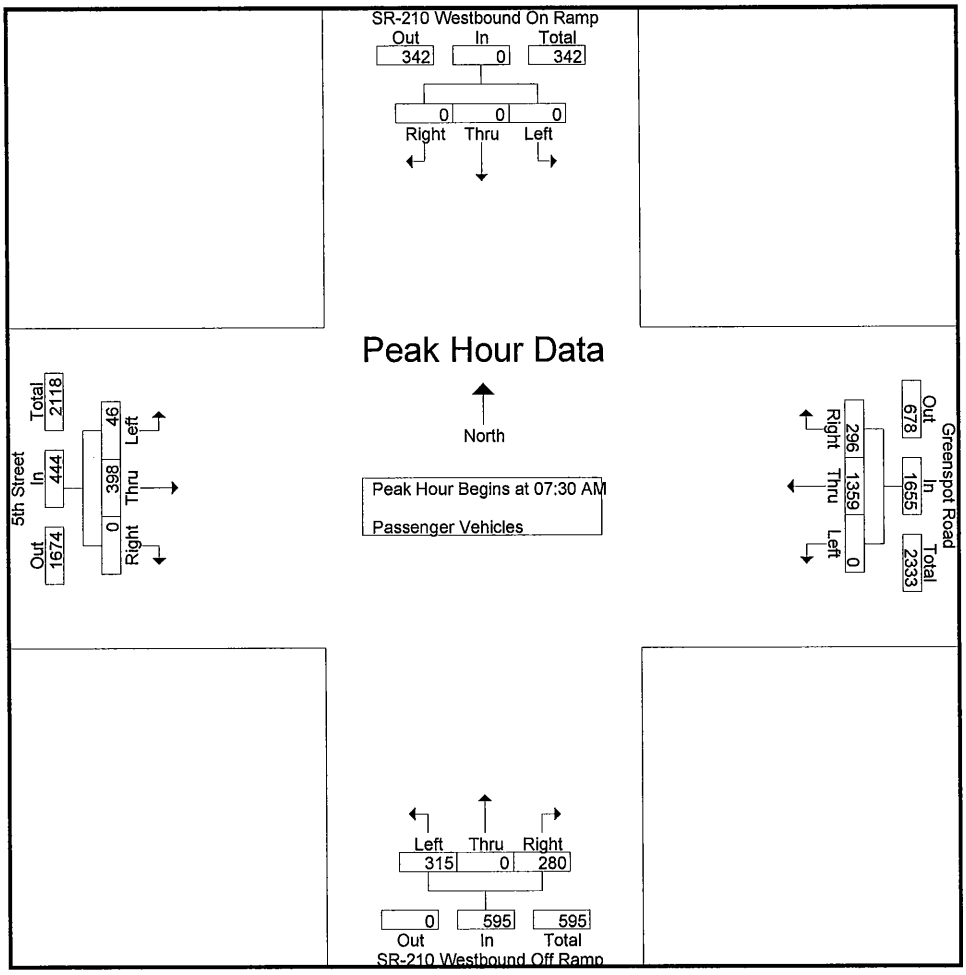
(951) 268-6268

City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	334	**81**	415	76	0	67	143	9	96	0	105
+15 mins.	0	0	0	0	0	**375**	80	**455**	**95**	0	66	161	7	86	0	93
+30 mins.	0	0	0	0	0	331	60	391	66	0	62	128	13	**116**	0	**129**
+45 mins.	0	0	0	0	0	319	75	394	78	0	**85**	**163**	**17**	100	0	117
Total Volume	0	0	0	0	0	1359	296	1655	315	0	280	595	46	398	0	444
% App. Total	0	0	0		0	82.1	17.9		52.9	0	47.1		10.4	89.6	0	
PHF	.000	.000	.000	.000	.000	.906	.914	.909	.829	.000	.824	.913	.676	.858	.000	.860

Counts Unlimited
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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	2	0	2	6	0	5	11	0	1	0	1	14
07:15 AM	0	0	0	0	0	2	0	2	1	0	3	4	0	2	0	2	8
07:30 AM	0	0	0	0	0	4	1	5	3	0	0	3	1	0	0	1	9
07:45 AM	0	0	0	0	0	1	1	2	3	0	3	6	2	0	0	2	10
Total	0	0	0	0	0	9	2	11	13	0	11	24	3	3	0	6	41
08:00 AM	0	0	0	0	0	2	2	4	4	0	4	8	2	3	0	5	17
08:15 AM	0	0	0	0	0	3	0	3	1	0	4	5	1	2	0	3	11
08:30 AM	0	0	0	0	0	1	1	2	0	0	9	9	1	0	0	1	12
08:45 AM	0	0	0	0	0	0	0	0	1	0	1	2	0	1	0	1	3
Total	0	0	0	0	0	6	3	9	6	0	18	24	4	6	0	10	43
Grand Total	0	0	0	0	0	15	5	20	19	0	29	48	7	9	0	16	84
Apprch %	0	0	0		0	75	25		39.6	0	60.4		43.8	56.2	0		
Total %	0	0	0	0	0	17.9	6	23.8	22.6	0	34.5	57.1	8.3	10.7	0	19	

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	**4**	1	**5**	3	0	0	3	1	0	0	1	9
07:45 AM	0	0	0	0	0	1	1	2	3	0	3	6	**2**	0	0	2	10
08:00 AM	0	0	0	0	0	2	**2**	4	**4**	0	**4**	**8**	2	**3**	0	**5**	**17**
08:15 AM	0	0	0	0	0	3	0	3	1	0	4	5	1	2	0	3	11
Total Volume	0	0	0	0	0	10	4	14	11	0	11	22	6	5	0	11	47
% App. Total	0	0	0		0	71.4	28.6		50	0	50		54.5	45.5	0		
PHF	.000	.000	.000	.000	.000	.625	.500	.700	.688	.000	.688	.688	.750	.417	.000	.550	.691

Counts Unlimited
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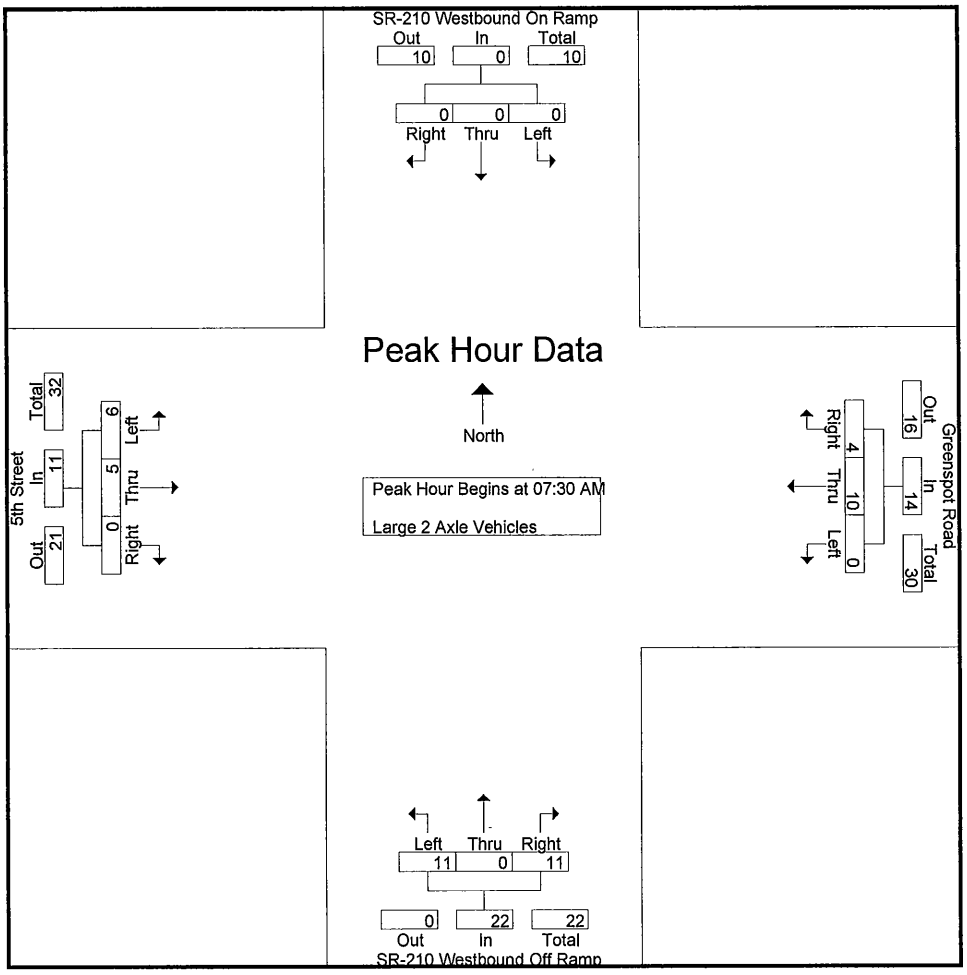
City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	**4**	1	**5**	3	0	0	3	1	0	0	1
+15 mins.	0	0	0	0	0	1	1	2	3	0	3	6	**2**	0	0	2
+30 mins.	0	0	0	0	0	2	**2**	4	**4**	0	**4**	**8**	2	**3**	0	**5**
+45 mins.	0	0	0	0	0	3	0	3	1	0	4	5	1	2	0	3
Total Volume	0	0	0	0	0	10	4	14	11	0	11	22	6	5	0	11
% App. Total	0	0	0		0	71.4	28.6		50	0	50		54.5	45.5	0	
PHF	.000	.000	.000	.000	.000	.625	.500	.700	.688	.000	.688	.688	.750	.417	.000	.550

Counts Unlimited
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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
07:15 AM	0	0	0	0	0	1	0	1	0	0	3	3	2	0	0	2	6
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
07:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
Total	0	0	0	0	0	1	0	1	2	0	3	5	4	1	0	5	11
08:00 AM	0	0	0	0	0	1	0	1	2	0	0	2	0	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
08:30 AM	0	0	0	0	0	2	0	2	0	0	1	1	0	2	0	2	5
08:45 AM	0	0	0	0	0	0	0	0	1	0	1	2	0	0	0	0	2
Total	0	0	0	0	0	3	0	3	3	0	2	5	0	6	0	6	14
Grand Total	0	0	0	0	0	4	0	4	5	0	5	10	4	7	0	11	25
Apprch %	0	0	0		0	100	0		50	0	50		36.4	63.6	0		
Total %	0	0	0	0	0	16	0	16	20	0	20	40	16	28	0	44	

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	0	2	2
07:45 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	2
08:00 AM	0	0	0	0	0	**1**	0	**1**	**2**	0	0	**2**	0	0	0	0	3
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	0	**4**	**4**
Total Volume	0	0	0	0	0	1	0	1	3	0	0	3	2	5	0	7	11
% App. Total	0	0	0		0	100	0		100	0	0		28.6	71.4	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.375	.000	.000	.375	.250	.313	.000	.438	.688

Counts Unlimited
PO Box 1178
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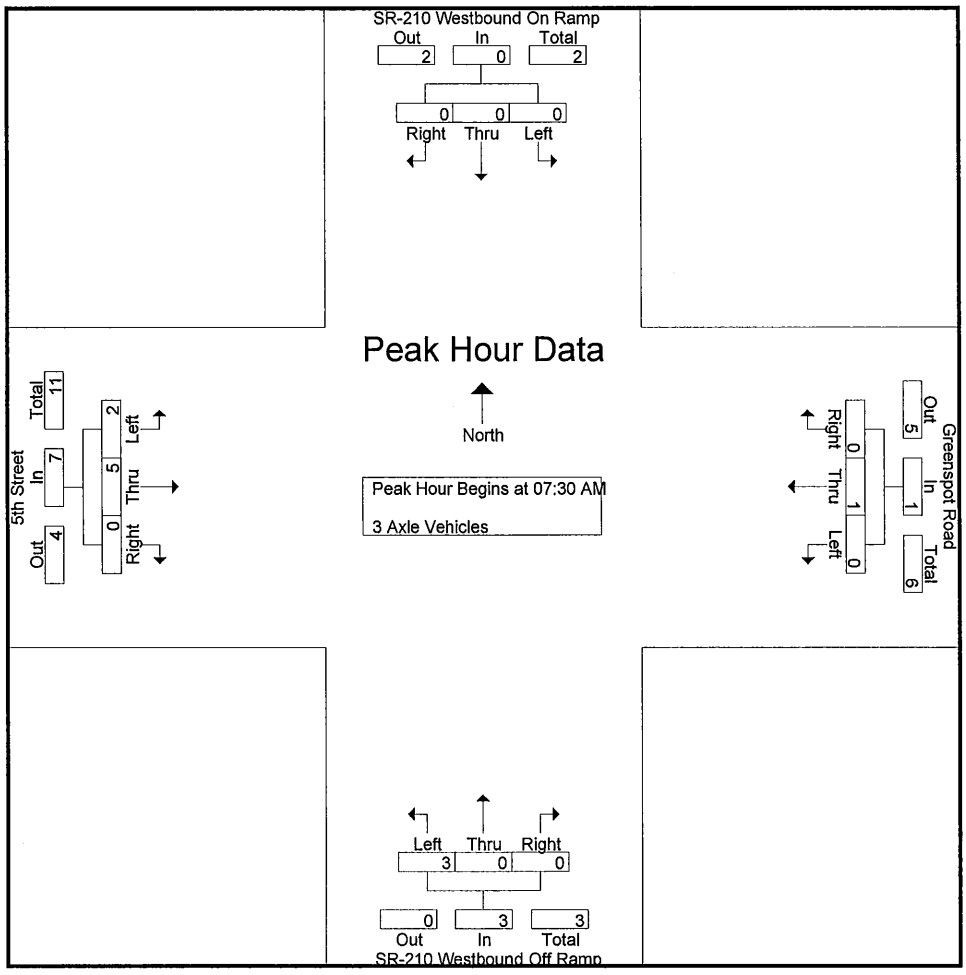
City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	0	2
+15 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1
+30 mins.	0	0	0	0	0	**1**	0	**1**	**2**	0	0	**2**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	0	**4**
Total Volume	0	0	0	0	0	1	0	1	3	0	0	3	2	5	0	7
% App. Total	0	0	0		0	100	0		100	0	0		28.6	71.4	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.375	.000	.000	.375	.250	.313	.000	.438

Counts Unlimited
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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	1	4	0	2	6	3	0	0	3	10
07:15 AM	0	0	0	0	0	2	0	2	2	0	0	2	0	0	0	0	4
07:30 AM	0	0	0	0	0	2	0	2	1	0	3	4	2	0	0	2	8
07:45 AM	0	0	0	0	0	2	0	2	3	0	1	4	2	0	0	2	8
Total	0	0	0	0	0	7	0	7	10	0	6	16	7	0	0	7	30
08:00 AM	0	0	0	0	0	2	0	2	1	0	6	7	1	0	0	1	10
08:15 AM	0	0	0	0	0	5	0	5	3	0	5	8	2	0	0	2	15
08:30 AM	0	0	0	0	0	1	0	1	2	0	1	3	0	0	0	0	4
08:45 AM	0	0	0	0	0	0	0	0	6	0	0	6	1	1	0	2	8
Total	0	0	0	0	0	8	0	8	12	0	12	24	4	1	0	5	37
Grand Total	0	0	0	0	0	15	0	15	22	0	18	40	11	1	0	12	67
Apprch %	0	0	0		0	100	0		55	0	45		91.7	8.3	0		
Total %	0	0	0	0	0	22.4	0	22.4	32.8	0	26.9	59.7	16.4	1.5	0	17.9	

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	2	0	2	1	0	3	4	**2**	0	0	**2**	8
07:45 AM	0	0	0	0	0	2	0	2	**3**	0	1	4	2	0	0	2	8
08:00 AM	0	0	0	0	0	2	0	2	1	0	**6**	7	1	0	0	1	10
08:15 AM	0	0	0	0	0	**5**	0	**5**	3	0	5	**8**	2	0	0	2	**15**
Total Volume	0	0	0	0	0	11	0	11	8	0	15	23	7	0	0	7	41
% App. Total	0	0	0		0	100	0		34.8	0	65.2		100	0	0		
PHF	.000	.000	.000	.000	.000	.550	.000	.550	.667	.000	.625	.719	.875	.000	.000	.875	.683

Counts Unlimited
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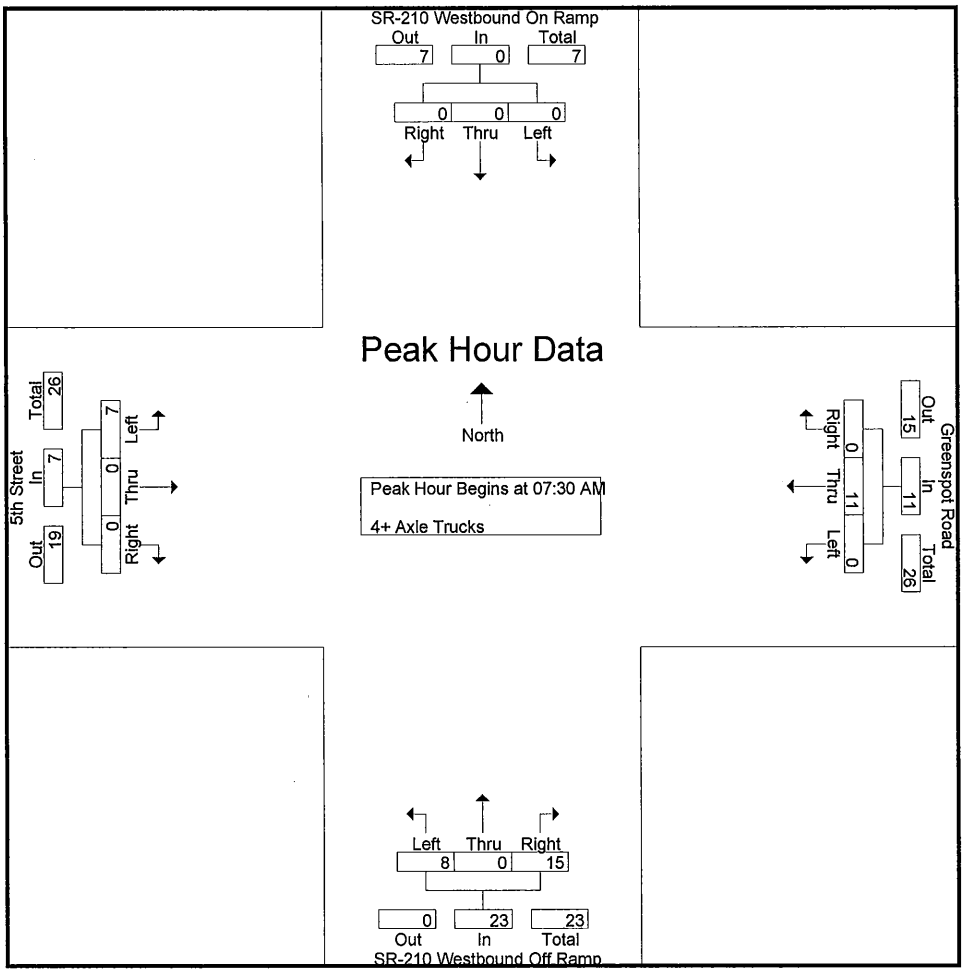
City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	2	0	2	1	0	3	4	**2**	0	0	**2**
+15 mins.	0	0	0	0	0	2	0	2	**3**	0	1	4	2	0	0	2
+30 mins.	0	0	0	0	0	2	0	2	1	0	**6**	7	1	0	0	1
+45 mins.	0	0	0	0	0	**5**	0	**5**	3	0	5	**8**	2	0	0	2
Total Volume	0	0	0	0	0	11	0	11	8	0	15	23	7	0	0	7
% App. Total	0	0	0		0	100	0		34.8	0	65.2		100	0	0	
PHF	.000	.000	.000	.000	.000	.550	.000	.550	.667	.000	.625	.719	.875	.000	.000	.875

Counts Unlimited
PO Box 1178
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(951) 268-6268

City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	184	73	257	57	0	100	157	36	214	0	250	664
04:15 PM	0	0	0	0	0	184	56	240	43	1	114	158	34	221	0	255	653
04:30 PM	0	0	0	0	0	162	63	225	30	0	113	143	69	211	0	280	648
04:45 PM	0	0	0	0	0	140	70	210	50	0	121	171	54	240	0	294	675
Total	0	0	0	0	0	670	262	932	180	1	448	629	193	886	0	1079	2640
05:00 PM	0	0	0	0	0	142	75	217	29	0	115	144	56	255	0	311	672
05:15 PM	0	0	0	0	0	160	75	235	45	0	125	170	58	302	0	360	765
05:30 PM	0	0	0	0	0	172	73	245	38	0	123	161	44	272	0	316	722
05:45 PM	0	0	0	0	0	148	64	212	41	0	119	160	37	223	0	260	632
Total	0	0	0	0	0	622	287	909	153	0	482	635	195	1052	0	1247	2791
Grand Total	0	0	0	0	0	1292	549	1841	333	1	930	1264	388	1938	0	2326	5431
Apprch %	0	0	0		0	70.2	29.8		26.3	0.1	73.6		16.7	83.3	0		
Total %	0	0	0	0	0	23.8	10.1	33.9	6.1	0	17.1	23.3	7.1	35.7	0	42.8	
Passenger Vehicles	0	0	0	0	0	1277	545	1822	310	1	923	1234	365	1925	0	2290	5346
% Passenger Vehicles	0	0	0	0	0	98.8	99.3	99	93.1	100	99.2	97.6	94.1	99.3	0	98.5	98.4
Large 2 Axle Vehicles	0	0	0	0	0	13	4	17	12	0	5	17	3	10	0	13	47
% Large 2 Axle Vehicles	0	0	0	0	0	1	0.7	0.9	3.6	0	0.5	1.3	0.8	0.5	0	0.6	0.9
3 Axle Vehicles	0	0	0	0	0	0	0	0	5	0	1	6	4	0	0	4	10
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	1.5	0	0.1	0.5	1	0	0	0.2	0.2
4+ Axle Trucks	0	0	0	0	0	2	0	2	6	0	1	7	16	3	0	19	28
% 4+ Axle Trucks	0	0	0	0	0	0.2	0	0.1	1.8	0	0.1	0.6	4.1	0.2	0	0.8	0.5

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	140	70	210	**50**	0	121	**171**	54	240	0	294	675
05:00 PM	0	0	0	0	0	142	**75**	217	29	0	115	144	56	255	0	311	672
05:15 PM	0	0	0	0	0	160	75	235	45	0	**125**	170	**58**	**302**	0	**360**	**765**
05:30 PM	0	0	0	0	0	**172**	73	**245**	38	0	123	161	44	272	0	316	722
Total Volume	0	0	0	0	0	614	293	907	162	0	484	646	212	1069	0	1281	2834
% App. Total	0	0	0		0	67.7	32.3		25.1	0	74.9		16.5	83.5	0		
PHF	.000	.000	.000	.000	.000	.892	.977	.926	.810	.000	.968	.944	.914	.885	.000	.890	.926

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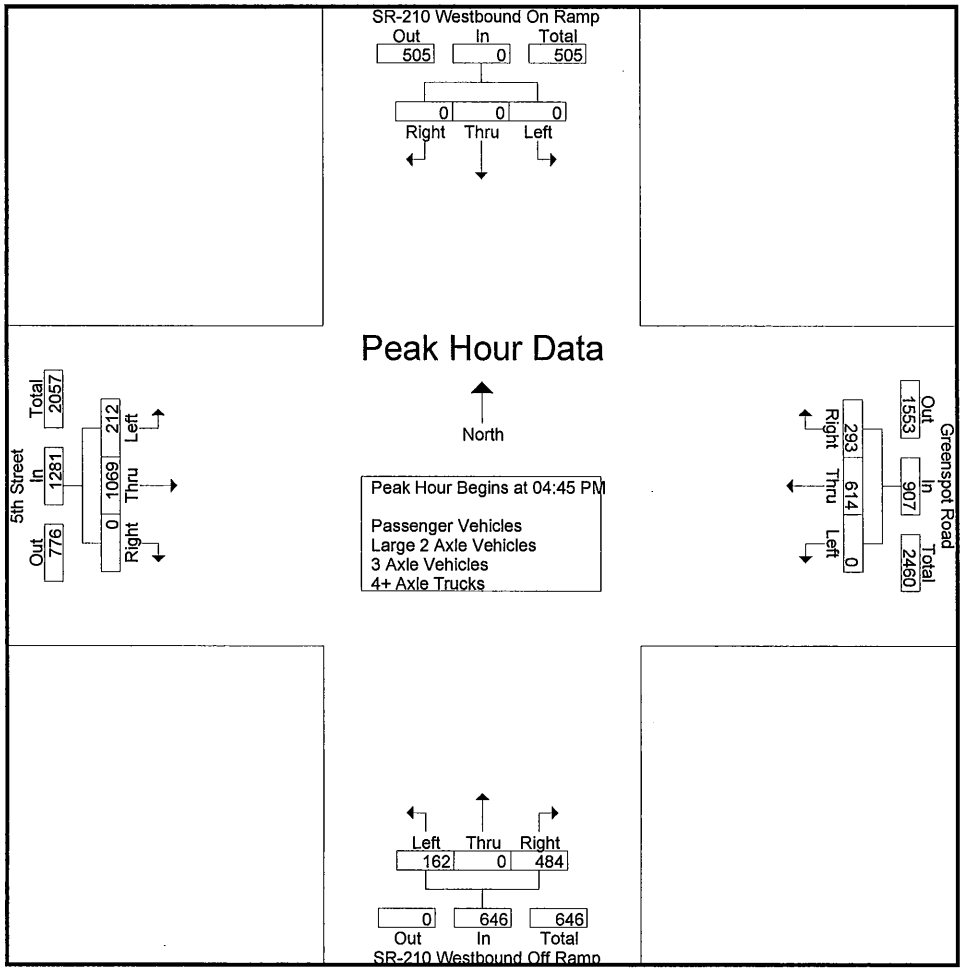
City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	**184**	**73**	**257**	**50**	0	121	**171**	54	240	0	294
+15 mins.	0	0	0	0	0	184	56	240	29	0	115	144	56	255	0	311
+30 mins.	0	0	0	0	0	162	63	225	45	0	**125**	170	**58**	**302**	0	**360**
+45 mins.	0	0	0	0	0	140	70	210	38	0	123	161	44	272	0	316
Total Volume	0	0	0	0	0	670	262	932	162	0	484	646	212	1069	0	1281
% App. Total	0	0	0		0	71.9	28.1		25.1	0	74.9		16.5	83.5	0	
PHF	.000	.000	.000	.000	.000	.910	.897	.907	.810	.000	.968	.944	.914	.885	.000	.890

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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	183	73	256	50	0	98	148	35	209	0	244	648
04:15 PM	0	0	0	0	0	181	56	237	41	1	113	155	30	218	0	248	640
04:30 PM	0	0	0	0	0	160	62	222	29	0	111	140	67	209	0	276	638
04:45 PM	0	0	0	0	0	139	69	208	45	0	120	165	49	240	0	289	662
Total	0	0	0	0	0	663	260	923	165	1	442	608	181	876	0	1057	2588
05:00 PM	0	0	0	0	0	140	74	214	27	0	115	142	51	255	0	306	662
05:15 PM	0	0	0	0	0	157	74	231	44	0	125	169	56	300	0	356	756
05:30 PM	0	0	0	0	0	171	73	244	36	0	122	158	41	272	0	313	715
05:45 PM	0	0	0	0	0	146	64	210	38	0	119	157	36	222	0	258	625
Total	0	0	0	0	0	614	285	899	145	0	481	626	184	1049	0	1233	2758
Grand Total	0	0	0	0	0	1277	545	1822	310	1	923	1234	365	1925	0	2290	5346
Apprch %	0	0	0		0	70.1	29.9		25.1	0.1	74.8		15.9	84.1	0		
Total %	0	0	0	0	0	23.9	10.2	34.1	5.8	0	17.3	23.1	6.8	36	0	42.8	

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	139	69	208	**45**	0	120	165	49	240	0	289	662
05:00 PM	0	0	0	0	0	140	**74**	214	27	0	115	142	51	255	0	306	662
05:15 PM	0	0	0	0	0	157	74	231	44	0	**125**	**169**	**56**	**300**	0	**356**	**756**
05:30 PM	0	0	0	0	0	**171**	73	**244**	36	0	122	158	41	272	0	313	715
Total Volume	0	0	0	0	0	607	290	897	152	0	482	634	197	1067	0	1264	2795
% App. Total	0	0	0		0	67.7	32.3		24	0	76		15.6	84.4	0		
PHF	.000	.000	.000	.000	.000	.887	.980	.919	.844	.000	.964	.938	.879	.889	.000	.888	.924

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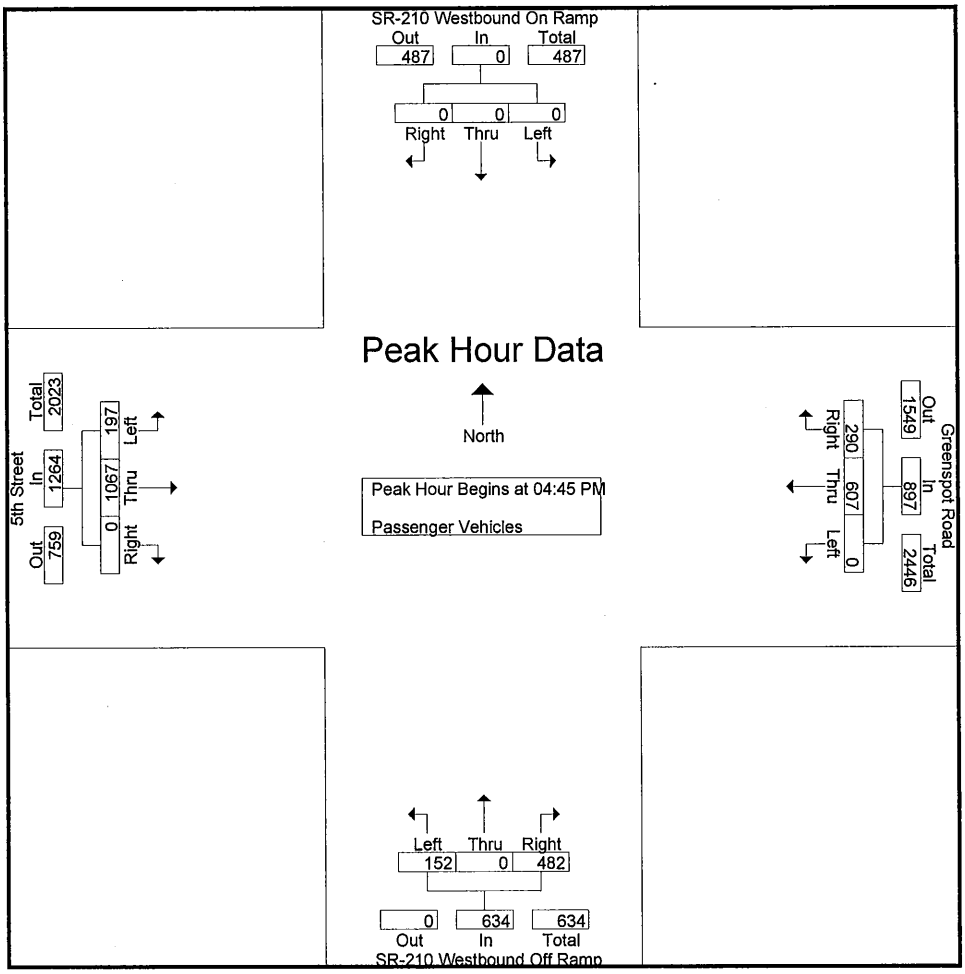
City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	139	69	208	**45**	0	120	165	49	240	0	289
+15 mins.	0	0	0	0	0	140	**74**	214	27	0	115	142	51	255	0	306
+30 mins.	0	0	0	0	0	157	74	231	44	0	**125**	**169**	**56**	**300**	0	**356**
+45 mins.	0	0	0	0	0	**171**	73	**244**	36	0	122	158	41	272	0	313
Total Volume	0	0	0	0	0	607	290	897	152	0	482	634	197	1067	0	1264
% App. Total	0	0	0		0	67.7	32.3		24	0	76		15.6	84.4	0	
PHF	.000	.000	.000	.000	.000	.887	.980	.919	.844	.000	.964	.938	.879	.889	.000	.888

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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	0	1	3	0	2	5	0	4	0	4	10
04:15 PM	0	0	0	0	0	3	0	3	1	0	1	2	0	1	0	1	6
04:30 PM	0	0	0	0	0	2	1	3	1	0	0	1	1	2	0	3	7
04:45 PM	0	0	0	0	0	1	1	2	2	0	1	3	0	0	0	0	5
Total	0	0	0	0	0	7	2	9	7	0	4	11	1	7	0	8	28
05:00 PM	0	0	0	0	0	1	1	2	1	0	0	1	1	0	0	1	4
05:15 PM	0	0	0	0	0	2	1	3	0	0	0	0	0	2	0	2	5
05:30 PM	0	0	0	0	0	1	0	1	2	0	1	3	1	0	0	1	5
05:45 PM	0	0	0	0	0	2	0	2	2	0	0	2	0	1	0	1	5
Total	0	0	0	0	0	6	2	8	5	0	1	6	2	3	0	5	19
Grand Total	0	0	0	0	0	13	4	17	12	0	5	17	3	10	0	13	47
Apprch %	0	0	0		0	76.5	23.5		70.6	0	29.4		23.1	76.9	0		
Total %	0	0	0	0	0	27.7	8.5	36.2	25.5	0	10.6	36.2	6.4	21.3	0	27.7	

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	1	**1**	2	**2**	0	**1**	**3**	0	0	0	0	**5**
05:00 PM	0	0	0	0	0	1	1	2	1	0	0	1	**1**	0	0	1	4
05:15 PM	0	0	0	0	0	**2**	1	**3**	0	0	0	0	0	**2**	0	**2**	5
05:30 PM	0	0	0	0	0	1	0	1	2	0	1	3	1	0	0	1	5
Total Volume	0	0	0	0	0	5	3	8	5	0	2	7	2	2	0	4	19
% App. Total	0	0	0		0	62.5	37.5		71.4	0	28.6		50	50	0		
PHF	.000	.000	.000	.000	.000	.625	.750	.667	.625	.000	.500	.583	.500	.250	.000	.500	.950

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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRPM
Site Code : 99916000
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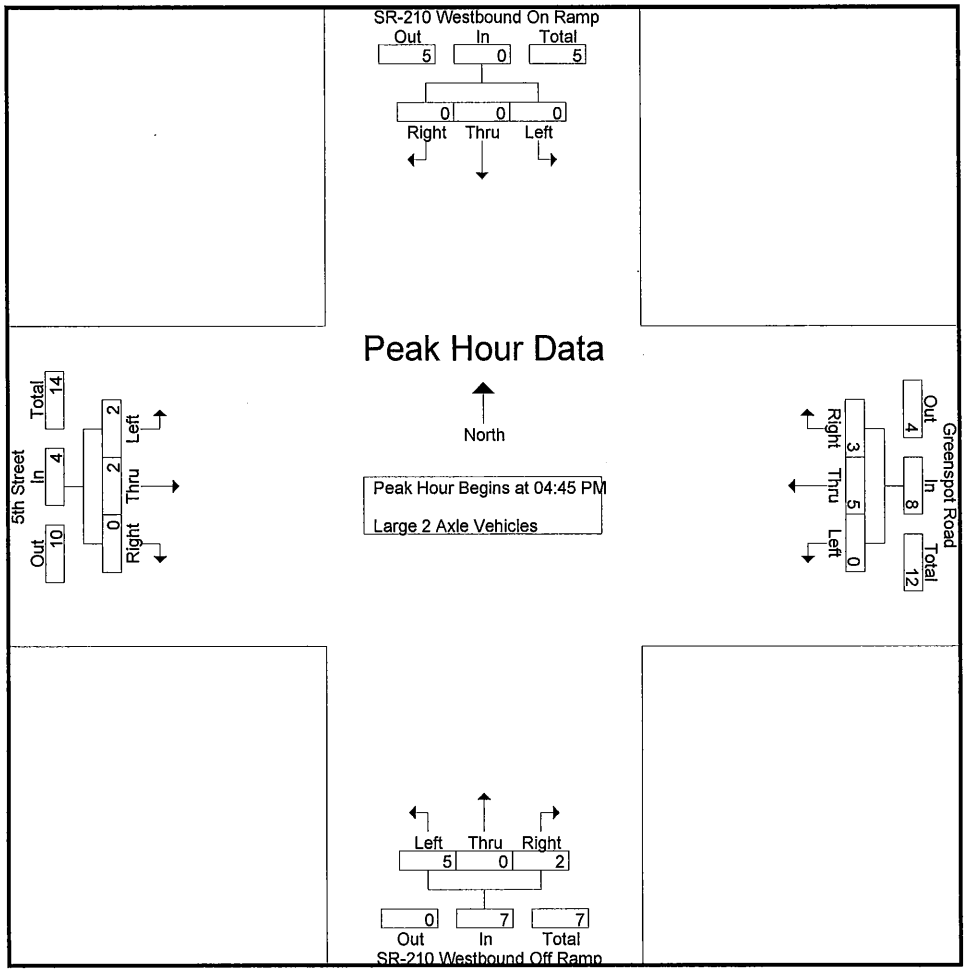

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	1	**1**	2	**2**	0	**1**	**3**	0	0	0	0
+15 mins.	0	0	0	0	0	1	1	2	1	0	0	1	**1**	0	0	1
+30 mins.	0	0	0	0	0	**2**	1	**3**	0	0	0	0	0	**2**	0	**2**
+45 mins.	0	0	0	0	0	1	0	1	2	0	1	3	1	0	0	1
Total Volume	0	0	0	0	0	5	3	8	5	0	2	7	2	2	0	4
% App. Total	0	0	0		0	62.5	37.5		71.4	0	28.6		50	50	0	
PHF	.000	.000	.000	.000	.000	.625	.750	.667	.625	.000	.500	.583	.500	.250	.000	.500

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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRPM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- 3 Axle Vehicles

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	3	0	0	3	0	0	0	0	3
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	1	2
04:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	2
Total	0	0	0	0	0	0	0	0	4	0	1	5	3	0	0	3	8
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
Total	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	1	2
Grand Total	0	0	0	0	0	0	0	0	5	0	1	6	4	0	0	4	10
Apprch %	0	0	0		0	0	0		83.3	0	16.7		100	0	0		
Total %	0	0	0	0	0	0	0	0	50	0	10	60	40	0	0	40	

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	**1**	0	0	**1**	**1**	0	0	**1**	**2**
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1	3
% App. Total	0	0	0		0	0	0		100	0	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.250	.000	.000	.250	.375

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City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRPM
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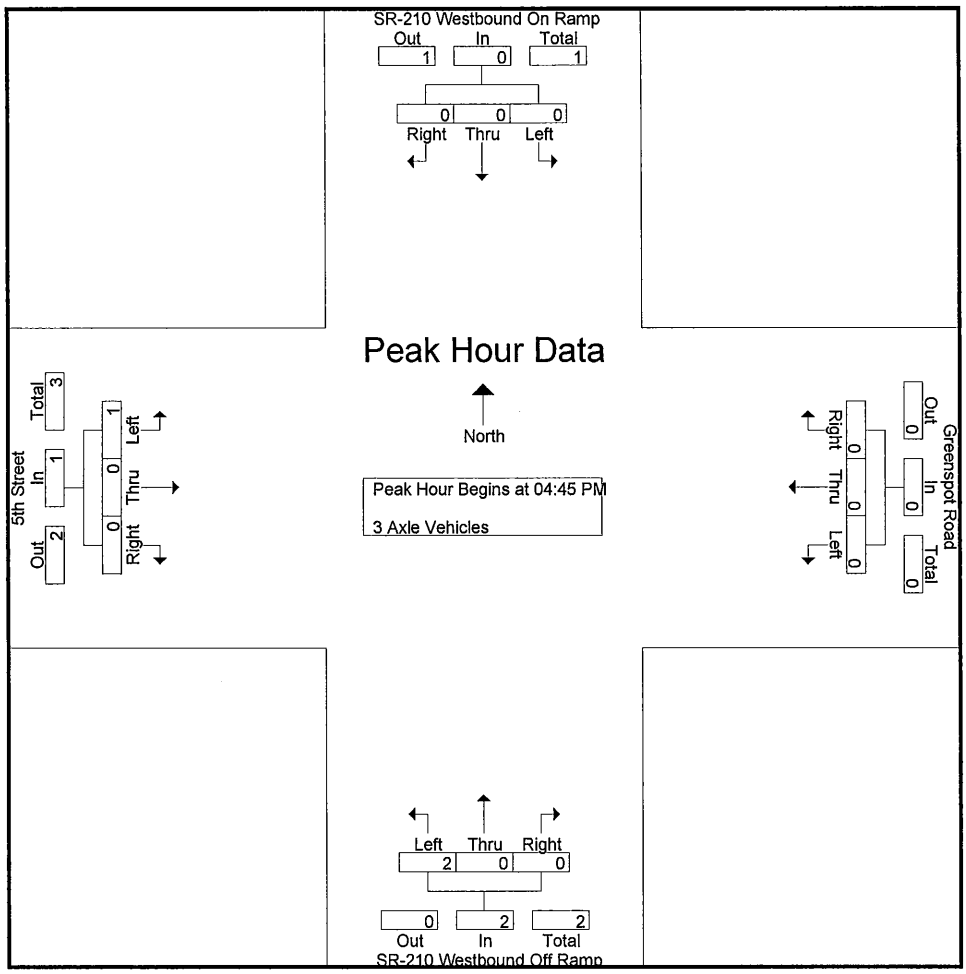

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	**1**	0	0	**1**	**1**	0	0	**1**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	2	0	0	2	1	0	0	1
% App. Total	0	0	0		0	0	0		100	0	0		100	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.500	.000	.000	.500	.250	.000	.000	.250

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Highland
N/S: SR-210 Westbound Ramps
E/W: 5th Street/Greenspot Road
Weather: Clear

File Name : HLD210WGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	1	1	0	2	3
04:15 PM	0	0	0	0	0	0	0	0	1	0	0	1	3	2	0	5	6
04:30 PM	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
04:45 PM	0	0	0	0	0	0	0	0	2	0	0	2	4	0	0	4	6
Total	0	0	0	0	0	0	0	0	4	0	1	5	8	3	0	11	16
05:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	4	0	0	4	6
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	2	0	0	2	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
05:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
Total	0	0	0	0	0	2	0	2	2	0	0	2	8	0	0	8	12
Grand Total	0	0	0	0	0	2	0	2	6	0	1	7	16	3	0	19	28
Apprch %	0	0	0		0	100	0		85.7	0	14.3		84.2	15.8	0		
Total %	0	0	0	0	0	7.1	0	7.1	21.4	0	3.6	25	57.1	10.7	0	67.9	

	SR-210 Westbound On Ramp Southbound				Greenspot Road Westbound				SR-210 Westbound Off Ramp Northbound				5th Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	**2**	0	0	**2**	**4**	0	0	**4**	**6**
05:00 PM	0	0	0	0	0	**1**	0	**1**	1	0	0	1	4	0	0	4	6
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	2	0	0	2	3
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
Total Volume	0	0	0	0	0	2	0	2	3	0	0	3	12	0	0	12	17
% App. Total	0	0	0		0	100	0		100	0	0		100	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.375	.000	.000	.375	.750	.000	.000	.750	.708

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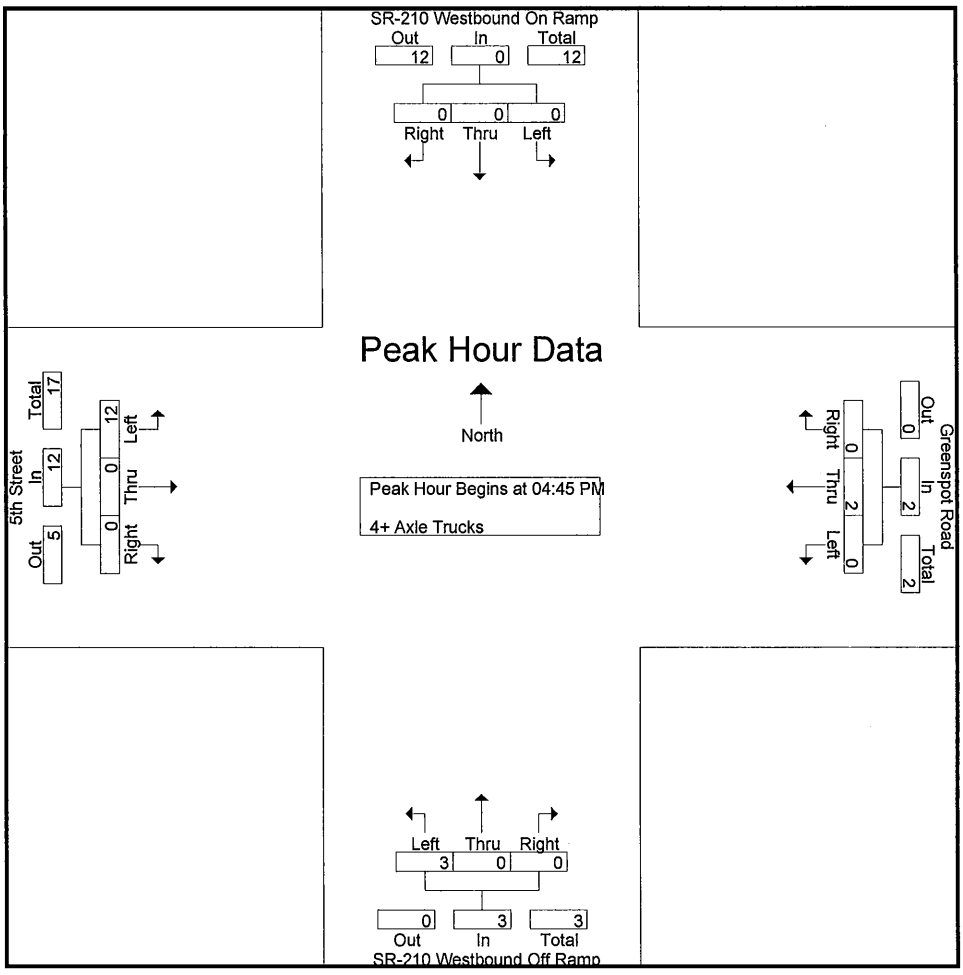
File Name : HLD210WGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	**2**	0	0	**2**	**4**	0	0	**4**
+15 mins.	0	0	0	0	0	**1**	0	**1**	1	0	0	1	4	0	0	4
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	2	0	0	2
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Total Volume	0	0	0	0	0	2	0	2	3	0	0	3	12	0	0	12
% App. Total	0	0	0		0	100	0		100	0	0		100	0	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.375	.000	.000	.375	.750	.000	.000	.750

3

Counts Unlimited
PO Box 1178
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(951) 268-6268

City of Highland
N/S: Lowes Shopping Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	1	310	0	311	12	0	1	13	0	104	16	120	444
07:15 AM	0	0	0	0	3	379	0	382	16	0	6	22	0	154	9	163	567
07:30 AM	0	0	0	0	0	412	0	412	11	0	1	12	1	151	17	169	593
07:45 AM	0	0	0	0	4	438	0	442	17	0	4	21	0	144	12	156	619
Total	0	0	0	0	8	1539	0	1547	56	0	12	68	1	553	54	608	2223
08:00 AM	0	0	0	0	6	378	0	384	14	0	1	15	0	166	25	191	590
08:15 AM	0	0	0	0	7	388	0	395	17	0	6	23	0	177	25	202	620
08:30 AM	0	0	0	0	7	267	0	274	31	0	3	34	0	189	32	221	529
08:45 AM	0	0	0	0	4	198	0	202	19	0	13	32	1	130	28	159	393
Total	0	0	0	0	24	1231	0	1255	81	0	23	104	1	662	110	773	2132
Grand Total	0	0	0	0	32	2770	0	2802	137	0	35	172	2	1215	164	1381	4355
Apprch %	0	0	0		1.1	98.9	0		79.7	0	20.3		0.1	88	11.9		
Total %	0	0	0	0	0.7	63.6	0	64.3	3.1	0	0.8	3.9	0	27.9	3.8	31.7	
Passenger Vehicles	0	0	0	0	32	2735	0	2767	135	0	34	169	2	1150	161	1313	4249
% Passenger Vehicles	0	0	0	0	100	98.7	0	98.8	98.5	0	97.1	98.3	100	94.7	98.2	95.1	97.6
Large 2 Axle Vehicles	0	0	0	0	0	16	0	16	2	0	1	3	0	34	3	37	56
% Large 2 Axle Vehicles	0	0	0	0	0	0.6	0	0.6	1.5	0	2.9	1.7	0	2.8	1.8	2.7	1.3
3 Axle Vehicles	0	0	0	0	0	4	0	4	0	0	0	0	0	12	0	12	16
% 3 Axle Vehicles	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	1	0	0.9	0.4
4+ Axle Trucks	0	0	0	0	0	15	0	15	0	0	0	0	0	19	0	19	34
% 4+ Axle Trucks	0	0	0	0	0	0.5	0	0.5	0	0	0	0	0	1.6	0	1.4	0.8

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	412	0	412	11	0	1	12	**1**	151	17	169	593
07:45 AM	0	0	0	0	4	**438**	0	**442**	**17**	0	**4**	21	0	144	12	156	619
08:00 AM	0	0	0	0	6	378	0	384	14	0	1	15	0	166	**25**	191	590
08:15 AM	0	0	0	0	**7**	388	0	395	17	0	**6**	**23**	0	**177**	25	**202**	**620**
Total Volume	0	0	0	0	17	1616	0	1633	59	0	12	71	1	638	79	718	2422
% App. Total	0	0	0		1	99	0		83.1	0	16.9		0.1	88.9	11		
PHF	.000	.000	.000	.000	.607	.922	.000	.924	.868	.000	.500	.772	.250	.901	.790	.889	.977

Counts Unlimited
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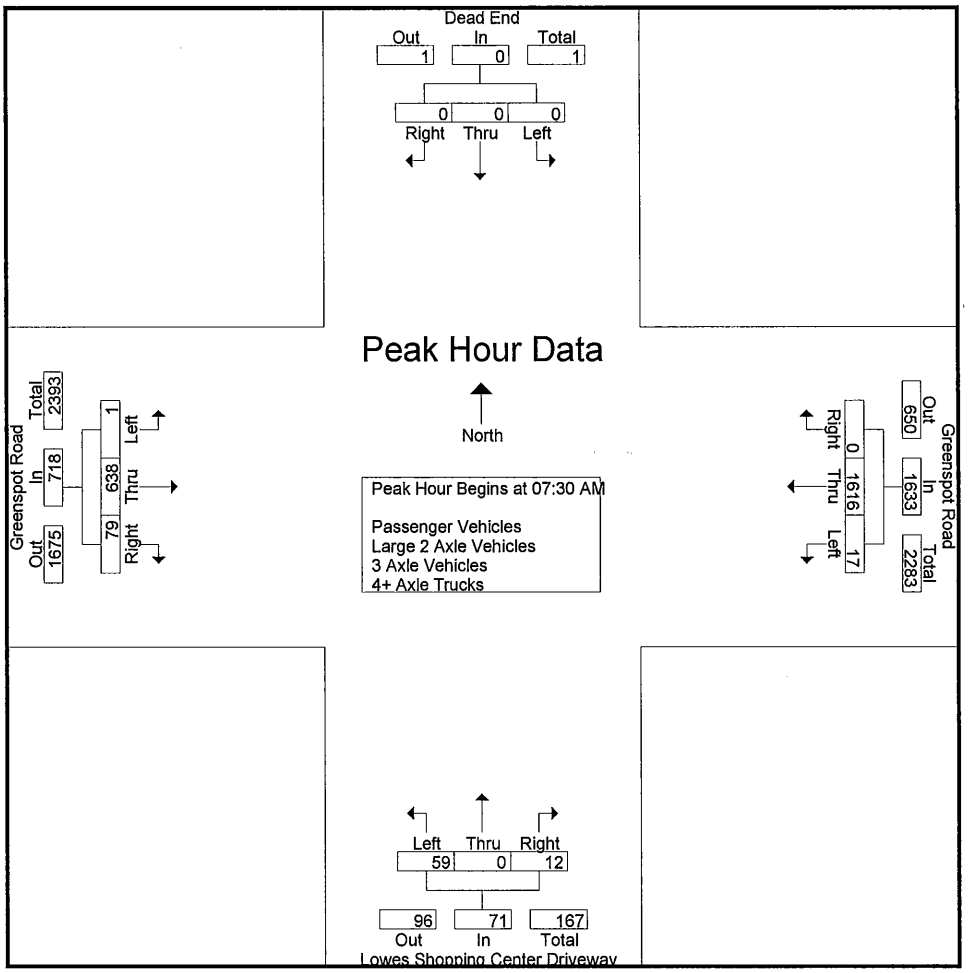
City of Highland
N/S: Lowes Shopping Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:30 AM				08:00 AM				08:00 AM			
+0 mins.	0	0	0	0	0	412	0	412	14	0	1	15	0	166	25	191
+15 mins.	0	0	0	0	4	**438**	0	**442**	17	0	6	23	0	177	25	202
+30 mins.	0	0	0	0	6	378	0	384	**31**	0	3	**34**	0	**189**	**32**	**221**
+45 mins.	0	0	0	0	**7**	388	0	395	19	0	**13**	32	**1**	130	28	159
Total Volume	0	0	0	0	17	1616	0	1633	81	0	23	104	1	662	110	773
% App. Total	0	0	0		1	99	0		77.9	0	22.1		0.1	85.6	14.2	
PHF	.000	.000	.000	.000	.607	.922	.000	.924	.653	.000	.442	.765	.250	.876	.859	.874

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City of Highland
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Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	1	307	0	308	12	0	1	13	0	96	16	112	433
07:15 AM	0	0	0	0	3	374	0	377	16	0	6	22	0	146	9	155	554
07:30 AM	0	0	0	0	0	407	0	407	11	0	1	12	1	148	17	166	585
07:45 AM	0	0	0	0	4	434	0	438	17	0	4	21	0	139	12	151	610
Total	0	0	0	0	8	1522	0	1530	56	0	12	68	1	529	54	584	2182
08:00 AM	0	0	0	0	6	371	0	377	14	0	1	15	0	155	23	178	570
08:15 AM	0	0	0	0	7	382	0	389	16	0	6	22	0	162	25	187	598
08:30 AM	0	0	0	0	7	262	0	269	30	0	3	33	0	178	31	209	511
08:45 AM	0	0	0	0	4	198	0	202	19	0	12	31	1	126	28	155	388
Total	0	0	0	0	24	1213	0	1237	79	0	22	101	1	621	107	729	2067
Grand Total	0	0	0	0	32	2735	0	2767	135	0	34	169	2	1150	161	1313	4249
Apprch %	0	0	0		1.2	98.8	0		79.9	0	20.1		0.2	87.6	12.3		
Total %	0	0	0	0	0.8	64.4	0	65.1	3.2	0	0.8	4	0	27.1	3.8	30.9	

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	407	0	407	11	0	1	12	**1**	148	17	166	585
07:45 AM	0	0	0	0	4	**434**	0	**438**	**17**	0	4	21	0	139	12	151	**610**
08:00 AM	0	0	0	0	6	371	0	377	14	0	1	15	0	155	23	178	570
08:15 AM	0	0	0	0	**7**	382	0	389	16	0	**6**	**22**	0	**162**	**25**	**187**	598
Total Volume	0	0	0	0	17	1594	0	1611	58	0	12	70	1	604	77	682	2363
% App. Total	0	0	0		1.1	98.9	0		82.9	0	17.1		0.1	88.6	11.3		
PHF	.000	.000	.000	.000	.607	.918	.000	.920	.853	.000	.500	.795	.250	.932	.770	.912	.968

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File Name : HLDLOGRAM
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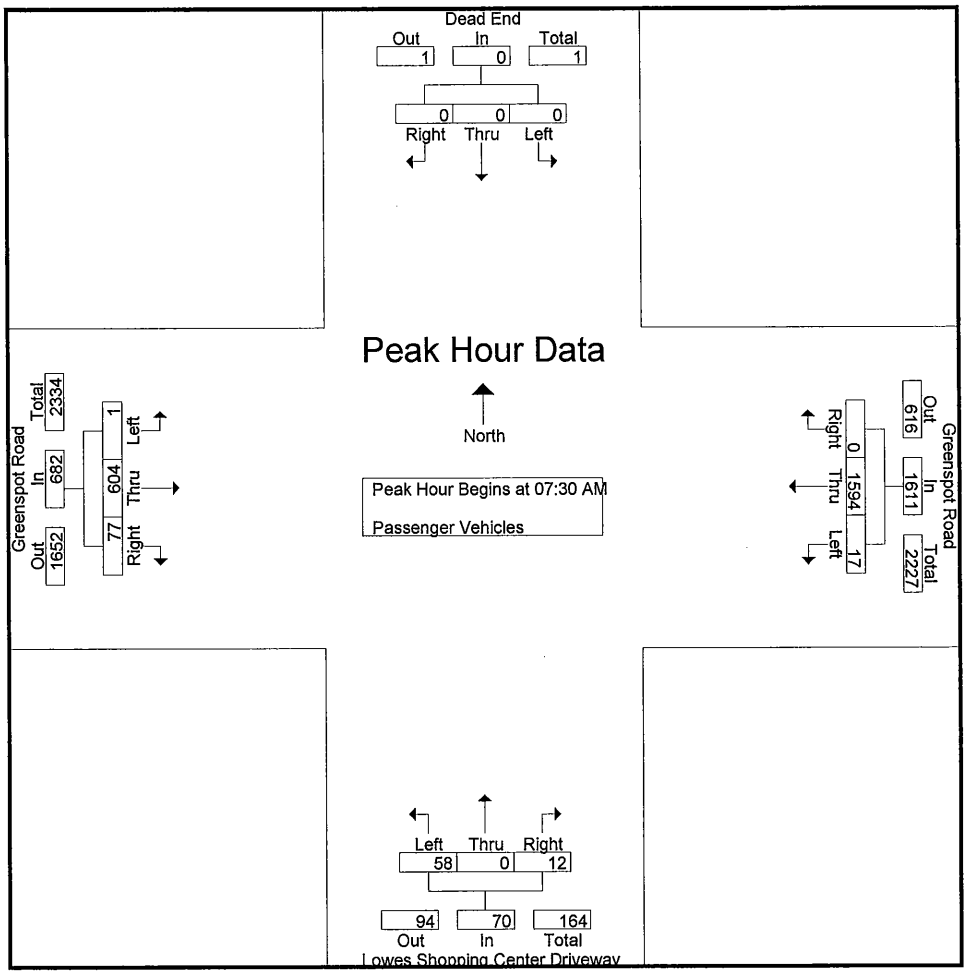
Page No : 2



Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	407	0	407	11	0	1	12	**1**	148	17	166
+15 mins.	0	0	0	0	4	**434**	0	**438**	**17**	0	4	21	0	139	12	151
+30 mins.	0	0	0	0	6	371	0	377	14	0	1	15	0	155	23	178
+45 mins.	0	0	0	0	**7**	382	0	389	16	0	**6**	**22**	0	**162**	**25**	**187**
Total Volume	0	0	0	0	17	1594	0	1611	58	0	12	70	1	604	77	682
% App. Total	0	0	0		1.1	98.9	0		82.9	0	17.1		0.1	88.6	11.3	
PHF	.000	.000	.000	.000	.607	.918	.000	.920	.853	.000	.500	.795	.250	.932	.770	.912

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City of Highland
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E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	6	0	6	8
07:15 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	5	0	5	7
07:30 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
Total	0	0	0	0	0	9	0	9	0	0	0	0	0	14	0	14	23
08:00 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	5	2	7	11
08:15 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	6	0	6	8
08:30 AM	0	0	0	0	0	2	0	2	1	0	0	1	0	7	1	8	11
08:45 AM	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	3
Total	0	0	0	0	0	7	0	7	2	0	1	3	0	20	3	23	33
Grand Total	0	0	0	0	0	16	0	16	2	0	1	3	0	34	3	37	56
Apprch %	0	0	0		0	100	0		66.7	0	33.3		0	91.9	8.1		
Total %	0	0	0	0	0	28.6	0	28.6	3.6	0	1.8	5.4	0	60.7	5.4	66.1	

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
08:00 AM	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	5	**2**	**7**	**11**
08:15 AM	0	0	0	0	0	1	0	1	**1**	0	0	**1**	0	**6**	0	6	8
Total Volume	0	0	0	0	0	10	0	10	1	0	0	1	0	14	2	16	27
% App. Total	0	0	0		0	100	0		100	0	0		0	87.5	12.5		
PHF	.000	.000	.000	.000	.000	.625	.000	.625	.250	.000	.000	.250	.000	.583	.250	.571	.614

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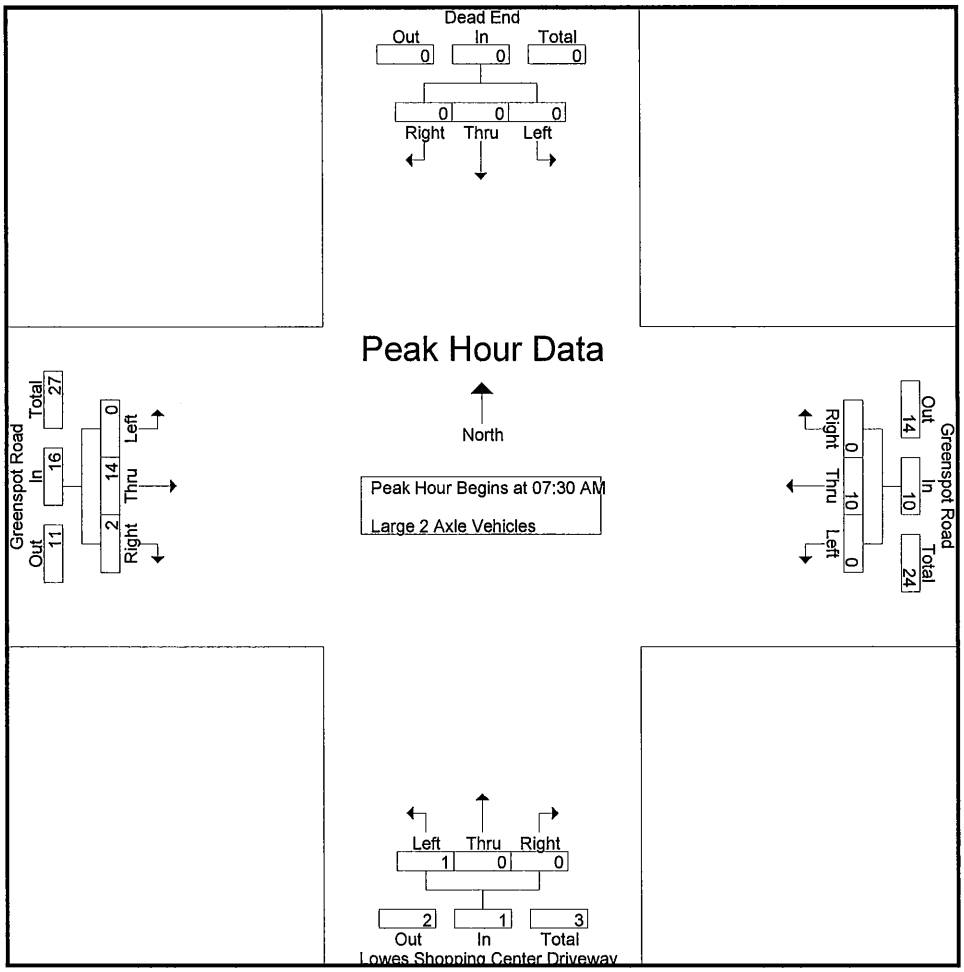

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3
+30 mins.	0	0	0	0	0	**4**	0	**4**	0	0	0	0	0	5	**2**	**7**
+45 mins.	0	0	0	0	0	1	0	1	**1**	0	0	**1**	0	**6**	0	6
Total Volume	0	0	0	0	0	10	0	10	1	0	0	1	0	14	2	16
% App. Total	0	0	0		0	100	0		100	0	0		0	87.5	12.5	
PHF	.000	.000	.000	.000	.000	.625	.000	.625	.250	.000	.000	.250	.000	.583	.250	.571

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City of Highland
N/S: Lowes Shopping Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
08:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	3	0	3	0	0	0	0	0	8	0	8	11
Grand Total	0	0	0	0	0	4	0	4	0	0	0	0	0	12	0	12	16
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	25	0	25	0	0	0	0	0	75	0	75	

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	5	0	5	6
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.313	.000	.313	.375

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City of Highland
N/S: Lowes Shopping Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRAM
Site Code : 99916000
Start Date : 12/6/2016
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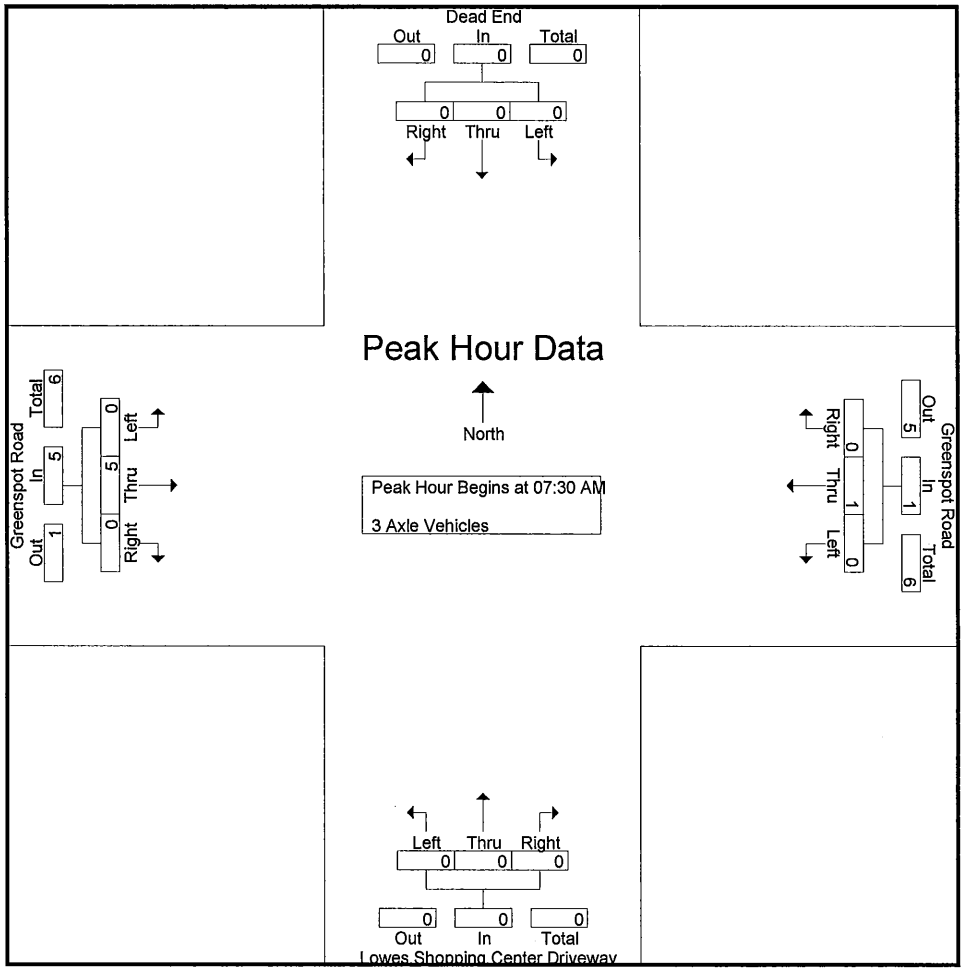

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	0	**4**
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	5	0	5
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.313	.000	.313

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Groups Printed- 4+ Axle Trucks

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
07:15 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
07:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
Total	0	0	0	0	0	7	0	7	0	0	0	0	0	6	0	6	13
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	6	0	6	8
08:15 AM	0	0	0	0	0	5	0	5	0	0	0	0	0	5	0	5	10
08:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	8	0	8	0	0	0	0	0	13	0	13	21
Grand Total	0	0	0	0	0	15	0	15	0	0	0	0	0	19	0	19	34
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	44.1	0	44.1	0	0	0	0	0	55.9	0	55.9	

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	**6**	0	**6**	8
08:15 AM	0	0	0	0	0	**5**	0	**5**	0	0	0	0	0	5	0	5	**10**
Total Volume	0	0	0	0	0	11	0	11	0	0	0	0	0	15	0	15	26
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.550	.000	.550	.000	.000	.000	.000	.000	.625	.000	.625	.650

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E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRAM
Site Code : 99916000
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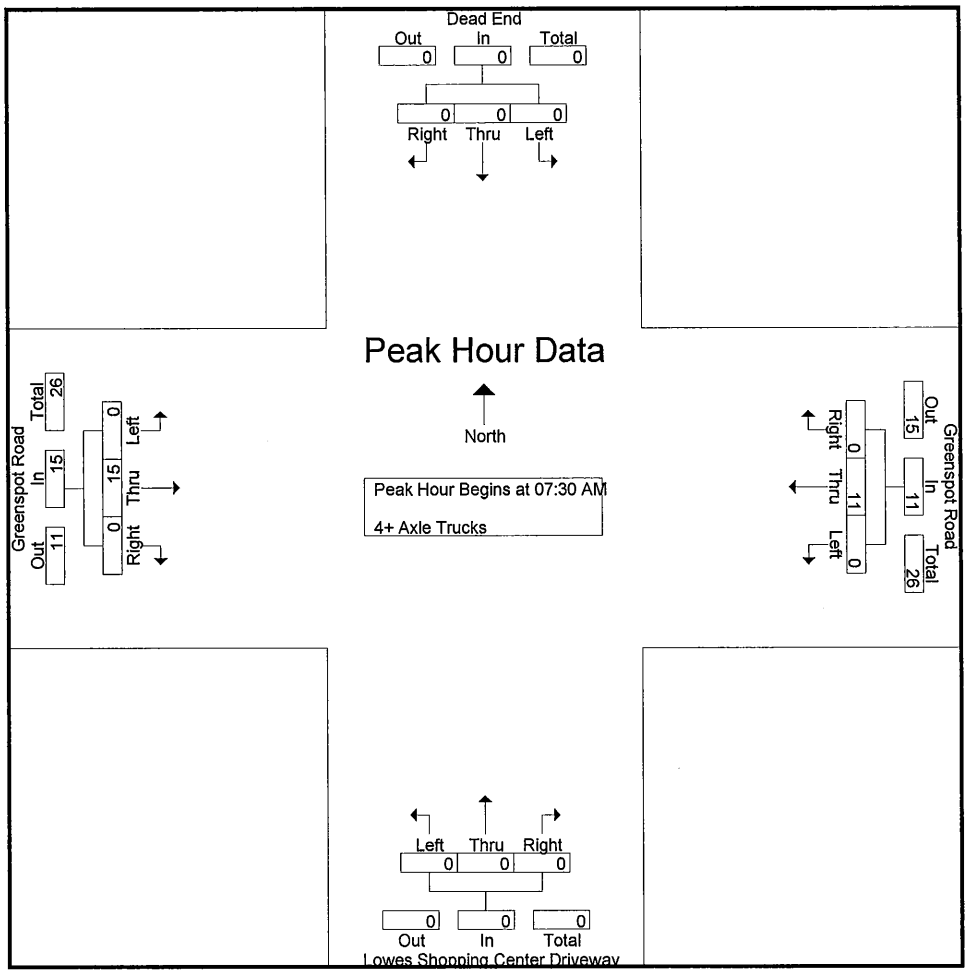

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	**6**	0	**6**
+45 mins.	0	0	0	0	0	**5**	0	**5**	0	0	0	0	0	5	0	5
Total Volume	0	0	0	0	0	11	0	11	0	0	0	0	0	15	0	15
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.550	.000	.550	.000	.000	.000	.000	.000	.625	.000	.625

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File Name : HLDLOGRPM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	10	210	0	220	41	0	6	47	0	274	35	309	576
04:15 PM	0	0	0	0	8	188	0	196	45	0	7	52	1	305	31	337	585
04:30 PM	0	0	0	0	13	187	0	200	42	0	13	55	0	279	38	317	572
04:45 PM	0	0	0	0	8	178	0	186	30	0	12	42	0	333	26	359	587
Total	0	0	0	0	39	763	0	802	158	0	38	196	1	1191	130	1322	2320
05:00 PM	0	0	0	0	8	187	0	195	26	0	15	41	0	323	42	365	601
05:15 PM	0	0	0	0	8	198	0	206	30	0	6	36	0	383	37	420	662
05:30 PM	0	0	0	0	5	202	0	207	43	0	18	61	0	360	32	392	660
05:45 PM	0	0	0	0	8	182	0	190	26	0	13	39	0	322	22	344	573
Total	0	0	0	0	29	769	0	798	125	0	52	177	0	1388	133	1521	2496
Grand Total	0	0	0	0	68	1532	0	1600	283	0	90	373	1	2579	263	2843	4816
Apprch %	0	0	0		4.2	95.8	0		75.9	0	24.1		0	90.7	9.3		
Total %	0	0	0	0	1.4	31.8	0	33.2	5.9	0	1.9	7.7	0	53.6	5.5	59	
Passenger Vehicles	0	0	0	0	68	1513	0	1581	281	0	90	371	1	2561	260	2822	4774
% Passenger Vehicles	0	0	0	0	100	98.8	0	98.8	99.3	0	100	99.5	100	99.3	98.9	99.3	99.1
Large 2 Axle Vehicles	0	0	0	0	0	15	0	15	2	0	0	2	0	13	3	16	33
% Large 2 Axle Vehicles	0	0	0	0	0	1	0	0.9	0.7	0	0	0.5	0	0.5	1.1	0.6	0.7
3 Axle Vehicles	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
% 3 Axle Vehicles	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	3	0	3	0	0	0	0	0	4	0	4	7
% 4+ Axle Trucks	0	0	0	0	0	0.2	0	0.2	0	0	0	0	0	0.2	0	0.1	0.1

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	**8**	178	0	186	30	0	12	42	0	333	26	359	587
05:00 PM	0	0	0	0	8	187	0	195	26	0	15	41	0	323	**42**	365	601
05:15 PM	0	0	0	0	8	198	0	206	30	0	6	36	0	**383**	37	**420**	**662**
05:30 PM	0	0	0	0	5	**202**	0	**207**	**43**	0	**18**	**61**	0	360	32	392	660
Total Volume	0	0	0	0	29	765	0	794	129	0	51	180	0	1399	137	1536	2510
% App. Total	0	0	0		3.7	96.3	0		71.7	0	28.3		0	91.1	8.9		
PHF	.000	.000	.000	.000	.906	.947	.000	.959	.750	.000	.708	.738	.000	.913	.815	.914	.948

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E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRPM
Site Code : 99916000
Start Date : 12/6/2016
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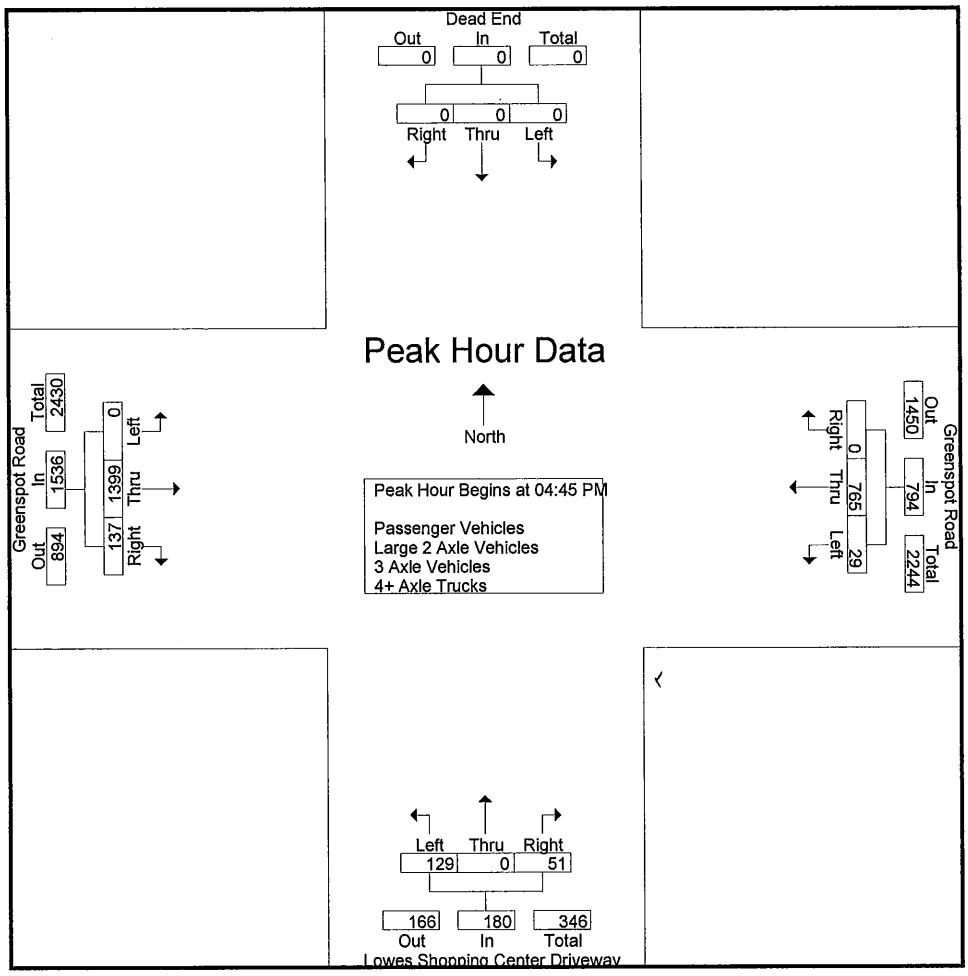

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:00 PM				04:45 PM			
+0 mins.	0	0	0	0	10	**210**	0	**220**	41	0	6	47	0	333	26	359
+15 mins.	0	0	0	0	8	188	0	196	**45**	0	7	52	0	323	**42**	365
+30 mins.	0	0	0	0	**13**	187	0	200	42	0	**13**	**55**	0	**383**	37	**420**
+45 mins.	0	0	0	0	8	178	0	186	30	0	12	42	0	360	32	392
Total Volume	0	0	0	0	39	763	0	802	158	0	38	196	0	1399	137	1536
% App. Total	0	0	0		4.9	95.1	0		80.6	0	19.4		0	91.1	8.9	
PHF	.000	.000	.000	.000	.750	.908	.000	.911	.878	.000	.731	.891	.000	.913	.815	.914

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Groups Printed- Passenger Vehicles

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	10	209	0	219	40	0	6	46	0	270	33	303	568
04:15 PM	0	0	0	0	8	185	0	193	44	0	7	51	1	301	31	333	577
04:30 PM	0	0	0	0	13	184	0	197	42	0	13	55	0	275	37	312	564
04:45 PM	0	0	0	0	8	176	0	184	30	0	12	42	0	333	26	359	585
Total	0	0	0	0	39	754	0	793	156	0	38	194	1	1179	127	1307	2294
05:00 PM	0	0	0	0	8	183	0	191	26	0	15	41	0	322	42	364	596
05:15 PM	0	0	0	0	8	195	0	203	30	0	6	36	0	381	37	418	657
05:30 PM	0	0	0	0	5	201	0	206	43	0	18	61	0	359	32	391	658
05:45 PM	0	0	0	0	8	180	0	188	26	0	13	39	0	320	22	342	569
Total	0	0	0	0	29	759	0	788	125	0	52	177	0	1382	133	1515	2480
Grand Total	0	0	0	0	68	1513	0	1581	281	0	90	371	1	2561	260	2822	4774
Apprch %	0	0	0		4.3	95.7	0		75.7	0	24.3		0	90.8	9.2		
Total %	0	0	0	0	1.4	31.7	0	33.1	5.9	0	1.9	7.8	0	53.6	5.4	59.1	

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	**8**	176	0	184	30	0	12	42	0	333	26	359	585
05:00 PM	0	0	0	0	8	183	0	191	26	0	15	41	0	322	**42**	364	596
05:15 PM	0	0	0	0	8	195	0	203	30	0	6	36	0	**381**	37	**418**	657
05:30 PM	0	0	0	0	5	**201**	0	**206**	**43**	0	**18**	**61**	0	359	32	391	**658**
Total Volume	0	0	0	0	29	755	0	784	129	0	51	180	0	1395	137	1532	2496
% App. Total	0	0	0		3.7	96.3	0		71.7	0	28.3		0	91.1	8.9		
PHF	.000	.000	.000	.000	.906	.939	.000	.951	.750	.000	.708	.738	.000	.915	.815	.916	.948

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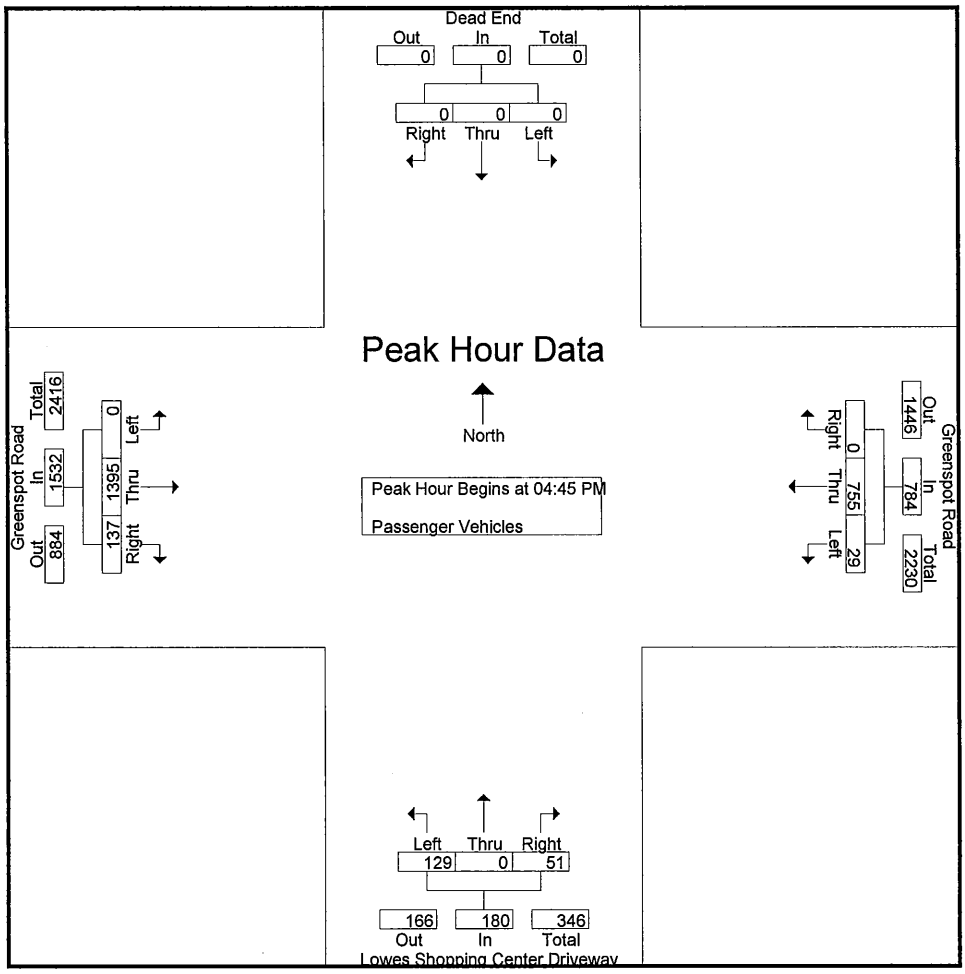

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	**8**	176	0	184	30	0	12	42	0	333	26	359
+15 mins.	0	0	0	0	8	183	0	191	26	0	15	41	0	322	**42**	364
+30 mins.	0	0	0	0	8	195	0	203	30	0	6	36	0	**381**	37	**418**
+45 mins.	0	0	0	0	5	**201**	0	**206**	**43**	0	**18**	**61**	0	359	32	391
Total Volume	0	0	0	0	29	755	0	784	129	0	51	180	0	1395	137	1532
% App. Total	0	0	0		3.7	96.3	0		71.7	0	28.3		0	91.1	8.9	
PHF	.000	.000	.000	.000	.906	.939	.000	.951	.750	.000	.708	.738	.000	.915	.815	.916

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Groups Printed- Large 2 Axle Vehicles

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	3	2	5	7
04:15 PM	0	0	0	0	0	3	0	3	1	0	0	1	0	2	0	2	6
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	1	3	5
04:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	8	0	8	2	0	0	2	0	7	3	10	20
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
05:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
05:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
Total	0	0	0	0	0	7	0	7	0	0	0	0	0	6	0	6	13
Grand Total	0	0	0	0	0	15	0	15	2	0	0	2	0	13	3	16	33
Apprch %	0	0	0		0	100	0		100	0	0		0	81.2	18.8		
Total %	0	0	0	0	0	45.5	0	45.5	6.1	0	0	6.1	0	39.4	9.1	48.5	

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	2
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1	3
05:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	**2**	0	**2**	**4**
05:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Total Volume	0	0	0	0	0	7	0	7	0	0	0	0	0	4	0	4	11
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.875	.000	.875	.000	.000	.000	.000	.000	.500	.000	.500	.688

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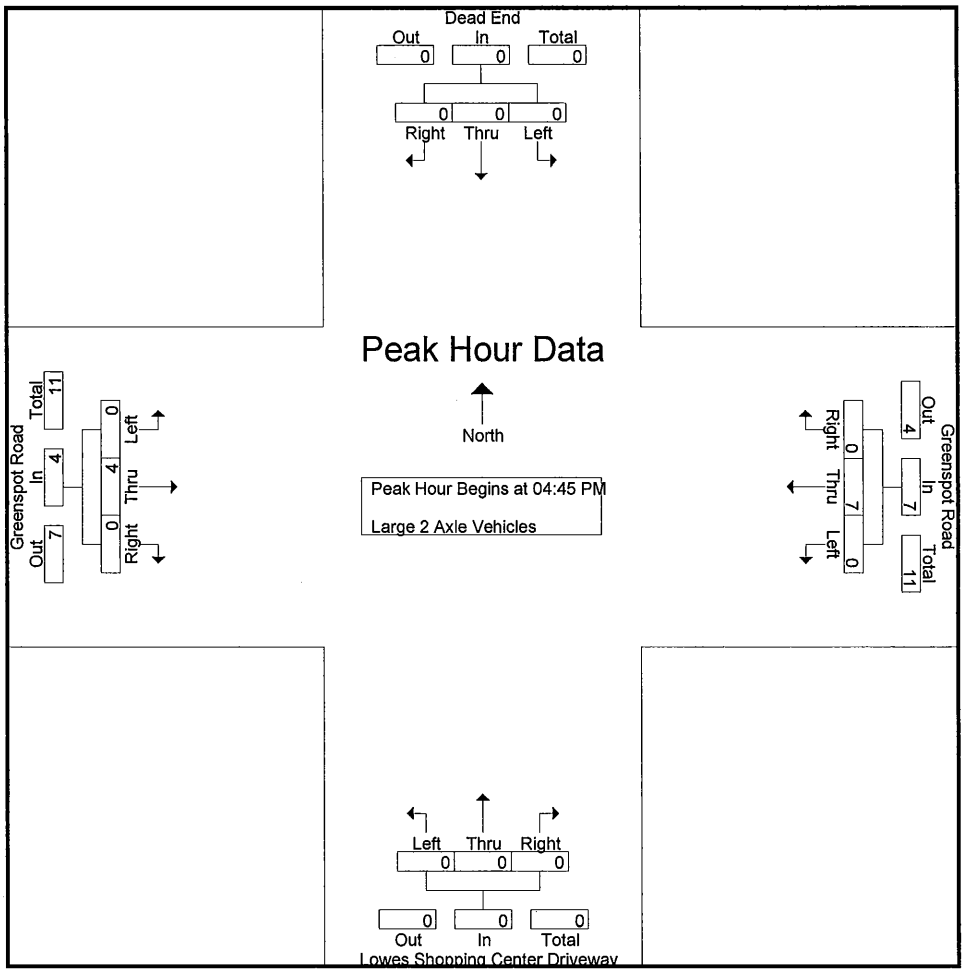

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	**2**	0	**2**
+45 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
Total Volume	0	0	0	0	0	7	0	7	0	0	0	0	0	4	0	4
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.875	.000	.875	.000	.000	.000	.000	.000	.500	.000	.500

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City of Highland
N/S: Lowes Shopping Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	50	0	50	0	0	0	0	0	50	0	50	

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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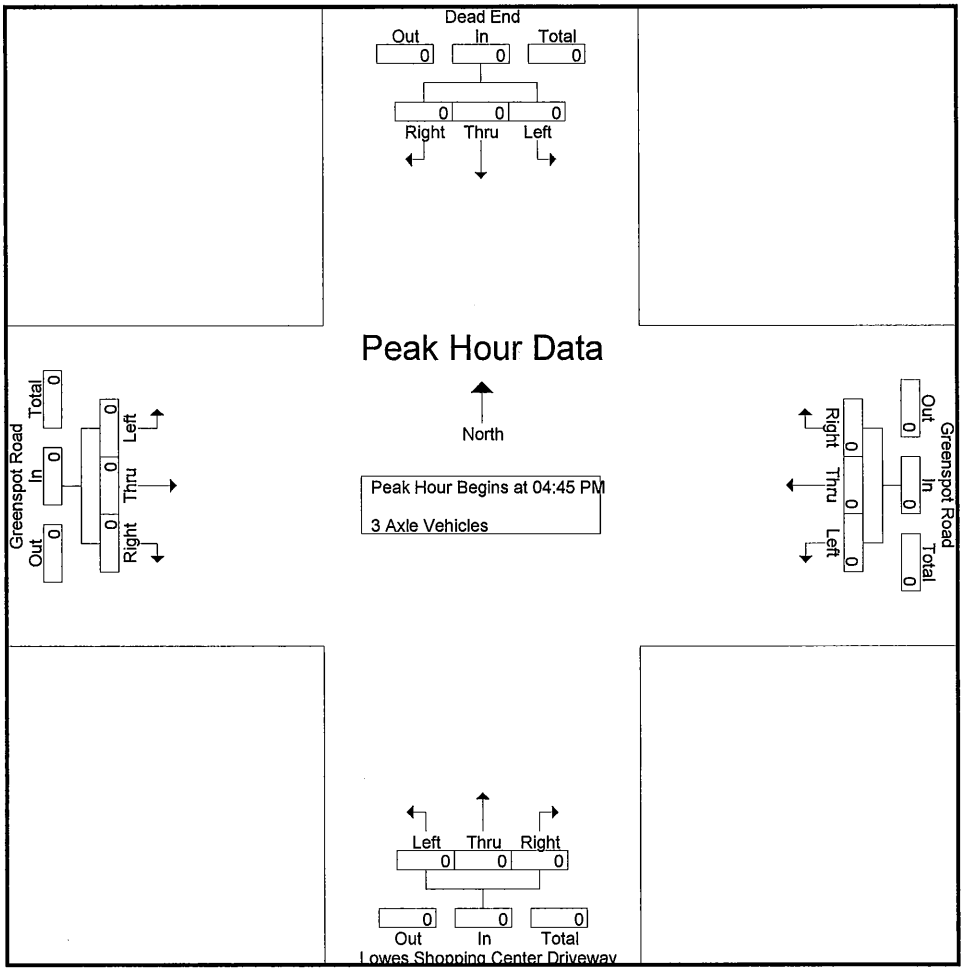
City of Highland
N/S: Lowes Shopping Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
N/S: Lowes Shopping Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
Grand Total	0	0	0	0	0	3	0	3	0	0	0	0	0	4	0	4	7
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	42.9	0	42.9	0	0	0	0	0	57.1	0	57.1	

	Dead End Southbound				Greenspot Road Westbound				Lowes Shopping Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0	**2**
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.000	.000	.000	.000	.375

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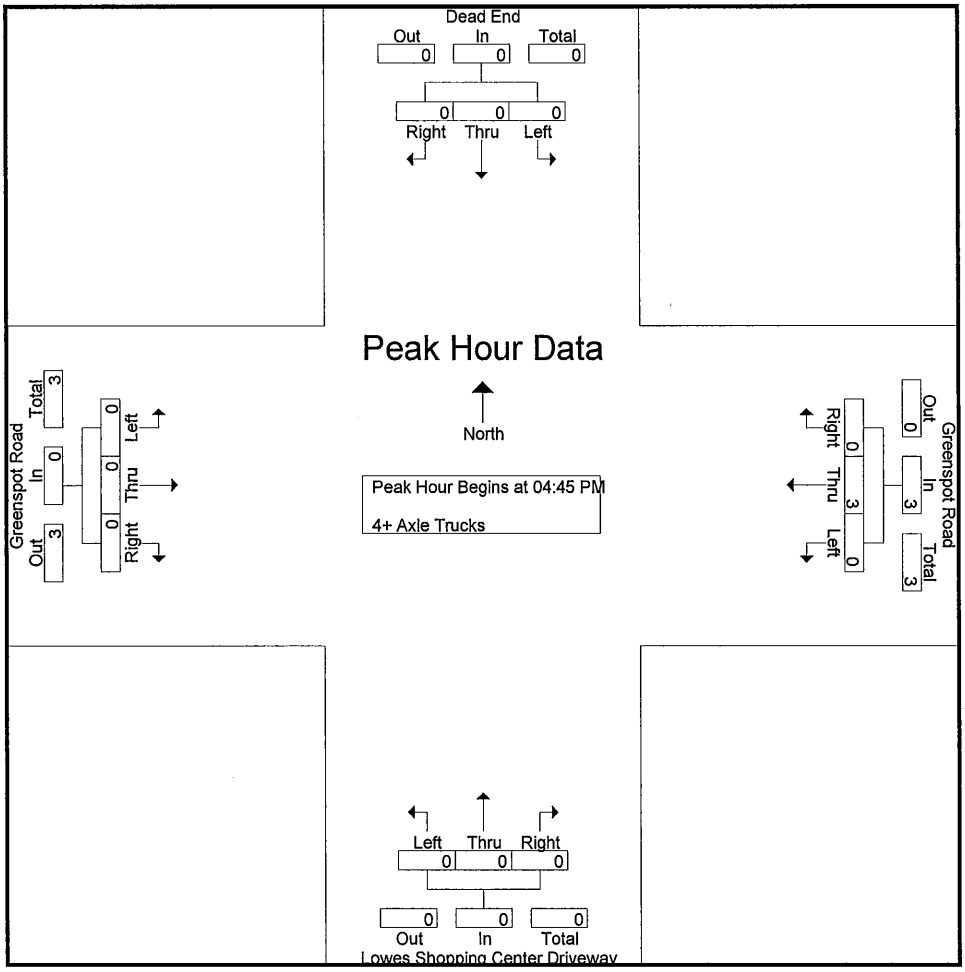
City of Highland
N/S: Lowes Shopping Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDLOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	1	0	**1**	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.375	.000	.375	.000	.000	.000	.000	.000	.000	.000	.000

4

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City of Highland
N/S: Staples Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	7	303	0	310	17	0	2	19	0	90	11	101	430
07:15 AM	0	0	0	0	11	360	0	371	17	0	0	17	0	136	26	162	550
07:30 AM	0	0	0	0	9	392	0	401	17	0	4	21	0	137	17	154	576
07:45 AM	0	0	0	0	16	418	1	435	23	0	8	31	0	138	11	149	615
Total	0	0	0	0	43	1473	1	1517	74	0	14	88	0	501	65	566	2171
08:00 AM	0	0	0	0	12	378	1	391	13	0	6	19	0	140	18	158	568
08:15 AM	0	0	0	0	17	373	0	390	17	0	6	23	0	157	25	182	595
08:30 AM	0	0	0	0	12	273	0	285	13	0	8	21	0	167	20	187	493
08:45 AM	0	0	0	0	14	200	0	214	11	0	6	17	0	129	23	152	383
Total	0	0	0	0	55	1224	1	1280	54	0	26	80	0	593	86	679	2039
Grand Total	0	0	0	0	98	2697	2	2797	128	0	40	168	0	1094	151	1245	4210
Apprch %	0	0	0		3.5	96.4	0.1		76.2	0	23.8		0	87.9	12.1		
Total %	0	0	0	0	2.3	64.1	0	66.4	3	0	1	4	0	26	3.6	29.6	
Passenger Vehicles	0	0	0	0	93	2663	2	2758	121	0	40	161	0	1033	145	1178	4097
% Passenger Vehicles	0	0	0	0	94.9	98.7	100	98.6	94.5	0	100	95.8	0	94.4	96	94.6	97.3
Large 2 Axle Vehicles	0	0	0	0	1	20	0	21	2	0	0	2	0	32	4	36	59
% Large 2 Axle Vehicles	0	0	0	0	1	0.7	0	0.8	1.6	0	0	1.2	0	2.9	2.6	2.9	1.4
3 Axle Vehicles	0	0	0	0	0	3	0	3	2	0	0	2	0	9	2	11	16
% 3 Axle Vehicles	0	0	0	0	0	0.1	0	0.1	1.6	0	0	1.2	0	0.8	1.3	0.9	0.4
4+ Axle Trucks	0	0	0	0	4	11	0	15	3	0	0	3	0	20	0	20	38
% 4+ Axle Trucks	0	0	0	0	4.1	0.4	0	0.5	2.3	0	0	1.8	0	1.8	0	1.6	0.9

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	9	392	0	401	17	0	4	21	0	137	17	154	576
07:45 AM	0	0	0	0	16	**418**	**1**	**435**	**23**	0	**8**	**31**	0	138	11	149	**615**
08:00 AM	0	0	0	0	12	378	1	391	13	0	6	19	0	140	18	158	568
08:15 AM	0	0	0	0	**17**	373	0	390	17	0	6	23	0	**157**	**25**	**182**	595
Total Volume	0	0	0	0	54	1561	2	1617	70	0	24	94	0	572	71	643	2354
% App. Total	0	0	0		3.3	96.5	0.1		74.5	0	25.5		0	89	11		
PHF	.000	.000	.000	.000	.794	.934	.500	.929	.761	.000	.750	.758	.000	.911	.710	.883	.957

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City of Highland
N/S: Staples Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRAM
Site Code : 99916000
Start Date : 12/6/2016
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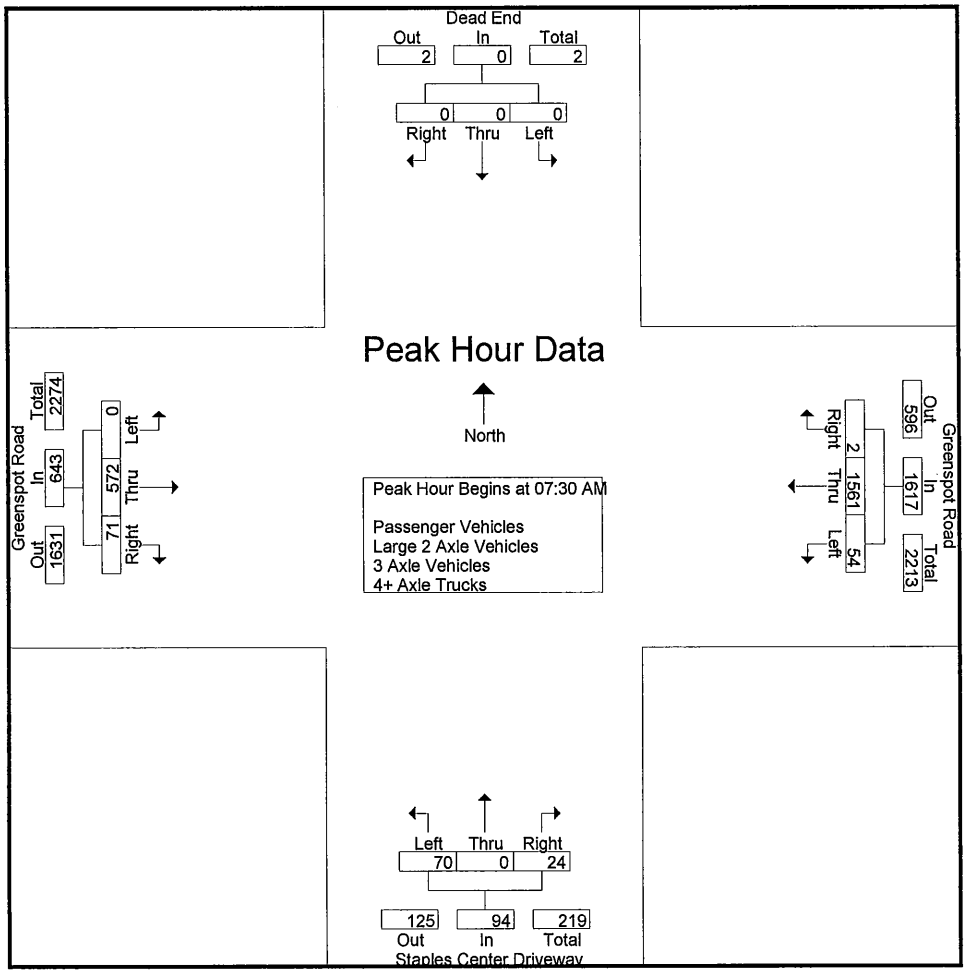

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:30 AM				07:30 AM				08:00 AM			
+0 mins.	0	0	0	0	9	392	0	401	17	0	4	21	0	140	18	158
+15 mins.	0	0	0	0	16	**418**	**1**	**435**	**23**	0	**8**	**31**	0	157	**25**	182
+30 mins.	0	0	0	0	12	378	1	391	13	0	6	19	0	**167**	20	**187**
+45 mins.	0	0	0	0	**17**	373	0	390	17	0	6	23	0	129	23	152
Total Volume	0	0	0	0	54	1561	2	1617	70	0	24	94	0	593	86	679
% App. Total	0	0	0		3.3	96.5	0.1		74.5	0	25.5		0	87.3	12.7	
PHF	.000	.000	.000	.000	.794	.934	.500	.929	.761	.000	.750	.758	.000	.888	.860	.908

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City of Highland
N/S: Staples Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	7	300	0	307	17	0	2	19	0	83	11	94	420
07:15 AM	0	0	0	0	11	358	0	369	16	0	0	16	0	126	26	152	537
07:30 AM	0	0	0	0	9	382	0	391	16	0	4	20	0	134	16	150	561
07:45 AM	0	0	0	0	15	414	1	430	23	0	8	31	0	136	10	146	607
Total	0	0	0	0	42	1454	1	1497	72	0	14	86	0	479	63	542	2125
08:00 AM	0	0	0	0	12	373	1	386	11	0	6	17	0	132	17	149	552
08:15 AM	0	0	0	0	17	369	0	386	16	0	6	22	0	145	23	168	576
08:30 AM	0	0	0	0	8	267	0	275	11	0	8	19	0	154	20	174	468
08:45 AM	0	0	0	0	14	200	0	214	11	0	6	17	0	123	22	145	376
Total	0	0	0	0	51	1209	1	1261	49	0	26	75	0	554	82	636	1972
Grand Total	0	0	0	0	93	2663	2	2758	121	0	40	161	0	1033	145	1178	4097
Apprch %	0	0	0		3.4	96.6	0.1		75.2	0	24.8		0	87.7	12.3		
Total %	0	0	0	0	2.3	65	0	67.3	3	0	1	3.9	0	25.2	3.5	28.8	

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	9	382	0	391	16	0	4	20	0	134	16	150	561
07:45 AM	0	0	0	0	15	**414**	**1**	**430**	**23**	0	**8**	**31**	0	136	10	146	**607**
08:00 AM	0	0	0	0	12	373	1	386	11	0	6	17	0	132	17	149	552
08:15 AM	0	0	0	0	**17**	369	0	386	16	0	6	22	0	**145**	**23**	**168**	576
Total Volume	0	0	0	0	53	1538	2	1593	66	0	24	90	0	547	66	613	2296
% App. Total	0	0	0		3.3	96.5	0.1		73.3	0	26.7		0	89.2	10.8		
PHF	.000	.000	.000	.000	.779	.929	.500	.926	.717	.000	.750	.726	.000	.943	.717	.912	.946

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City of Highland
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Start Date : 12/6/2016
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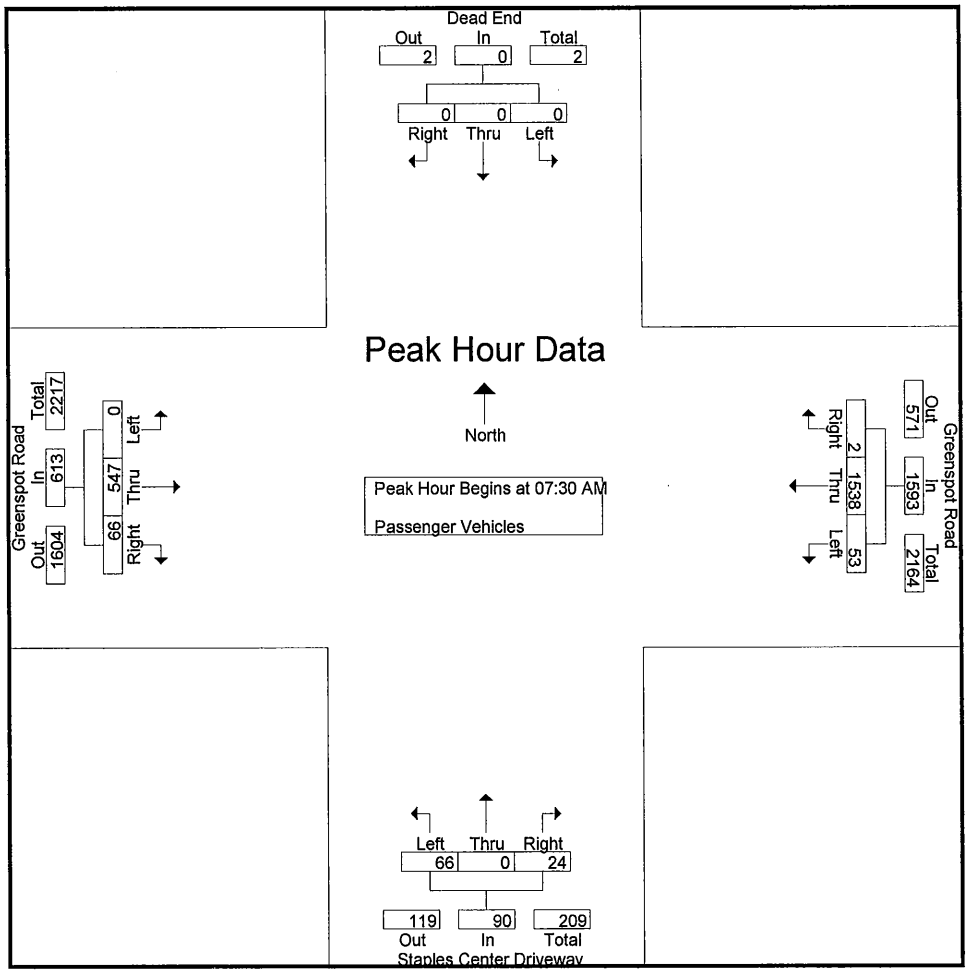

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	9	382	0	391	16	0	4	20	0	134	16	150
+15 mins.	0	0	0	0	15	**414**	**1**	**430**	**23**	0	**8**	**31**	0	136	10	146
+30 mins.	0	0	0	0	12	373	1	386	11	0	6	17	0	132	17	149
+45 mins.	0	0	0	0	**17**	369	0	386	16	0	6	22	0	**145**	**23**	**168**
Total Volume	0	0	0	0	53	1538	2	1593	66	0	24	90	0	547	66	613
% App. Total	0	0	0		3.3	96.5	0.1		73.3	0	26.7		0	89.2	10.8	
PHF	.000	.000	.000	.000	.779	.929	.500	.926	.717	.000	.750	.726	.000	.943	.717	.912

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City of Highland
N/S: Staples Center Driveway
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File Name : HLDSHGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	5	0	5	7
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	6	0	6	7
07:30 AM	0	0	0	0	0	8	0	8	0	0	0	0	0	0	1	1	9
07:45 AM	0	0	0	0	1	2	0	3	0	0	0	0	0	1	1	2	5
Total	0	0	0	0	1	13	0	14	0	0	0	0	0	12	2	14	28
08:00 AM	0	0	0	0	0	3	0	3	1	0	0	1	0	2	1	3	7
08:15 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	6	1	7	9
08:30 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	7	0	7	10
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
Total	0	0	0	0	0	7	0	7	2	0	0	2	0	20	2	22	31
Grand Total	0	0	0	0	1	20	0	21	2	0	0	2	0	32	4	36	59
Apprch %	0	0	0		4.8	95.2	0		100	0	0		0	88.9	11.1		
Total %	0	0	0	0	1.7	33.9	0	35.6	3.4	0	0	3.4	0	54.2	6.8	61	

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	**8**	0	**8**	0	0	0	0	0	0	**1**	1	**9**
07:45 AM	0	0	0	0	**1**	2	0	3	0	0	0	0	0	1	1	2	5
08:00 AM	0	0	0	0	0	3	0	3	**1**	0	0	**1**	0	**2**	1	3	7
08:15 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	**6**	1	**7**	9
Total Volume	0	0	0	0	1	14	0	15	2	0	0	2	0	9	4	13	30
% App. Total	0	0	0		6.7	93.3	0		100	0	0		0	69.2	30.8		
PHF	.000	.000	.000	.000	.250	.438	.000	.469	.500	.000	.000	.500	.000	.375	1.00	.464	.833

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City of Highland
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E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRAM
Site Code : 99916000
Start Date : 12/6/2016
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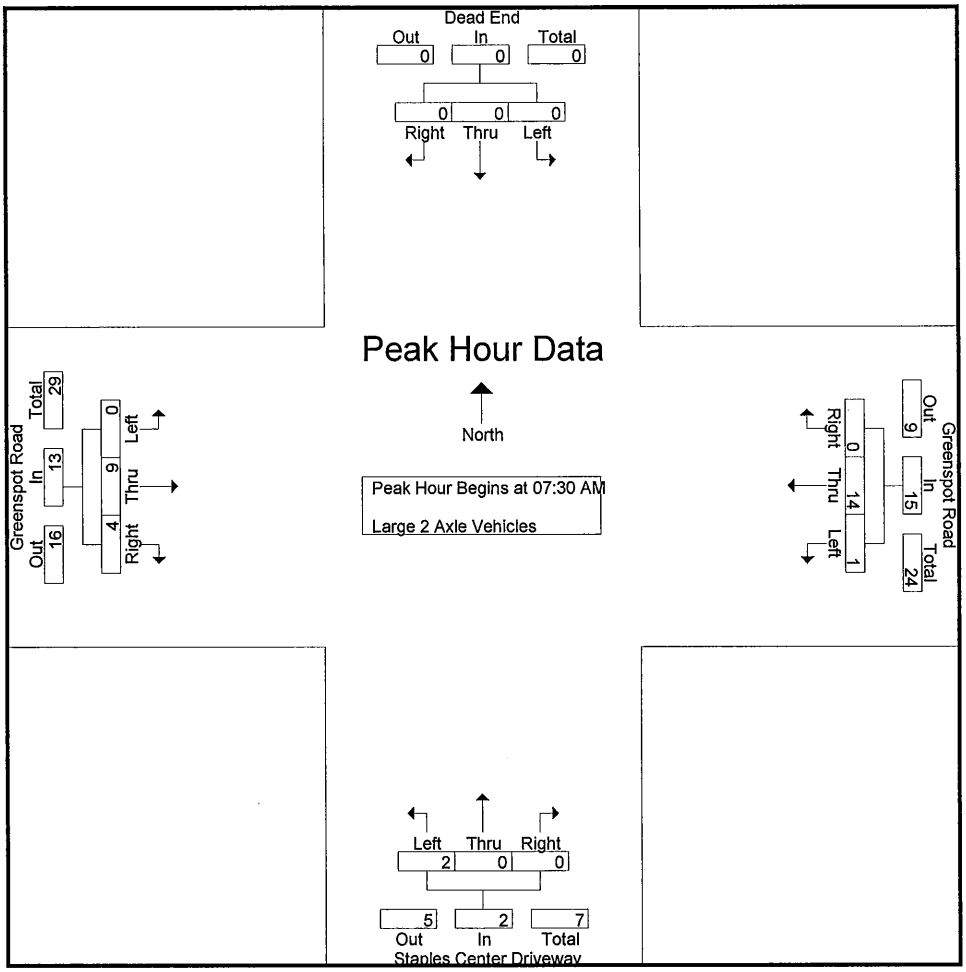

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	**8**	0	**8**	0	0	0	0	0	0	**1**	1
+15 mins.	0	0	0	0	**1**	2	0	3	0	0	0	0	0	1	1	2
+30 mins.	0	0	0	0	0	3	0	3	**1**	0	0	**1**	0	2	1	3
+45 mins.	0	0	0	0	0	1	0	1	1	0	0	1	0	**6**	1	**7**
Total Volume	0	0	0	0	1	14	0	15	2	0	0	2	0	9	4	13
% App. Total	0	0	0		6.7	93.3	0		100	0	0		0	69.2	30.8	
PHF	.000	.000	.000	.000	.250	.438	.000	.469	.500	.000	.000	.500	.000	.375	1.000	.464

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Groups Printed- 3 Axle Vehicles

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
07:30 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
08:00 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	3
08:30 AM	0	0	0	0	0	2	0	2	1	0	0	1	0	3	0	3	6
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	0	0	2	0	2	2	0	0	2	0	5	2	7	11
Grand Total	0	0	0	0	0	3	0	3	2	0	0	2	0	9	2	11	16
Apprch %	0	0	0		0	100	0		100	0	0		0	81.8	18.2		
Total %	0	0	0	0	0	18.8	0	18.8	12.5	0	0	12.5	0	56.2	12.5	68.8	

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:00 AM	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	1
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	**1**	**3**	**3**
Total Volume	0	0	0	0	0	1	0	1	1	0	0	1	0	3	1	4	6
% App. Total	0	0	0		0	100	0		100	0	0		0	75	25		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.250	.000	.000	.250	.000	.375	.250	.333	.500

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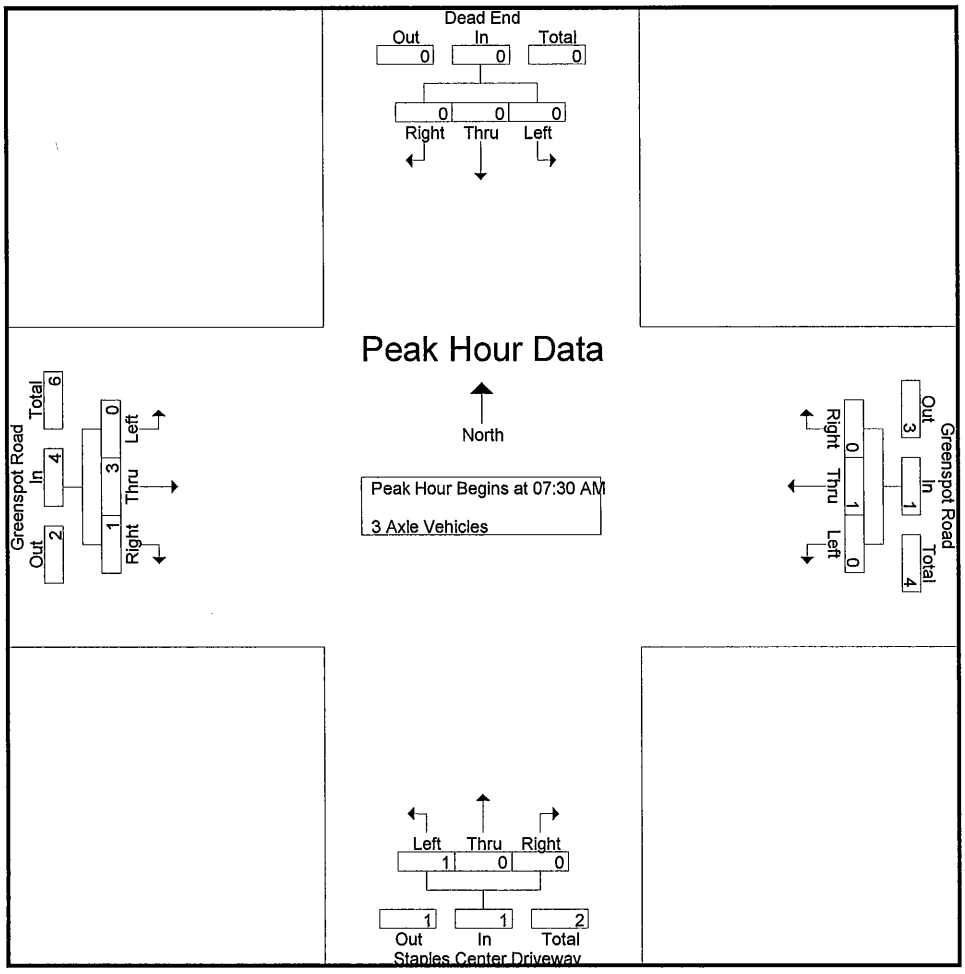

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	**1**	**3**
Total Volume	0	0	0	0	0	1	0	1	1	0	0	1	0	3	1	4
% App. Total	0	0	0		0	100	0		100	0	0		0	75	25	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.250	.000	.000	.250	.000	.375	.250	.333

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Groups Printed- 4+ Axle Trucks

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
07:15 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	1	0	1	3
07:30 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	3	0	3	5
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	5	0	5	2	0	0	2	0	6	0	6	13
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	6	0	6	8
08:15 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	4	0	4	7
08:30 AM	0	0	0	0	4	1	0	5	1	0	0	1	0	3	0	3	9
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	4	6	0	10	1	0	0	1	0	14	0	14	25
Grand Total	0	0	0	0	4	11	0	15	3	0	0	3	0	20	0	20	38
Apprch %	0	0	0		26.7	73.3	0		100	0	0		0	100	0		
Total %	0	0	0	0	10.5	28.9	0	39.5	7.9	0	0	7.9	0	52.6	0	52.6	

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	1	0	1	**1**	0	0	**1**	0	3	0	3	5
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
08:00 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	**6**	0	**6**	**8**
08:15 AM	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	4	0	4	7
Total Volume	0	0	0	0	0	8	0	8	1	0	0	1	0	13	0	13	22
% App. Total	0	0	0		0	100	0		100	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.667	.000	.667	.250	.000	.000	.250	.000	.542	.000	.542	.688

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Start Date : 12/6/2016
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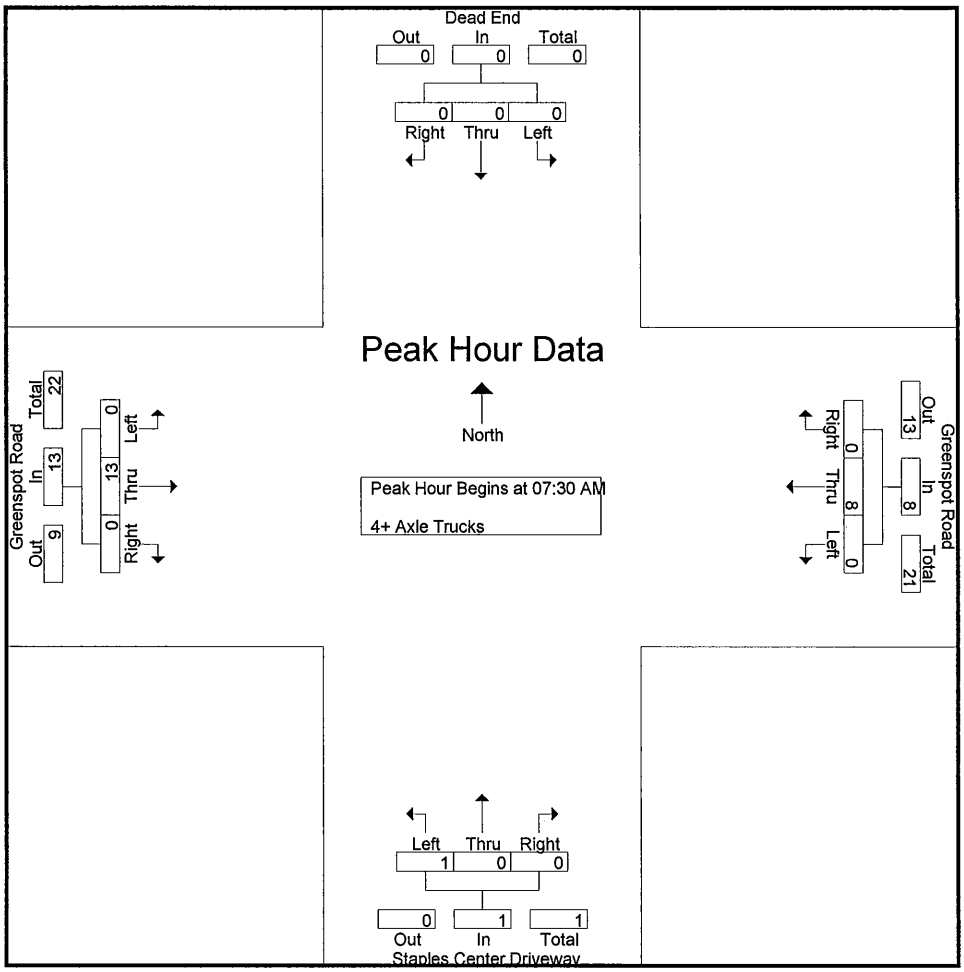

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	1	0	1	**1**	0	0	**1**	0	3	0	3
+15 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	**6**	0	**6**
+45 mins.	0	0	0	0	0	**3**	0	**3**	0	0	0	0	0	4	0	4
Total Volume	0	0	0	0	0	8	0	8	1	0	0	1	0	13	0	13
% App. Total	0	0	0		0	100	0		100	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.667	.000	.667	.250	.000	.000	.250	.000	.542	.000	.542

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City of Highland
N/S: Staples Center Driveway
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File Name : HLDSHGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	13	179	0	192	34	0	20	54	1	251	34	286	532
04:15 PM	0	0	0	0	17	172	0	189	27	0	15	42	0	268	35	303	534
04:30 PM	0	0	0	0	24	167	0	191	35	0	22	57	1	263	28	292	540
04:45 PM	0	0	0	0	18	146	0	164	38	0	16	54	1	299	39	339	557
Total	0	0	0	0	72	664	0	736	134	0	73	207	3	1081	136	1220	2163
05:00 PM	0	0	0	0	22	159	0	181	45	0	19	64	1	294	36	331	576
05:15 PM	0	0	0	0	18	175	0	193	36	0	27	63	0	351	30	381	637
05:30 PM	0	0	0	0	24	172	0	196	27	0	17	44	1	338	38	377	617
05:45 PM	0	0	0	0	14	150	0	164	36	0	14	50	2	296	38	336	550
Total	0	0	0	0	78	656	0	734	144	0	77	221	4	1279	142	1425	2380
Grand Total	0	0	0	0	150	1320	0	1470	278	0	150	428	7	2360	278	2645	4543
Apprch %	0	0	0		10.2	89.8	0		65	0	35		0.3	89.2	10.5		
Total %	0	0	0	0	3.3	29.1	0	32.4	6.1	0	3.3	9.4	0.2	51.9	6.1	58.2	
Passenger Vehicles	0	0	0	0	149	1307	0	1456	273	0	149	422	7	2345	274	2626	4504
% Passenger Vehicles	0	0	0	0	99.3	99	0	99	98.2	0	99.3	98.6	100	99.4	98.6	99.3	99.1
Large 2 Axle Vehicles	0	0	0	0	1	11	0	12	3	0	1	4	0	12	2	14	30
% Large 2 Axle Vehicles	0	0	0	0	0.7	0.8	0	0.8	1.1	0	0.7	0.9	0	0.5	0.7	0.5	0.7
3 Axle Vehicles	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	2
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0.4	0	0	0.2	0	0	0.4	0	0
4+ Axle Trucks	0	0	0	0	0	2	0	2	1	0	0	1	0	3	1	4	7
% 4+ Axle Trucks	0	0	0	0	0	0.2	0	0.1	0.4	0	0	0.2	0	0.1	0.4	0.2	0.2

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	18	146	0	164	38	0	16	54	**1**	299	**39**	339	557
05:00 PM	0	0	0	0	22	159	0	181	**45**	0	19	**64**	1	294	36	331	576
05:15 PM	0	0	0	0	18	**175**	0	193	36	0	**27**	63	0	**351**	30	**381**	**637**
05:30 PM	0	0	0	0	**24**	172	0	**196**	27	0	17	44	1	338	38	377	617
Total Volume	0	0	0	0	82	652	0	734	146	0	79	225	3	1282	143	1428	2387
% App. Total	0	0	0		11.2	88.8	0		64.9	0	35.1		0.2	89.8	10		
PHF	.000	.000	.000	.000	.854	.931	.000	.936	.811	.000	.731	.879	.750	.913	.917	.937	.937

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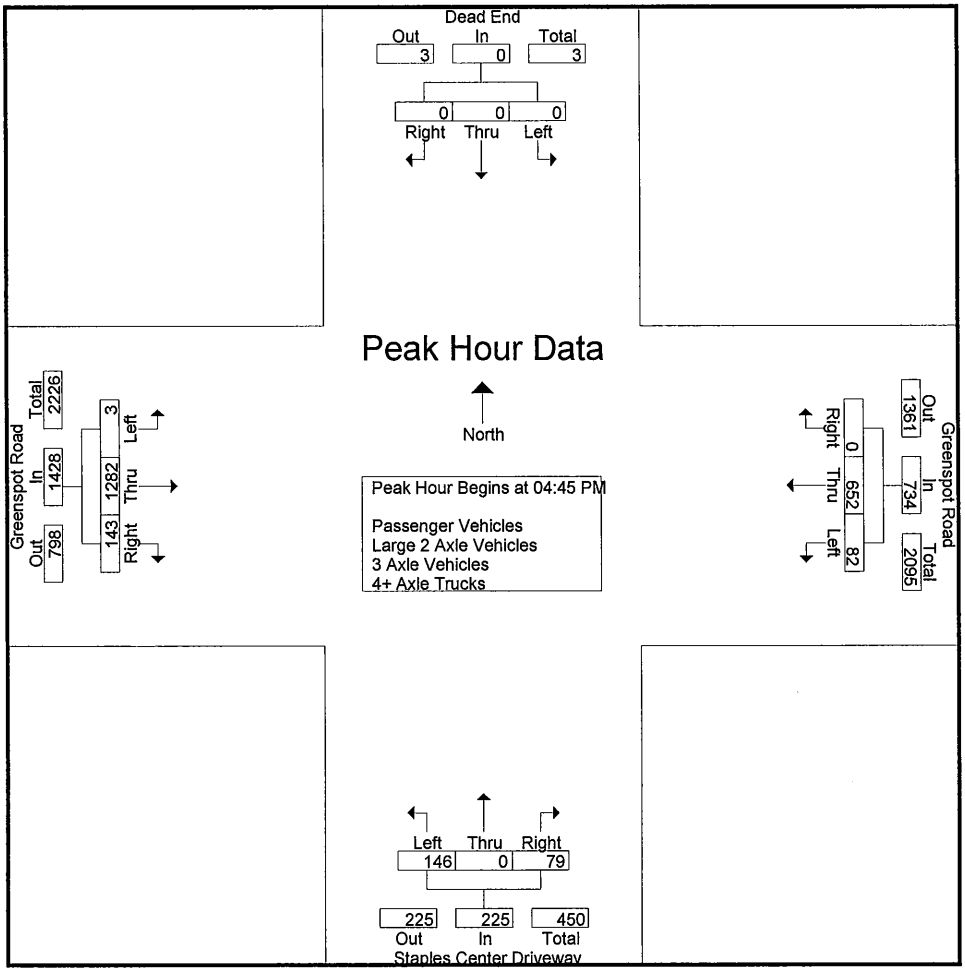

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:00 PM				04:30 PM				04:45 PM			
+0 mins.	0	0	0	0	13	**179**	0	**192**	35	0	22	57	**1**	299	**39**	339
+15 mins.	0	0	0	0	17	172	0	189	38	0	16	54	1	294	36	331
+30 mins.	0	0	0	0	**24**	167	0	191	**45**	0	19	**64**	0	**351**	30	**381**
+45 mins.	0	0	0	0	18	146	0	164	36	0	**27**	63	1	338	38	377
Total Volume	0	0	0	0	72	664	0	736	154	0	84	238	3	1282	143	1428
% App. Total	0	0	0		9.8	90.2	0		64.7	0	35.3		0.2	89.8	10	
PHF	.000	.000	.000	.000	.750	.927	.000	.958	.856	.000	.778	.930	.750	.913	.917	.937

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Groups Printed- Passenger Vehicles

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	13	179	0	192	33	0	20	53	1	246	34	281	526
04:15 PM	0	0	0	0	17	169	0	186	27	0	15	42	0	265	34	299	527
04:30 PM	0	0	0	0	24	165	0	189	34	0	22	56	1	261	26	288	533
04:45 PM	0	0	0	0	18	144	0	162	38	0	16	54	1	299	39	339	555
Total	0	0	0	0	72	657	0	729	132	0	73	205	3	1071	133	1207	2141
05:00 PM	0	0	0	0	21	156	0	177	44	0	19	63	1	293	36	330	570
05:15 PM	0	0	0	0	18	173	0	191	36	0	26	62	0	349	30	379	632
05:30 PM	0	0	0	0	24	171	0	195	26	0	17	43	1	338	37	376	614
05:45 PM	0	0	0	0	14	150	0	164	35	0	14	49	2	294	38	334	547
Total	0	0	0	0	77	650	0	727	141	0	76	217	4	1274	141	1419	2363
Grand Total	0	0	0	0	149	1307	0	1456	273	0	149	422	7	2345	274	2626	4504
Apprch %	0	0	0		10.2	89.8	0		64.7	0	35.3		0.3	89.3	10.4		
Total %	0	0	0	0	3.3	29	0	32.3	6.1	0	3.3	9.4	0.2	52.1	6.1	58.3	

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	18	144	0	162	38	0	16	54	**1**	299	**39**	339	555
05:00 PM	0	0	0	0	21	156	0	177	**44**	0	19	**63**	1	293	36	330	570
05:15 PM	0	0	0	0	18	**173**	0	191	36	0	**26**	62	0	**349**	30	**379**	**632**
05:30 PM	0	0	0	0	**24**	171	0	**195**	26	0	17	43	1	338	37	376	614
Total Volume	0	0	0	0	81	644	0	725	144	0	78	222	3	1279	142	1424	2371
% App. Total	0	0	0		11.2	88.8	0		64.9	0	35.1		0.2	89.8	10		
PHF	.000	.000	.000	.000	.844	.931	.000	.929	.818	.000	.750	.881	.750	.916	.910	.939	.938

Counts Unlimited
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City of Highland
N/S: Staples Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRPM
Site Code : 99916000
Start Date : 12/6/2016
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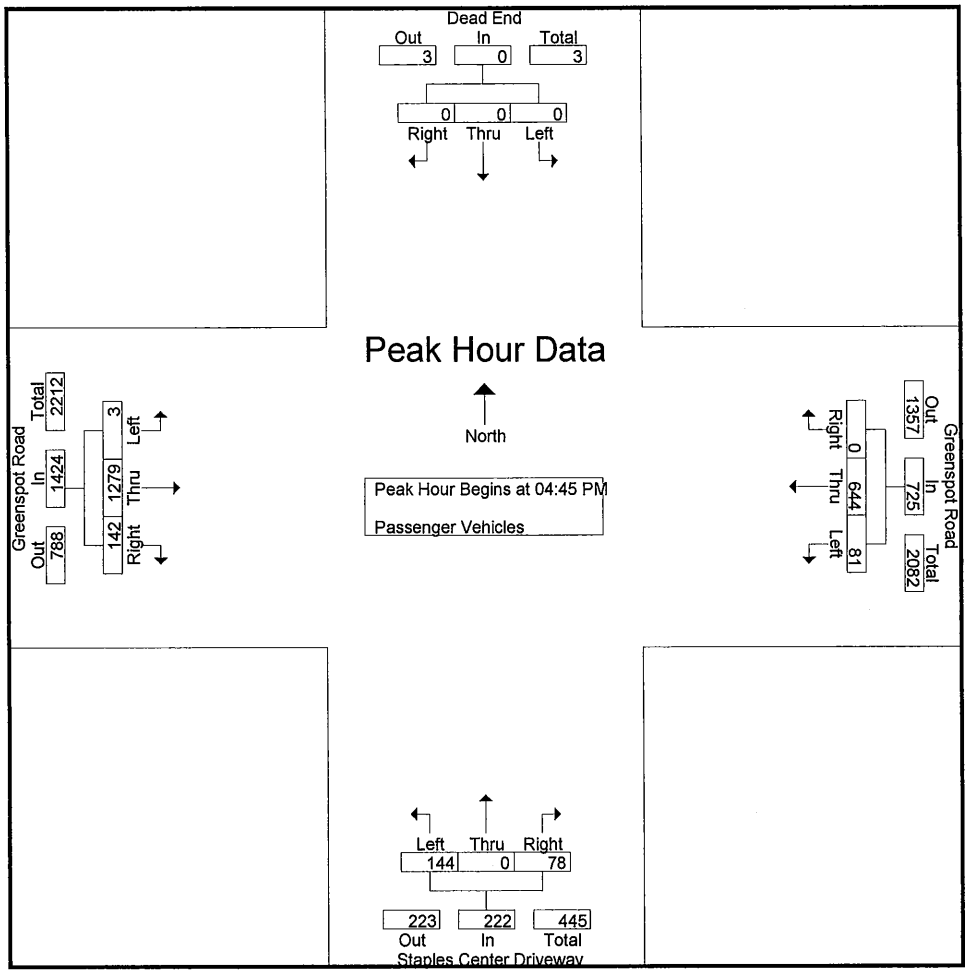

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	18	144	0	162	38	0	16	54	**1**	299	**39**	339
+15 mins.	0	0	0	0	21	156	0	177	**44**	0	19	**63**	1	293	36	330
+30 mins.	0	0	0	0	18	**173**	0	191	36	0	**26**	62	0	**349**	30	**379**
+45 mins.	0	0	0	0	**24**	171	0	**195**	26	0	17	43	1	338	37	376
Total Volume	0	0	0	0	81	644	0	725	144	0	78	222	3	1279	142	1424
% App. Total	0	0	0		11.2	88.8	0		64.9	0	35.1		0.2	89.8	10	
PHF	.000	.000	.000	.000	.844	.931	.000	.929	.818	.000	.750	.881	.750	.916	.910	.939

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City of Highland
N/S: Staples Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	4	0	4	5
04:15 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	1	2	5
04:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
04:45 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total	0	0	0	0	0	7	0	7	1	0	0	1	0	7	1	8	16
05:00 PM	0	0	0	0	1	2	0	3	0	0	0	0	0	1	0	1	4
05:15 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	2	0	2	4
05:30 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	1	1	3
05:45 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	2	0	2	3
Total	0	0	0	0	1	4	0	5	2	0	1	3	0	5	1	6	14
Grand Total	0	0	0	0	1	11	0	12	3	0	1	4	0	12	2	14	30
Apprch %	0	0	0		8.3	91.7	0		75	0	25		0	85.7	14.3		
Total %	0	0	0	0	3.3	36.7	0	40	10	0	3.3	13.3	0	40	6.7	46.7	

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	**2**	0	2	0	0	0	0	0	0	0	0	2
05:00 PM	0	0	0	0	**1**	2	0	**3**	0	0	0	0	0	1	0	1	**4**
05:15 PM	0	0	0	0	0	1	0	1	0	0	**1**	**1**	0	**2**	0	**2**	4
05:30 PM	0	0	0	0	0	1	0	1	**1**	0	0	1	0	0	**1**	1	3
Total Volume	0	0	0	0	1	6	0	7	1	0	1	2	0	3	1	4	13
% App. Total	0	0	0		14.3	85.7	0		50	0	50		0	75	25		
PHF	.000	.000	.000	.000	.250	.750	.000	.583	.250	.000	.250	.500	.000	.375	.250	.500	.813

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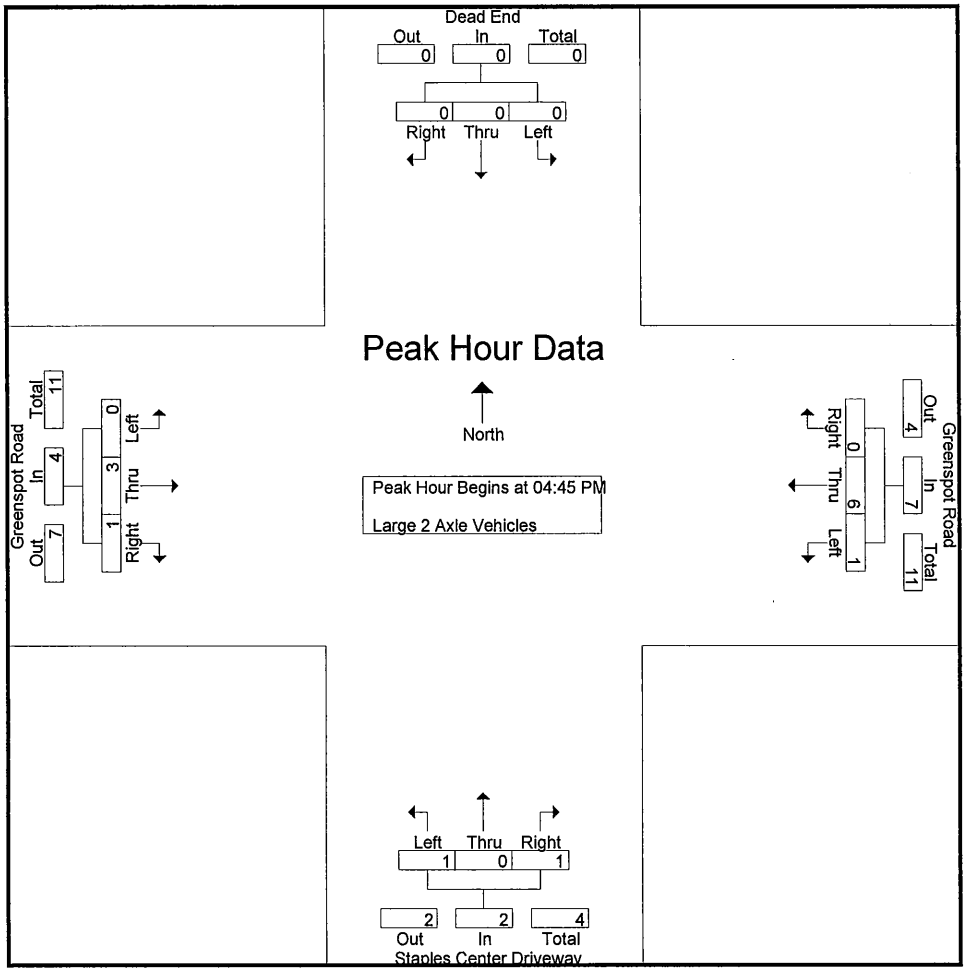
City of Highland
N/S: Staples Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	**2**	0	2	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	**1**	2	0	**3**	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	1	0	1	0	0	**1**	**1**	0	**2**	0	**2**
+45 mins.	0	0	0	0	0	1	0	1	**1**	0	0	1	0	0	**1**	1
Total Volume	0	0	0	0	1	6	0	7	1	0	1	2	0	3	1	4
% App. Total	0	0	0		14.3	85.7	0		50	0	50		0	75	25	
PHF	.000	.000	.000	.000	.250	.750	.000	.583	.250	.000	.250	.500	.000	.375	.250	.500

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City of Highland
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E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	2
Apprch %	0	0	0		0	0	0		100	0	0		0	0	100		
Total %	0	0	0	0	0	0	0	0	50	0	0	50	0	0	50	50	

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
N/S: Staples Center Driveway
E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRPM
Site Code : 99916000
Start Date : 12/6/2016
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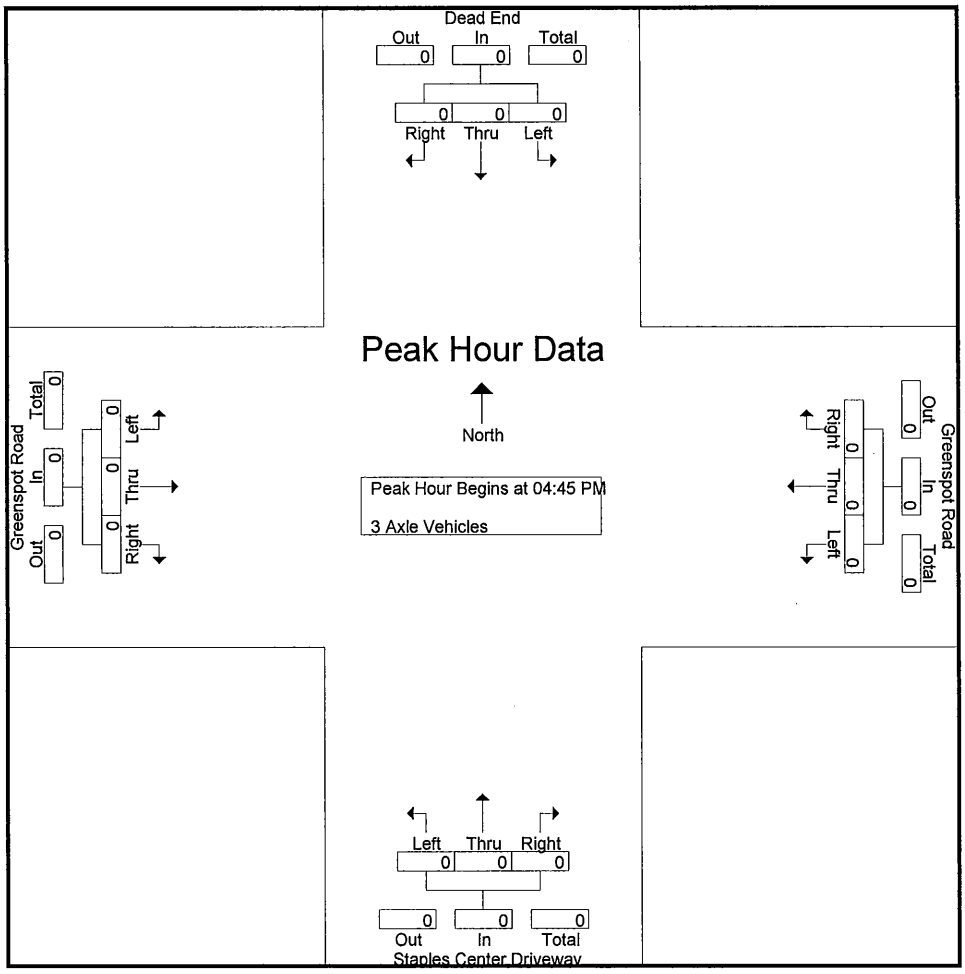

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
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E/W: Greenspot Road
Weather: Clear

File Name : HLDSHGRPM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- 4+ Axle Trucks

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	4	4
05:00 PM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	1	0	0	1	0	0	0	0	3
Grand Total	0	0	0	0	0	2	0	2	1	0	0	1	0	3	1	4	7
Apprch %	0	0	0		0	100	0		100	0	0		0	75	25		
Total %	0	0	0	0	0	28.6	0	28.6	14.3	0	0	14.3	0	42.9	14.3	57.1	

	Dead End Southbound				Greenspot Road Westbound				Staples Center Driveway Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	**1**	0	**1**	**1**	0	0	**1**	0	0	0	0	**2**
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	1	0	0	1	0	0	0	0	3
% App. Total	0	0	0		0	100	0		100	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.250	.000	.000	.250	.000	.000	.000	.000	.375

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City of Highland
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Weather: Clear

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Site Code : 99916000
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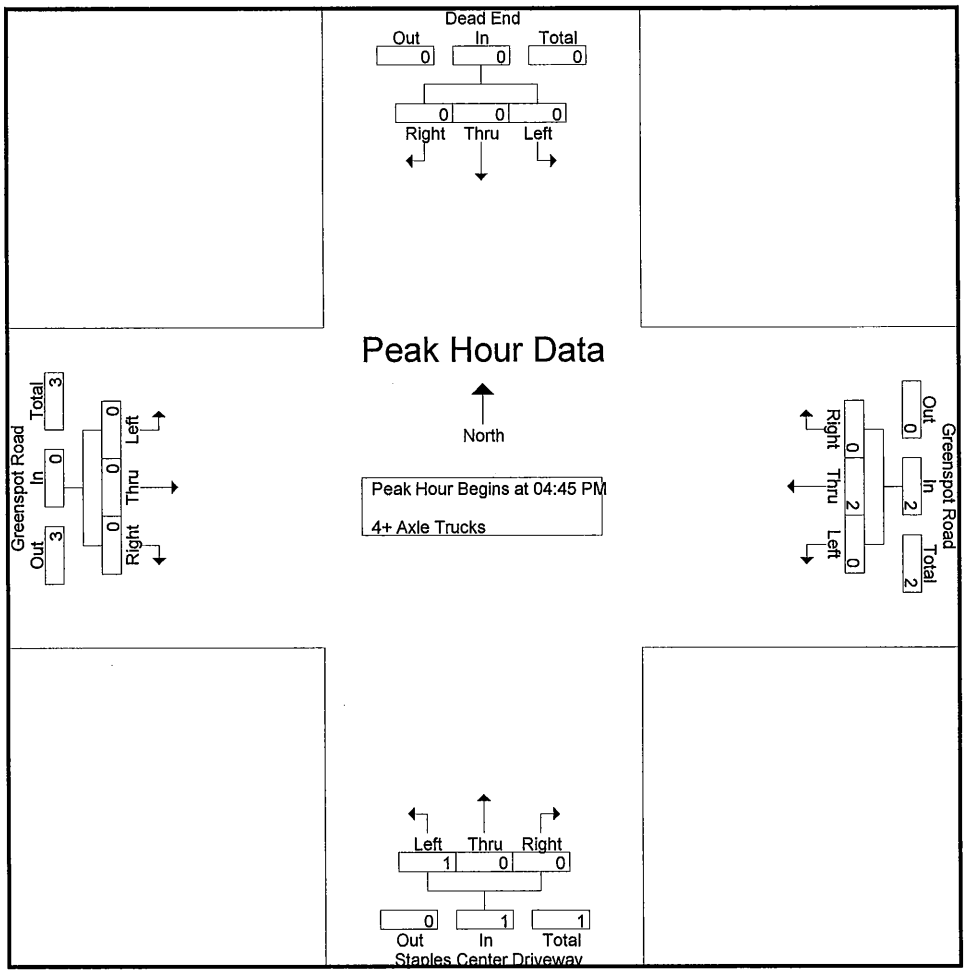

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	**1**	0	**1**	**1**	0	0	**1**	0	0	0	0
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	1	0	0	1	0	0	0	0
% App. Total	0	0	0		0	100	0		100	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.250	.000	.000	.250	.000	.000	.000	.000

5

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City of Highland
N/S: Boulder Avenue
E/W: Greenspot Road
Weather: Clear

File Name : HLDBOGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	26	0	30	36	283	10	329	23	11	26	60	4	73	14	91	510
07:15 AM	10	47	1	58	75	295	10	380	23	20	43	86	6	102	12	120	644
07:30 AM	8	54	1	63	98	340	12	450	36	41	37	114	0	96	21	117	744
07:45 AM	10	94	1	105	122	339	13	474	43	43	60	146	4	93	33	130	855
Total	32	221	3	256	331	1257	45	1633	125	115	166	406	14	364	80	458	2753
08:00 AM	12	117	0	129	110	294	22	426	43	53	56	152	3	76	34	113	820
08:15 AM	10	58	0	68	95	292	24	411	49	61	80	190	8	113	16	137	806
08:30 AM	10	29	2	41	61	213	28	302	34	49	77	160	7	122	21	150	653
08:45 AM	12	32	1	45	45	140	9	194	31	36	32	99	4	76	13	93	431
Total	44	236	3	283	311	939	83	1333	157	199	245	601	22	387	84	493	2710
Grand Total	76	457	6	539	642	2196	128	2966	282	314	411	1007	36	751	164	951	5463
Apprch %	14.1	84.8	1.1		21.6	74	4.3		28	31.2	40.8		3.8	79	17.2		
Total %	1.4	8.4	0.1	9.9	11.8	40.2	2.3	54.3	5.2	5.7	7.5	18.4	0.7	13.7	3	17.4	
Passenger Vehicles	70	452	5	527	622	2179	127	2928	264	312	392	968	34	718	144	896	5319
% Passenger Vehicles	92.1	98.9	83.3	97.8	96.9	99.2	99.2	98.7	93.6	99.4	95.4	96.1	94.4	95.6	87.8	94.2	97.4
Large 2 Axle Vehicles	3	5	1	9	10	14	1	25	4	2	9	15	2	23	4	29	78
% Large 2 Axle Vehicles	3.9	1.1	16.7	1.7	1.6	0.6	0.8	0.8	1.4	0.6	2.2	1.5	5.6	3.1	2.4	3	1.4
3 Axle Vehicles	0	0	0	0	9	1	0	10	1	0	10	11	0	8	0	8	29
% 3 Axle Vehicles	0	0	0	0	1.4	0	0	0.3	0.4	0	2.4	1.1	0	1.1	0	0.8	0.5
4+ Axle Trucks	3	0	0	3	1	2	0	3	13	0	0	13	0	2	16	18	37
% 4+ Axle Trucks	3.9	0	0	0.6	0.2	0.1	0	0.1	4.6	0	0	1.3	0	0.3	9.8	1.9	0.7

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	8	54	**1**	63	98	**340**	12	450	36	41	37	114	0	96	21	117	744
07:45 AM	10	94	1	105	**122**	339	13	**474**	43	43	60	146	4	93	33	130	**855**
08:00 AM	**12**	**117**	0	**129**	110	294	22	426	43	53	56	152	3	76	**34**	113	820
08:15 AM	10	58	0	68	95	292	**24**	411	**49**	**61**	**80**	**190**	**8**	**113**	16	**137**	806
Total Volume	40	323	2	365	425	1265	71	1761	171	198	233	602	15	378	104	497	3225
% App. Total	11	88.5	0.5		24.1	71.8	4		28.4	32.9	38.7		3	76.1	20.9		
PHF	.833	.690	.500	.707	.871	.930	.740	.929	.872	.811	.728	.792	.469	.836	.765	.907	.943

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City of Highland
N/S: Boulder Avenue
E/W: Greenspot Road
Weather: Clear

File Name : HLDBOGRAM
Site Code : 99916000
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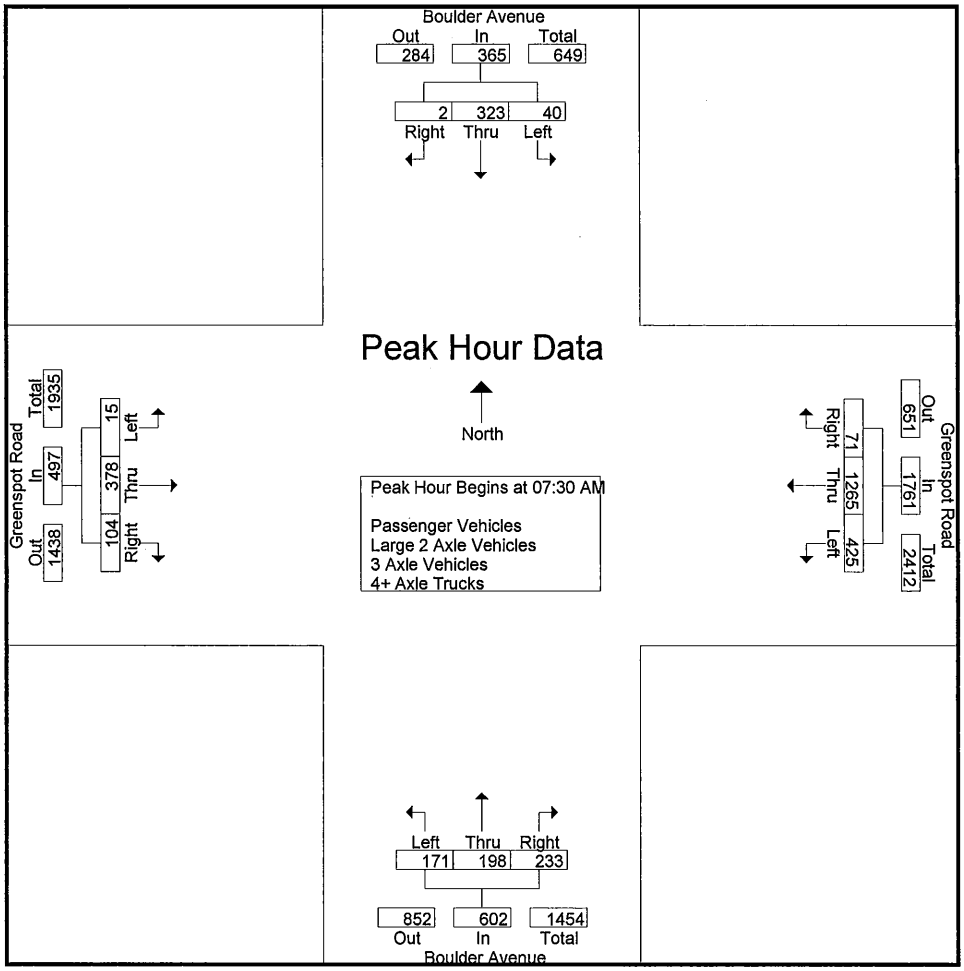

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:45 AM				07:45 AM			
+0 mins.	8	54	1	63	98	**340**	12	450	43	43	60	146	4	93	33	130
+15 mins.	10	94	1	105	**122**	339	13	**474**	43	53	56	152	3	76	**34**	113
+30 mins.	**12**	**117**	0	**129**	110	294	22	426	**49**	**61**	**80**	**190**	**8**	113	16	137
+45 mins.	10	58	0	68	95	292	**24**	411	34	49	77	160	7	**122**	21	**150**
Total Volume	40	323	2	365	425	1265	71	1761	169	206	273	648	22	404	104	530
% App. Total	11	88.5	0.5		24.1	71.8	4		26.1	31.8	42.1		4.2	76.2	19.6	
PHF	.833	.690	.500	.707	.871	.930	.740	.929	.862	.844	.853	.853	.688	.828	.765	.883

Counts Unlimited
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City of Highland
N/S: Boulder Avenue
E/W: Greenspot Road
Weather: Clear

File Name : HLDBOGRAM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- Passenger Vehicles

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	25	0	29	35	282	10	327	22	10	25	57	4	70	12	86	499
07:15 AM	8	46	1	55	75	292	10	377	22	20	41	83	5	95	11	111	626
07:30 AM	7	54	1	62	96	335	12	443	34	41	37	112	0	96	18	114	731
07:45 AM	8	93	1	102	121	337	13	471	41	42	59	142	4	93	29	126	841
Total	27	218	3	248	327	1246	45	1618	119	113	162	394	13	354	70	437	2697
08:00 AM	12	116	0	128	109	291	22	422	41	53	55	149	3	75	28	106	805
08:15 AM	10	58	0	68	93	292	24	409	44	61	80	185	8	105	13	126	788
08:30 AM	9	29	2	40	52	210	27	289	30	49	74	153	6	112	20	138	620
08:45 AM	12	31	0	43	41	140	9	190	30	36	21	87	4	72	13	89	409
Total	43	234	2	279	295	933	82	1310	145	199	230	574	21	364	74	459	2622
Grand Total	70	452	5	527	622	2179	127	2928	264	312	392	968	34	718	144	896	5319
Apprch %	13.3	85.8	0.9		21.2	74.4	4.3		27.3	32.2	40.5		3.8	80.1	16.1		
Total %	1.3	8.5	0.1	9.9	11.7	41	2.4	55	5	5.9	7.4	18.2	0.6	13.5	2.7	16.8	

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	7	54	**1**	62	96	335	12	443	34	41	37	112	0	96	18	114	731
07:45 AM	8	93	1	102	**121**	**337**	13	**471**	41	42	59	142	4	93	**29**	**126**	**841**
08:00 AM	**12**	**116**	0	**128**	109	291	22	422	41	53	55	149	3	75	28	106	805
08:15 AM	10	58	0	68	93	292	**24**	409	**44**	**61**	**80**	**185**	**8**	**105**	13	126	788
Total Volume	37	321	2	360	419	1255	71	1745	160	197	231	588	15	369	88	472	3165
% App. Total	10.3	89.2	0.6		24	71.9	4.1		27.2	33.5	39.3		3.2	78.2	18.6		
PHF	.771	.692	.500	.703	.866	.931	.740	.926	.909	.807	.722	.795	.469	.879	.759	.937	.941

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City of Highland
N/S: Boulder Avenue
E/W: Greenspot Road
Weather: Clear

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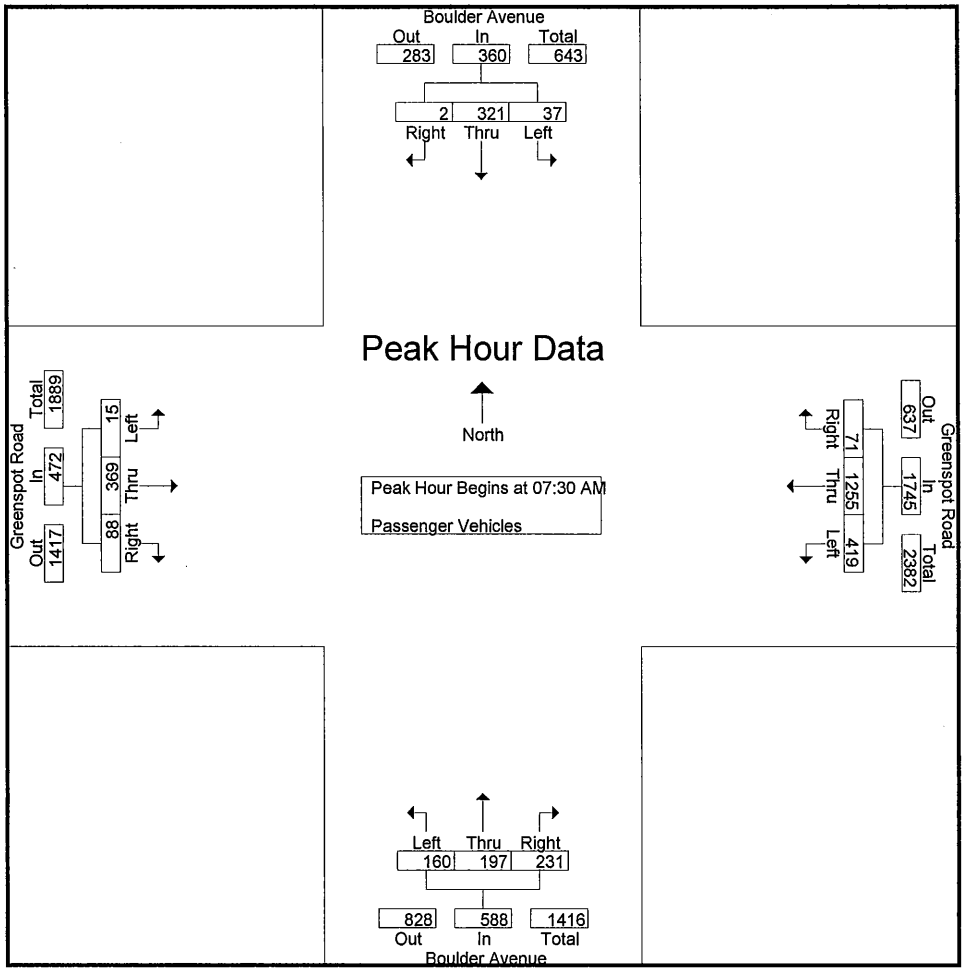

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	7	54	**1**	62	96	335	12	443	34	41	37	112	0	96	18	114
+15 mins.	8	93	1	102	**121**	**337**	13	**471**	41	42	59	142	4	93	**29**	**126**
+30 mins.	**12**	**116**	0	**128**	109	291	22	422	41	53	55	149	3	75	28	106
+45 mins.	10	58	0	68	93	292	**24**	409	**44**	**61**	**80**	**185**	**8**	**105**	13	126
Total Volume	37	321	2	360	419	1255	71	1745	160	197	231	588	15	369	88	472
% App. Total	10.3	89.2	0.6		24	71.9	4.1		27.2	33.5	39.3		3.2	78.2	18.6	
PHF	.771	.692	.500	.703	.866	.931	.740	.926	.909	.807	.722	.795	.469	.879	.759	.937

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N/S: Boulder Avenue
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Groups Printed- Large 2 Axle Vehicles

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	1	0	1	1	1	0	2	0	1	1	2	0	3	0	3	8
07:15 AM	2	1	0	3	0	2	0	2	0	0	2	2	1	4	1	6	13
07:30 AM	1	0	0	1	2	5	0	7	2	0	0	2	0	0	0	0	10
07:45 AM	0	1	0	1	1	2	0	3	0	1	1	2	0	0	3	3	9
Total	3	3	0	6	4	10	0	14	2	2	4	8	1	7	4	12	40
08:00 AM	0	1	0	1	1	2	0	3	1	0	1	2	0	1	0	1	7
08:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	5	0	5	6
08:30 AM	0	0	0	0	4	2	1	7	0	0	2	2	1	7	0	8	17
08:45 AM	0	1	1	2	0	0	0	0	1	0	2	3	0	3	0	3	8
Total	0	2	1	3	6	4	1	11	2	0	5	7	1	16	0	17	38
Grand Total	3	5	1	9	10	14	1	25	4	2	9	15	2	23	4	29	78
Apprch %	33.3	55.6	11.1		40	56	4		26.7	13.3	60		6.9	79.3	13.8		
Total %	3.8	6.4	1.3	11.5	12.8	17.9	1.3	32.1	5.1	2.6	11.5	19.2	2.6	29.5	5.1	37.2	

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**1**	0	0	**1**	**2**	**5**	0	**7**	**2**	0	0	**2**	0	0	0	0	**10**
07:45 AM	0	**1**	0	1	1	2	0	3	0	**1**	**1**	2	0	0	**3**	3	9
08:00 AM	0	1	0	1	1	2	0	3	1	0	1	2	0	1	0	1	7
08:15 AM	0	0	0	0	1	0	0	1	0	0	0	0	0	**5**	0	**5**	6
Total Volume	1	2	0	3	5	9	0	14	3	1	2	6	0	6	3	9	32
% App. Total	33.3	66.7	0		35.7	64.3	0		50	16.7	33.3		0	66.7	33.3		
PHF	.250	.500	.000	.750	.625	.450	.000	.500	.375	.250	.500	.750	.000	.300	.250	.450	.800

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City of Highland
N/S: Boulder Avenue
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Weather: Clear

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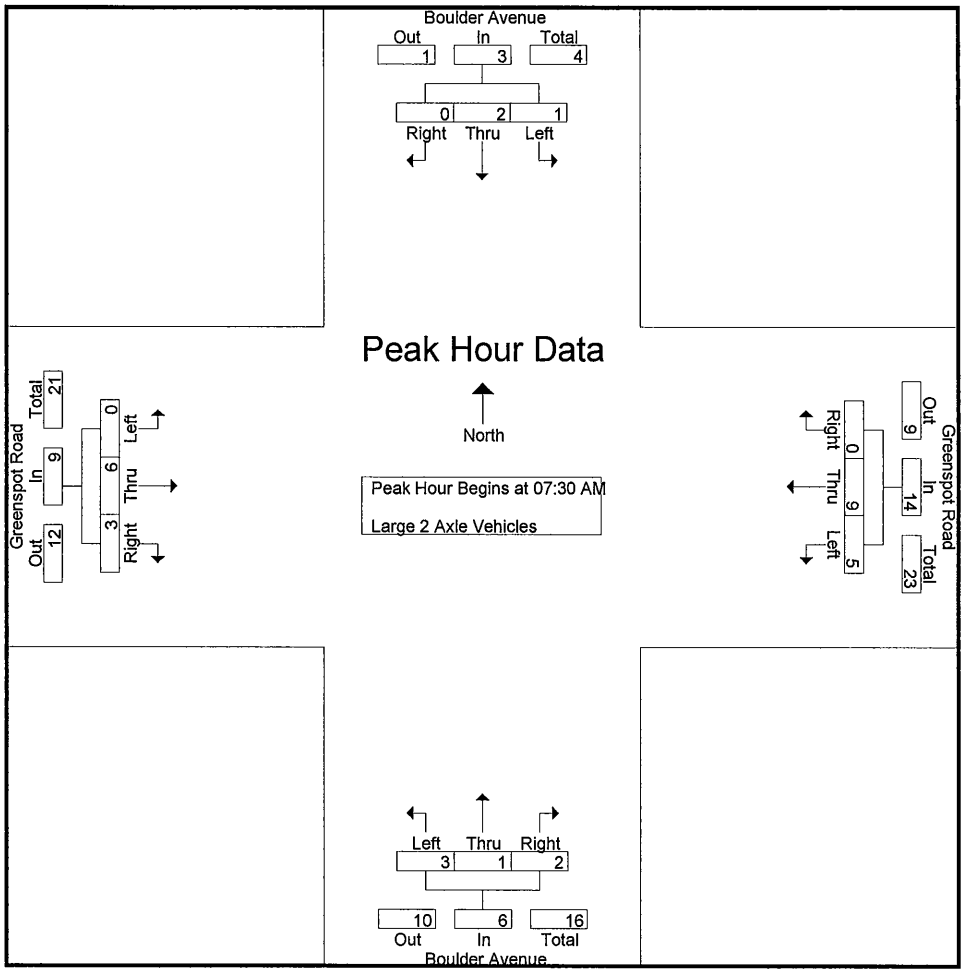

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**1**	0	0	**1**	**2**	**5**	0	**7**	**2**	0	0	**2**	0	0	0	0
+15 mins.	0	**1**	0	1	1	2	0	3	0	**1**	**1**	2	0	0	**3**	3
+30 mins.	0	1	0	1	1	2	0	3	1	0	1	2	0	1	0	1
+45 mins.	0	0	0	0	1	0	0	1	0	0	0	0	0	**5**	0	**5**
Total Volume	1	2	0	3	5	9	0	14	3	1	2	6	0	6	3	9
% App. Total	33.3	66.7	0		35.7	64.3	0		50	16.7	33.3		0	66.7	33.3	
PHF	.250	.500	.000	.750	.625	.450	.000	.500	.375	.250	.500	.750	.000	.300	.250	.450

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Groups Printed- 3 Axle Vehicles

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	3	4
08:30 AM	0	0	0	0	5	1	0	6	0	0	1	1	0	2	0	2	9
08:45 AM	0	0	0	0	4	0	0	4	0	0	9	9	0	0	0	0	13
Total	0	0	0	0	9	1	0	10	1	0	10	11	0	5	0	5	26
Grand Total	0	0	0	0	9	1	0	10	1	0	10	11	0	8	0	8	29
Apprch %	0	0	0		90	10	0		9.1	0	90.9		0	100	0		
Total %	0	0	0	0	31	3.4	0	34.5	3.4	0	34.5	37.9	0	27.6	0	27.6	

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	3	4
Total Volume	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	3	4
% App. Total	0	0	0		0	0	0		100	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.250	.000	.250	.250

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City of Highland
N/S: Boulder Avenue
E/W: Greenspot Road
Weather: Clear

File Name : HLDBOGRAM
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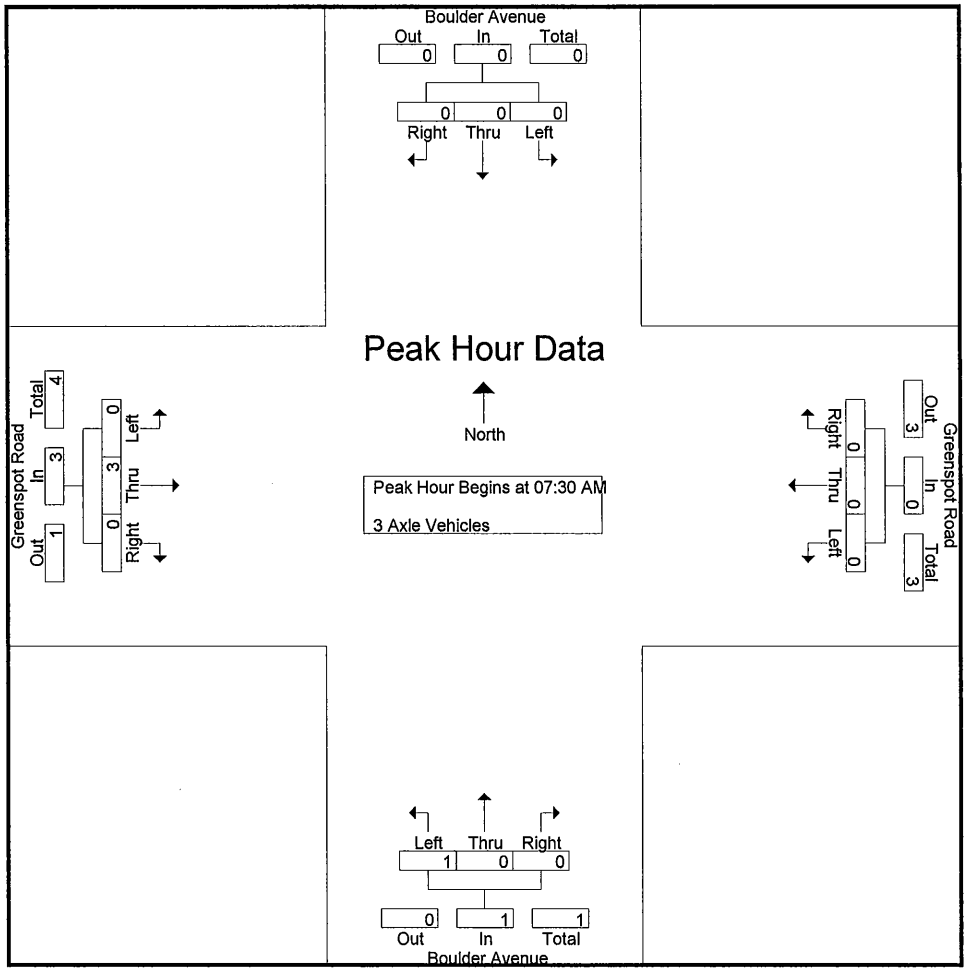

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	**3**	0	**3**
Total Volume	0	0	0	0	0	0	0	0	1	0	0	1	0	3	0	3
% App. Total	0	0	0		0	0	0		100	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.000	.250	.000	.250

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City of Highland
N/S: Boulder Avenue
E/W: Greenspot Road
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Groups Printed- 4+ Axle Trucks

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	1	0	0	1	0	0	2	2	3
07:15 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	0	0	2
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
07:45 AM	2	0	0	2	0	0	0	0	2	0	0	2	0	0	1	1	5
Total	2	0	0	2	0	1	0	1	4	0	0	4	0	0	6	6	13
08:00 AM	0	0	0	0	0	1	0	1	1	0	0	1	0	0	6	6	8
08:15 AM	0	0	0	0	1	0	0	1	4	0	0	4	0	0	3	3	8
08:30 AM	1	0	0	1	0	0	0	0	4	0	0	4	0	1	1	2	7
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	1	0	0	1	1	1	0	2	9	0	0	9	0	2	10	12	24
Grand Total	3	0	0	3	1	2	0	3	13	0	0	13	0	2	16	18	37
Apprch %	100	0	0		33.3	66.7	0		100	0	0		0	11.1	88.9		
Total %	8.1	0	0	8.1	2.7	5.4	0	8.1	35.1	0	0	35.1	0	5.4	43.2	48.6	

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3
07:45 AM	**2**	0	0	**2**	0	0	0	0	2	0	0	2	0	0	1	1	5
08:00 AM	0	0	0	0	0	**1**	0	**1**	1	0	0	1	0	0	**6**	**6**	**8**
08:15 AM	0	0	0	0	**1**	0	0	1	**4**	0	0	**4**	0	0	3	3	8
Total Volume	2	0	0	2	1	1	0	2	7	0	0	7	0	0	13	13	24
% App. Total	100	0	0		50	50	0		100	0	0		0	0	100		
PHF	.250	.000	.000	.250	.250	.250	.000	.500	.438	.000	.000	.438	.000	.000	.542	.542	.750

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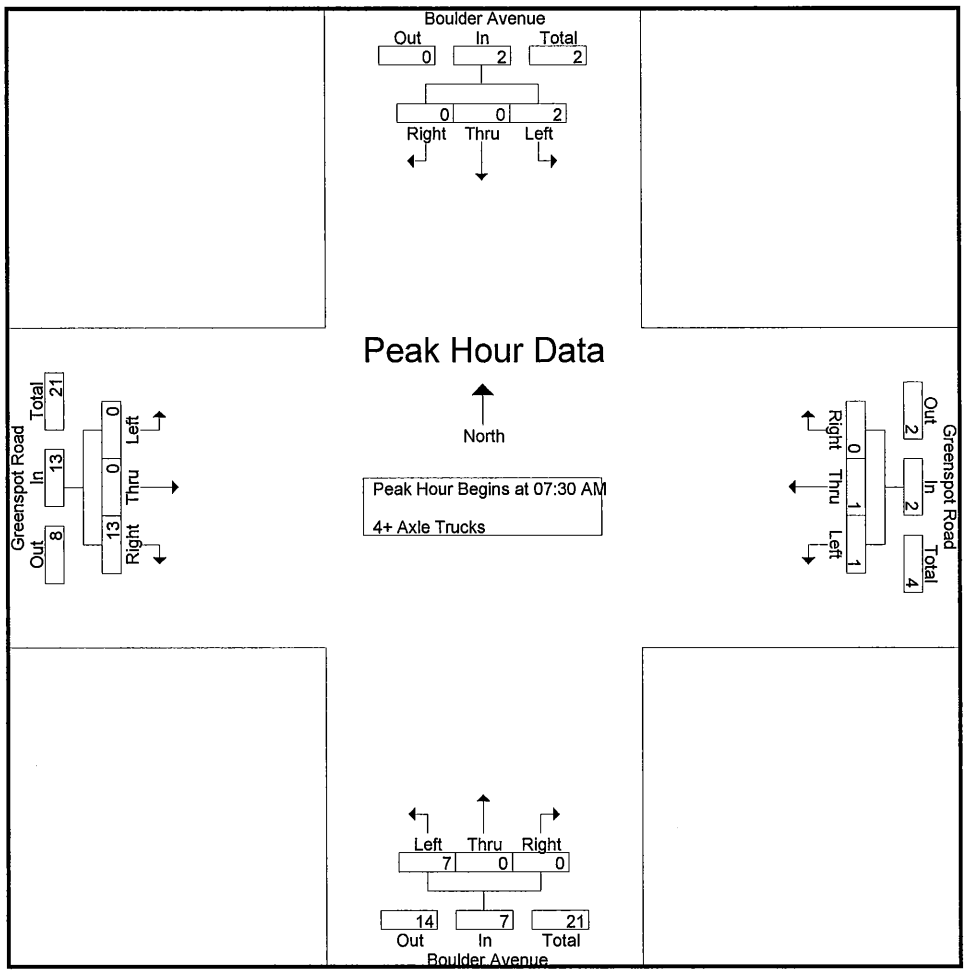

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
+15 mins.	**2**	0	0	**2**	0	0	0	0	2	0	0	2	0	0	1	1
+30 mins.	0	0	0	0	0	**1**	0	**1**	1	0	0	1	0	0	**6**	**6**
+45 mins.	0	0	0	0	**1**	0	0	1	**4**	0	0	**4**	0	0	3	3
Total Volume	2	0	0	2	1	1	0	2	7	0	0	7	0	0	13	13
% App. Total	100	0	0		50	50	0		100	0	0		0	0	100	
PHF	.250	.000	.000	.250	.250	.250	.000	.500	.438	.000	.000	.438	.000	.000	.542	.542

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City of Highland
N/S: Boulder Avenue
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Weather: Clear

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	12	52	1	65	59	153	10	222	25	55	98	178	6	162	57	225	690
04:15 PM	19	62	2	83	35	123	16	174	29	78	98	205	4	192	61	257	719
04:30 PM	20	61	3	84	48	132	13	193	32	76	82	190	3	179	61	243	710
04:45 PM	11	79	4	94	66	122	18	206	33	74	115	222	9	196	66	271	793
Total	62	254	10	326	208	530	57	795	119	283	393	795	22	729	245	996	2912
05:00 PM	18	81	2	101	51	122	11	184	41	96	121	258	6	205	53	264	807
05:15 PM	17	85	3	105	54	118	9	181	48	83	138	269	9	255	94	358	913
05:30 PM	13	62	2	77	64	128	16	208	41	59	131	231	3	226	75	304	820
05:45 PM	19	72	1	92	61	122	15	198	31	64	102	197	9	192	65	266	753
Total	67	300	8	375	230	490	51	771	161	302	492	955	27	878	287	1192	3293
Grand Total	129	554	18	701	438	1020	108	1566	280	585	885	1750	49	1607	532	2188	6205
Apprch %	18.4	79	2.6		28	65.1	6.9		16	33.4	50.6		2.2	73.4	24.3		
Total %	2.1	8.9	0.3	11.3	7.1	16.4	1.7	25.2	4.5	9.4	14.3	28.2	0.8	25.9	8.6	35.3	
Passenger Vehicles	128	552	18	698	430	1008	107	1545	278	581	879	1738	49	1595	530	2174	6155
% Passenger Vehicles	99.2	99.6	100	99.6	98.2	98.8	99.1	98.7	99.3	99.3	99.3	99.3	100	99.3	99.6	99.4	99.2
Large 2 Axle Vehicles	1	2	0	3	8	10	1	19	2	4	6	12	0	9	1	10	44
% Large 2 Axle Vehicles	0.8	0.4	0	0.4	1.8	1	0.9	1.2	0.7	0.7	0.7	0.7	0	0.6	0.2	0.5	0.7
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0
4+ Axle Trucks	0	0	0	0	0	2	0	2	0	0	0	0	0	2	1	3	5
% 4+ Axle Trucks	0	0	0	0	0	0.2	0	0.1	0	0	0	0	0	0.1	0.2	0.1	0.1

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	11	79	**4**	94	**66**	122	**18**	206	33	74	115	222	**9**	196	66	271	793
05:00 PM	**18**	81	2	101	51	122	11	184	41	**96**	121	258	6	205	53	264	807
05:15 PM	17	**85**	3	**105**	54	118	9	181	**48**	83	**138**	**269**	9	**255**	**94**	**358**	**913**
05:30 PM	13	62	2	77	64	**128**	16	**208**	41	59	131	231	3	226	75	304	820
Total Volume	59	307	11	377	235	490	54	779	163	312	505	980	27	882	288	1197	3333
% App. Total	15.6	81.4	2.9		30.2	62.9	6.9		16.6	31.8	51.5		2.3	73.7	24.1		
PHF	.819	.903	.688	.898	.890	.957	.750	.936	.849	.813	.915	.911	.750	.865	.766	.836	.913

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City of Highland
N/S: Boulder Avenue
E/W: Greenspot Road
Weather: Clear

File Name : HLDBOGRPM
Site Code : 99916000
Start Date : 12/6/2016
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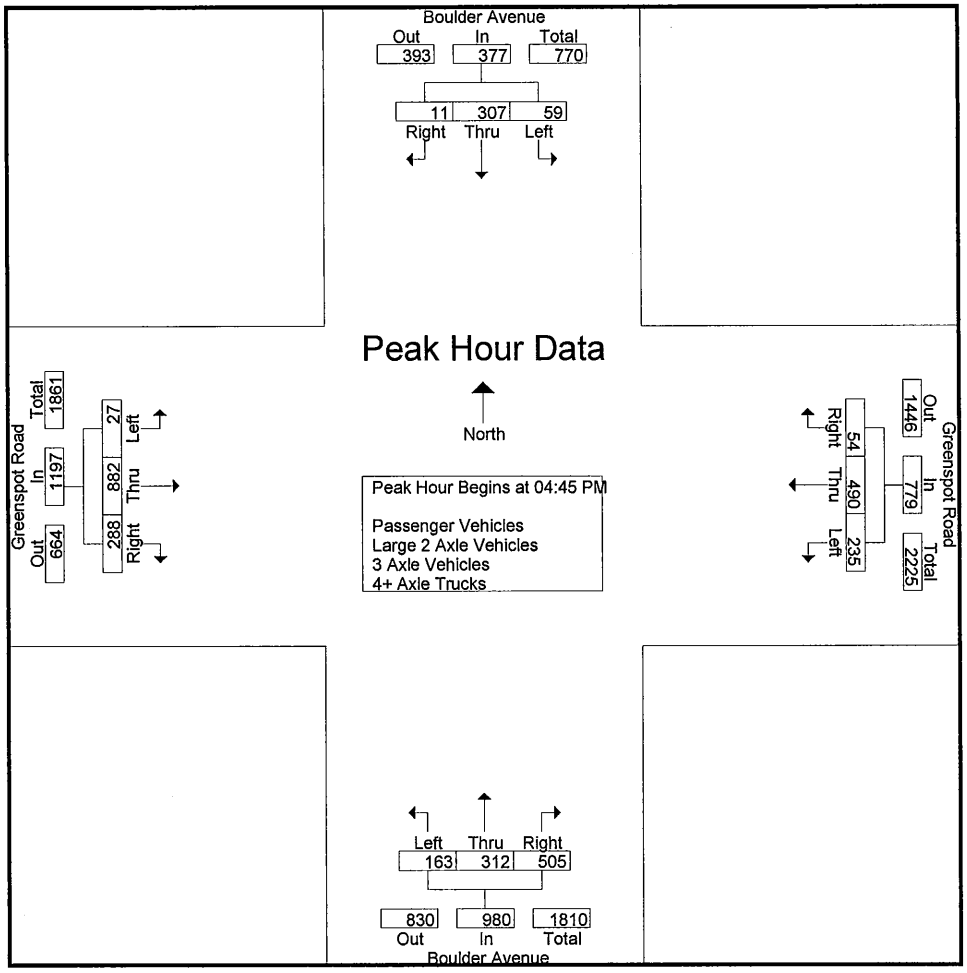

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				04:45 PM				04:45 PM			
+0 mins.	**20**	61	3	84	59	**153**	10	**222**	33	74	115	222	**9**	196	66	271
+15 mins.	11	79	**4**	94	35	123	16	174	41	**96**	121	258	6	205	53	264
+30 mins.	18	81	2	101	48	132	13	193	**48**	83	**138**	**269**	9	**255**	**94**	**358**
+45 mins.	17	**85**	3	**105**	**66**	122	**18**	206	41	59	131	231	3	226	75	304
Total Volume	66	306	12	384	208	530	57	795	163	312	505	980	27	882	288	1197
% App. Total	17.2	79.7	3.1		26.2	66.7	7.2		16.6	31.8	51.5		2.3	73.7	24.1	
PHF	.825	.900	.750	.914	.788	.866	.792	.895	.849	.813	.915	.911	.750	.865	.766	.836

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File Name : HLDBOGRPM
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Groups Printed- Passenger Vehicles

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	11	50	1	62	57	152	10	219	25	53	97	175	6	159	57	222	678
04:15 PM	19	62	2	83	34	121	15	170	29	78	97	204	4	190	60	254	711
04:30 PM	20	61	3	84	48	131	13	192	32	76	81	189	3	177	60	240	705
04:45 PM	11	79	4	94	65	120	18	203	33	74	115	222	9	196	66	271	790
Total	61	252	10	323	204	524	56	784	119	281	390	790	22	722	243	987	2884
05:00 PM	18	81	2	101	48	119	11	178	41	95	120	256	6	204	53	263	798
05:15 PM	17	85	3	105	54	116	9	179	47	83	137	267	9	253	94	356	907
05:30 PM	13	62	2	77	63	128	16	207	40	59	131	230	3	226	75	304	818
05:45 PM	19	72	1	92	61	121	15	197	31	63	101	195	9	190	65	264	748
Total	67	300	8	375	226	484	51	761	159	300	489	948	27	873	287	1187	3271
Grand Total	128	552	18	698	430	1008	107	1545	278	581	879	1738	49	1595	530	2174	6155
Apprch %	18.3	79.1	2.6		27.8	65.2	6.9		16	33.4	50.6		2.3	73.4	24.4		
Total %	2.1	9	0.3	11.3	7	16.4	1.7	25.1	4.5	9.4	14.3	28.2	0.8	25.9	8.6	35.3	

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	11	79	**4**	94	**65**	120	**18**	203	33	74	115	222	**9**	196	66	271	790
05:00 PM	**18**	81	2	101	48	119	11	178	41	**95**	120	256	6	204	53	263	798
05:15 PM	17	**85**	3	**105**	54	116	9	179	**47**	83	**137**	**267**	9	**253**	**94**	**356**	**907**
05:30 PM	13	62	2	77	63	**128**	16	**207**	40	59	131	230	3	226	75	304	818
Total Volume	59	307	11	377	230	483	54	767	161	311	503	975	27	879	288	1194	3313
% App. Total	15.6	81.4	2.9		30	63	7		16.5	31.9	51.6		2.3	73.6	24.1		
PHF	.819	.903	.688	.898	.885	.943	.750	.926	.856	.818	.918	.913	.750	.869	.766	.838	.913

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Site Code : 99916000
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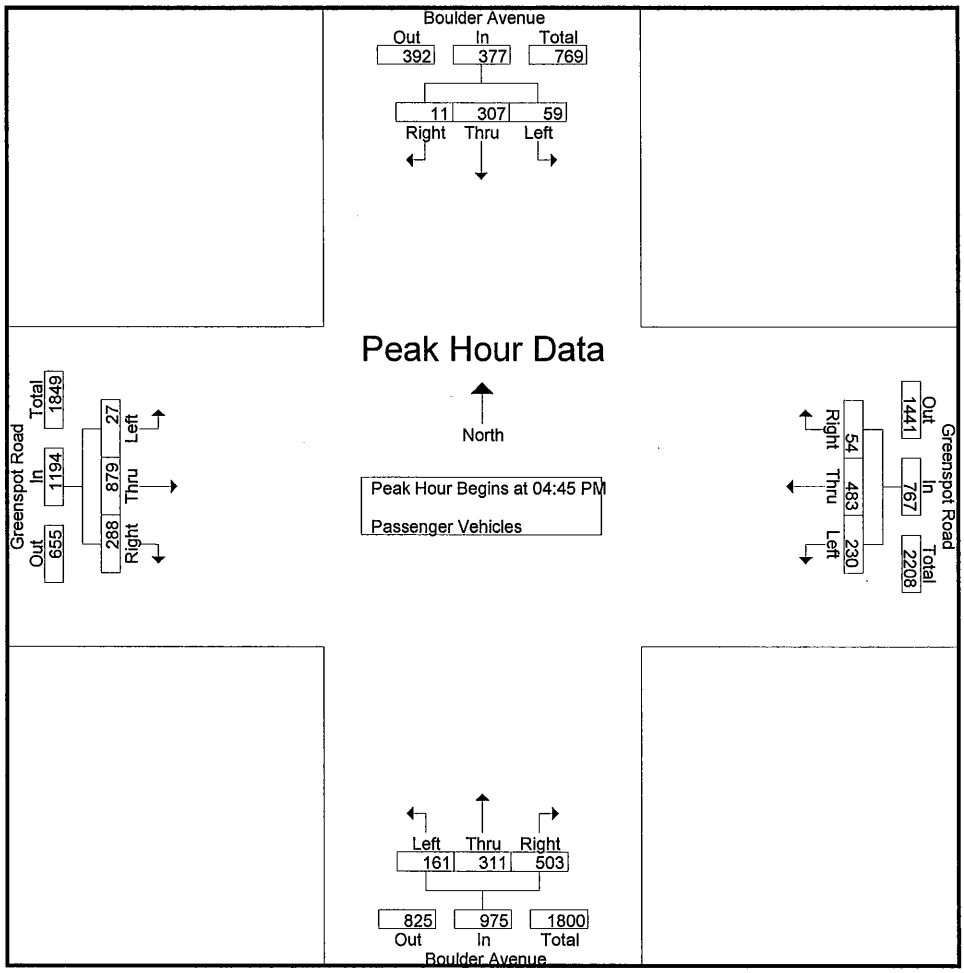

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	11	79	**4**	94	**65**	120	**18**	203	33	74	115	222	**9**	196	66	271
+15 mins.	**18**	81	2	101	48	119	11	178	41	**95**	120	256	6	204	53	263
+30 mins.	17	**85**	3	**105**	54	116	9	179	**47**	83	**137**	**267**	9	**253**	**94**	**356**
+45 mins.	13	62	2	77	63	**128**	16	**207**	40	59	131	230	3	226	75	304
Total Volume	59	307	11	377	230	483	54	767	161	311	503	975	27	879	288	1194
% App. Total	15.6	81.4	2.9		30	63	7		16.5	31.9	51.6		2.3	73.6	24.1	
PHF	.819	.903	.688	.898	.885	.943	.750	.926	.856	.818	.918	.913	.750	.869	.766	.838

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Groups Printed- Large 2 Axle Vehicles

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	2	0	3	2	1	0	3	0	2	1	3	0	2	0	2	11
04:15 PM	0	0	0	0	1	2	1	4	0	0	1	1	0	1	0	1	6
04:30 PM	0	0	0	0	0	1	0	1	0	0	1	1	0	1	1	2	4
04:45 PM	0	0	0	0	1	2	0	3	0	0	0	0	0	0	0	0	3
Total	1	2	0	3	4	6	1	11	0	2	3	5	0	4	1	5	24
05:00 PM	0	0	0	0	3	2	0	5	0	1	1	2	0	1	0	1	8
05:15 PM	0	0	0	0	0	1	0	1	1	0	1	2	0	2	0	2	5
05:30 PM	0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	0	2
05:45 PM	0	0	0	0	0	1	0	1	0	1	1	2	0	2	0	2	5
Total	0	0	0	0	4	4	0	8	2	2	3	7	0	5	0	5	20
Grand Total	1	2	0	3	8	10	1	19	2	4	6	12	0	9	1	10	44
Apprch %	33.3	66.7	0		42.1	52.6	5.3		16.7	33.3	50		0	90	10		
Total %	2.3	4.5	0	6.8	18.2	22.7	2.3	43.2	4.5	9.1	13.6	27.3	0	20.5	2.3	22.7	

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	1	**2**	0	3	0	0	0	0	0	0	0	0	3
05:00 PM	0	0	0	0	**3**	2	0	**5**	0	**1**	**1**	**2**	0	1	0	1	**8**
05:15 PM	0	0	0	0	0	1	0	1	**1**	0	1	2	0	**2**	0	**2**	5
05:30 PM	0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	0	2
Total Volume	0	0	0	0	5	5	0	10	2	1	2	5	0	3	0	3	18
% App. Total	0	0	0		50	50	0		40	20	40		0	100	0		
PHF	.000	.000	.000	.000	.417	.625	.000	.500	.500	.250	.500	.625	.000	.375	.000	.375	.563

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City of Highland
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File Name : HLDBOGRPM
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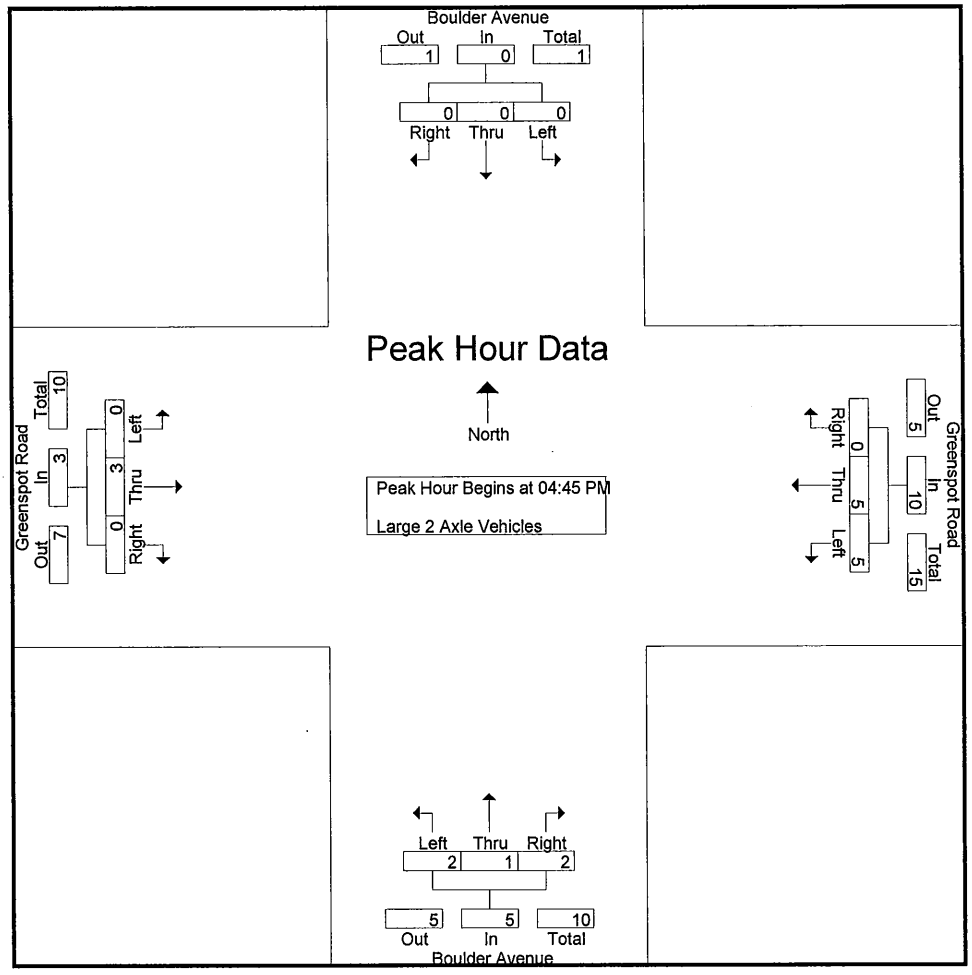

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	1	**2**	0	3	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	**3**	2	0	**5**	0	**1**	**1**	**2**	0	1	0	1
+30 mins.	0	0	0	0	0	1	0	1	**1**	0	1	2	0	**2**	0	**2**
+45 mins.	0	0	0	0	1	0	0	1	1	0	0	1	0	0	0	0
Total Volume	0	0	0	0	5	5	0	10	2	1	2	5	0	3	0	3
% App. Total	0	0	0		50	50	0		40	20	40		0	100	0	
PHF	.000	.000	.000	.000	.417	.625	.000	.500	.500	.250	.500	.625	.000	.375	.000	.375

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Weather: Clear

File Name : HLDBOGRPM
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Groups Printed- 3 Axle Vehicles

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Apprch %	0	0	0		0	0	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	100	

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
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Weather: Clear

File Name : HLDBOGRPM
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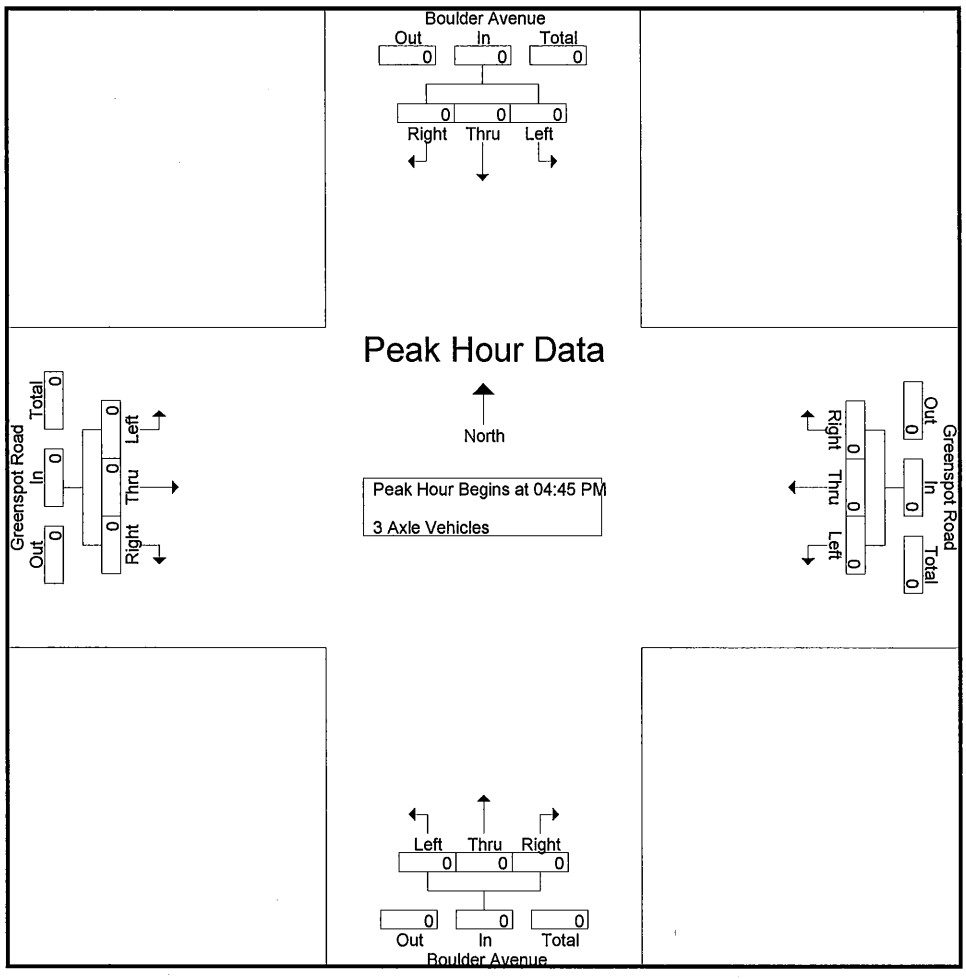

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3	3
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	2	0	2	0	0	0	0	0	2	1	3	5
Apprch %	0	0	0		0	100	0		0	0	0		0	66.7	33.3		
Total %	0	0	0	0	0	40	0	40	0	0	0	0	0	40	20	60	

	Boulder Avenue Southbound				Greenspot Road Westbound				Boulder Avenue Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.500

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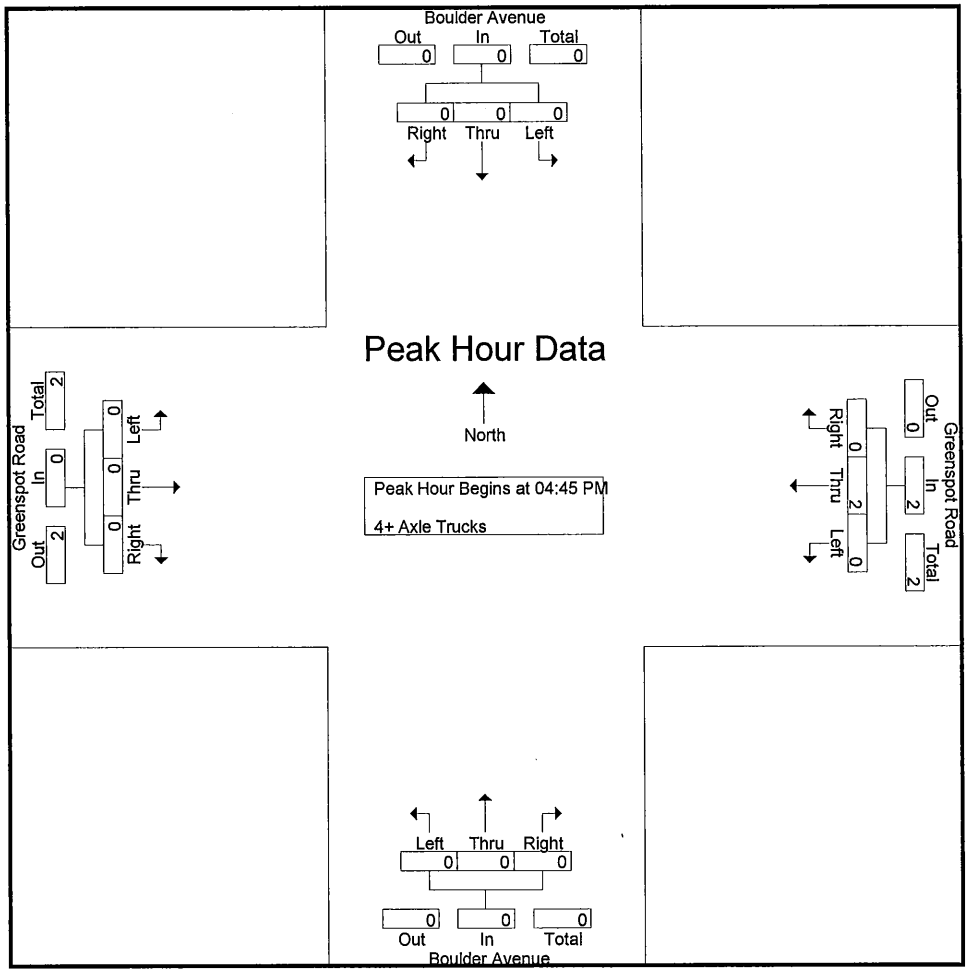

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000

6

Counts Unlimited
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City of Highland
N/S: Orange Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDORGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	1	30	33	0	287	6	293	5	1	1	7	11	86	1	98	431
07:15 AM	5	1	52	58	0	325	16	341	1	2	0	3	48	110	2	160	562
07:30 AM	21	2	99	122	0	356	13	369	0	7	0	7	32	111	0	143	641
07:45 AM	14	1	105	120	0	367	20	387	1	0	1	2	30	125	0	155	664
Total	42	5	286	333	0	1335	55	1390	7	10	2	19	121	432	3	556	2298
08:00 AM	35	0	94	129	1	331	32	364	4	0	0	4	33	117	1	151	648
08:15 AM	48	0	118	166	1	285	41	327	0	0	0	0	50	148	1	199	692
08:30 AM	35	0	88	123	0	209	25	234	1	0	0	1	52	150	1	203	561
08:45 AM	5	0	27	32	0	167	4	171	1	0	0	1	13	98	1	112	316
Total	123	0	327	450	2	992	102	1096	6	0	0	6	148	513	4	665	2217
Grand Total	165	5	613	783	2	2327	157	2486	13	10	2	25	269	945	7	1221	4515
Apprch %	21.1	0.6	78.3		0.1	93.6	6.3		52	40	8		22	77.4	0.6		
Total %	3.7	0.1	13.6	17.3	0	51.5	3.5	55.1	0.3	0.2	0	0.6	6	20.9	0.2	27	
Passenger Vehicles	162	5	601	768	2	2299	155	2456	13	10	2	25	252	908	7	1167	4416
% Passenger Vehicles	98.2	100	98	98.1	100	98.8	98.7	98.8	100	100	100	100	93.7	96.1	100	95.6	97.8
Large 2 Axle Vehicles	3	0	12	15	0	17	2	19	0	0	0	0	17	17	0	34	68
% Large 2 Axle Vehicles	1.8	0	2	1.9	0	0.7	1.3	0.8	0	0	0	0	6.3	1.8	0	2.8	1.5
3 Axle Vehicles	0	0	0	0	0	9	0	9	0	0	0	0	0	15	0	15	24
% 3 Axle Vehicles	0	0	0	0	0	0.4	0	0.4	0	0	0	0	0	1.6	0	1.2	0.5
4+ Axle Trucks	0	0	0	0	0	2	0	2	0	0	0	0	0	5	0	5	7
% 4+ Axle Trucks	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	0.5	0	0.4	0.2

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	21	**2**	99	122	0	356	13	369	0	**7**	0	**7**	32	111	0	143	641
07:45 AM	14	1	105	120	0	**367**	20	**387**	1	0	**1**	2	30	125	0	155	664
08:00 AM	35	0	94	129	**1**	331	32	364	**4**	0	0	4	33	117	**1**	151	648
08:15 AM	**48**	0	**118**	**166**	1	285	**41**	327	0	0	0	0	**50**	**148**	1	**199**	**692**
Total Volume	118	3	416	537	2	1339	106	1447	5	7	1	13	145	501	2	648	2645
% App. Total	22	0.6	77.5		0.1	92.5	7.3		38.5	53.8	7.7		22.4	77.3	0.3		
PHF	.615	.375	.881	.809	.500	.912	.646	.935	.313	.250	.250	.464	.725	.846	.500	.814	.956

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City of Highland
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E/W: Greenspot Road
Weather: Clear

File Name : HLDORGRAM
Site Code : 99916000
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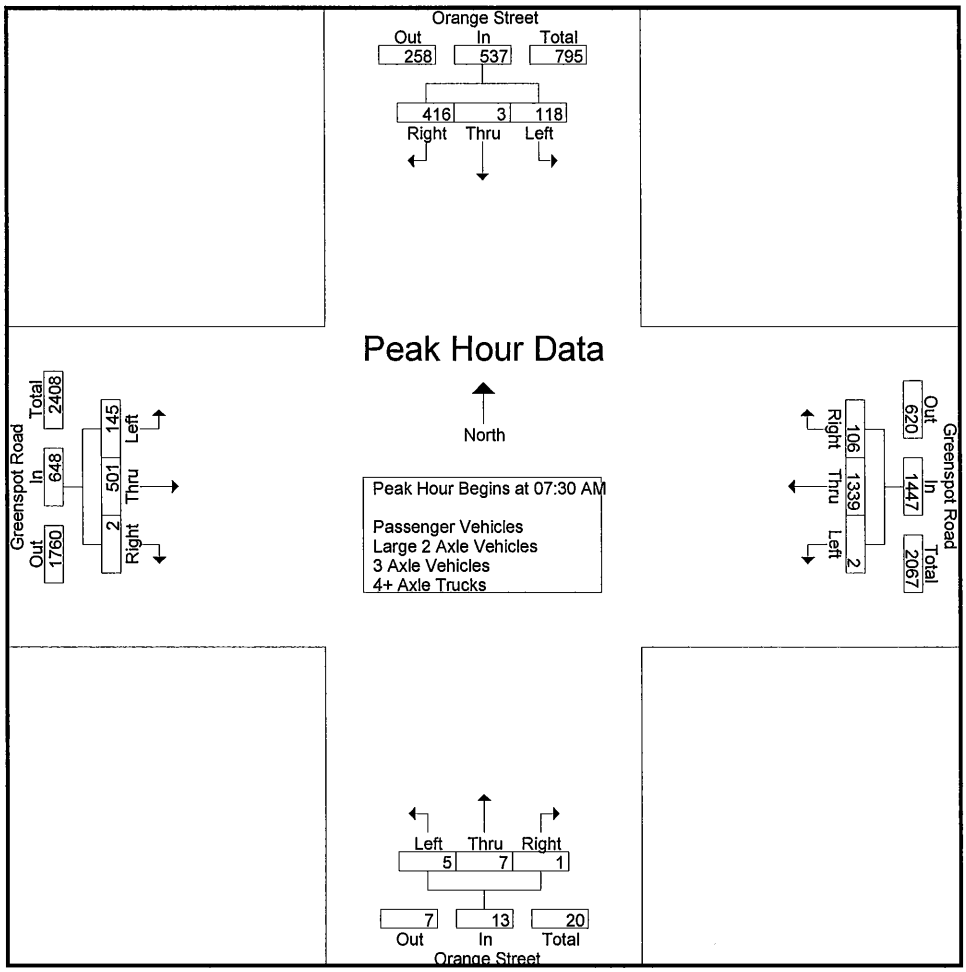

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:15 AM				07:00 AM				07:45 AM			
+0 mins.	14	**1**	105	120	0	325	16	341	**5**	1	**1**	**7**	30	125	0	155
+15 mins.	35	0	94	129	0	356	13	369	1	2	0	3	33	117	**1**	151
+30 mins.	**48**	0	**118**	**166**	0	**367**	20	**387**	0	**7**	0	7	50	148	1	199
+45 mins.	35	0	88	123	**1**	331	**32**	364	1	0	1	2	**52**	**150**	1	**203**
Total Volume	132	1	405	538	1	1379	81	1461	7	10	2	19	165	540	3	708
% App. Total	24.5	0.2	75.3		0.1	94.4	5.5		36.8	52.6	10.5		23.3	76.3	0.4	
PHF	.688	.250	.858	.810	.250	.939	.633	.944	.350	.357	.500	.679	.793	.900	.750	.872

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File Name : HLDORGRAM
Site Code : 99916000
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Page No : 1

Groups Printed- Passenger Vehicles

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	2	1	29	32	0	286	5	291	5	1	1	7	10	84	1	95	425
07:15 AM	5	1	51	57	0	323	16	339	1	2	0	3	43	107	2	152	551
07:30 AM	18	2	96	116	0	352	13	365	0	7	0	7	32	107	0	139	627
07:45 AM	14	1	105	120	0	364	20	384	1	0	1	2	30	122	0	152	658
Total	39	5	281	325	0	1325	54	1379	7	10	2	19	115	420	3	538	2261
08:00 AM	35	0	94	129	1	327	32	360	4	0	0	4	33	115	1	149	642
08:15 AM	48	0	117	165	1	283	40	324	0	0	0	0	45	144	1	190	679
08:30 AM	35	0	84	119	0	200	25	225	1	0	0	1	49	140	1	190	535
08:45 AM	5	0	25	30	0	164	4	168	1	0	0	1	10	89	1	100	299
Total	123	0	320	443	2	974	101	1077	6	0	0	6	137	488	4	629	2155
Grand Total	162	5	601	768	2	2299	155	2456	13	10	2	25	252	908	7	1167	4416
Apprch %	21.1	0.7	78.3		0.1	93.6	6.3		52	40	8		21.6	77.8	0.6		
Total %	3.7	0.1	13.6	17.4	0	52.1	3.5	55.6	0.3	0.2	0	0.6	5.7	20.6	0.2	26.4	

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	18	**2**	96	116	0	352	13	365	0	**7**	0	**7**	32	107	0	139	627
07:45 AM	14	1	105	120	0	**364**	20	**384**	1	0	**1**	2	30	122	0	152	658
08:00 AM	35	0	94	129	**1**	327	32	360	**4**	0	0	4	33	115	**1**	149	642
08:15 AM	**48**	0	**117**	**165**	1	283	**40**	324	0	0	0	0	**45**	**144**	1	**190**	**679**
Total Volume	115	3	412	530	2	1326	105	1433	5	7	1	13	140	488	2	630	2606
% App. Total	21.7	0.6	77.7		0.1	92.5	7.3		38.5	53.8	7.7		22.2	77.5	0.3		
PHF	.599	.375	.880	.803	.500	.911	.656	.933	.313	.250	.250	.464	.778	.847	.500	.829	.959

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City of Highland
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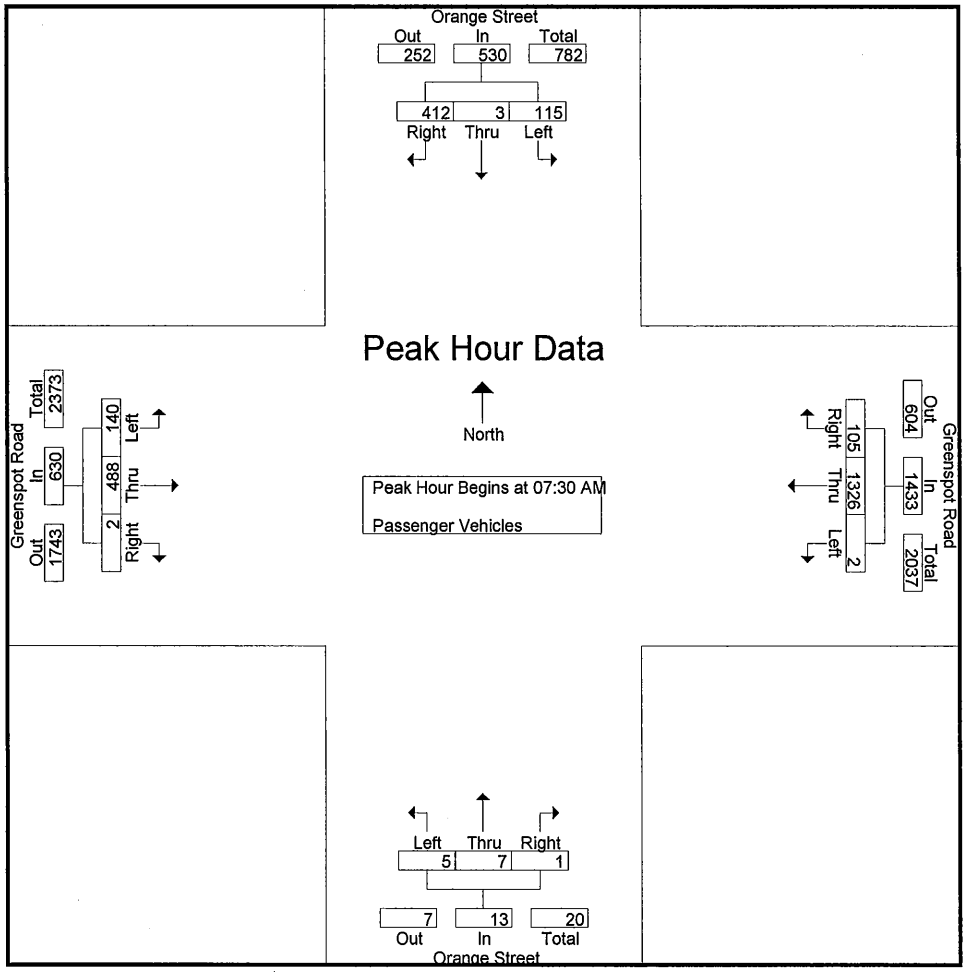

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	18	**2**	96	116	0	352	13	365	0	**7**	0	**7**	32	107	0	139
+15 mins.	14	1	105	120	0	**364**	20	**384**	1	0	**1**	2	30	122	0	152
+30 mins.	35	0	94	129	**1**	327	32	360	**4**	0	0	4	33	115	**1**	149
+45 mins.	**48**	0	**117**	**165**	1	283	**40**	324	0	0	0	0	**45**	**144**	1	**190**
Total Volume	115	3	412	530	2	1326	105	1433	5	7	1	13	140	488	2	630
% App. Total	21.7	0.6	77.7		0.1	92.5	7.3		38.5	53.8	7.7		22.2	77.5	0.3	
PHF	.599	.375	.880	.803	.500	.911	.656	.933	.313	.250	.250	.464	.778	.847	.500	.829

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City of Highland
N/S: Orange Street
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Weather: Clear

File Name : HLDORGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	1	1	0	1	1	2	0	0	0	0	1	2	0	3	6
07:15 AM	0	0	1	1	0	1	0	1	0	0	0	0	5	3	0	8	10
07:30 AM	3	0	3	6	0	4	0	4	0	0	0	0	0	1	0	1	11
07:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
Total	3	0	5	8	0	9	1	10	0	0	0	0	6	7	0	13	31
08:00 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	2	0	2	6
08:15 AM	0	0	1	1	0	1	1	2	0	0	0	0	5	2	0	7	10
08:30 AM	0	0	4	4	0	3	0	3	0	0	0	0	3	5	0	8	15
08:45 AM	0	0	2	2	0	0	0	0	0	0	0	0	3	1	0	4	6
Total	0	0	7	7	0	8	1	9	0	0	0	0	11	10	0	21	37
Grand Total	3	0	12	15	0	17	2	19	0	0	0	0	17	17	0	34	68
Apprch %	20	0	80		0	89.5	10.5		0	0	0		50	50	0		
Total %	4.4	0	17.6	22.1	0	25	2.9	27.9	0	0	0	0	25	25	0	50	

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	**3**	0	**3**	**6**	0	**4**	0	**4**	0	0	0	0	0	**1**	0	1	**11**
07:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1	4
08:00 AM	0	0	0	0	0	4	0	4	0	0	0	0	0	**2**	0	2	6
08:15 AM	0	0	1	1	0	1	**1**	2	0	0	0	0	**5**	2	0	**7**	10
Total Volume	3	0	4	7	0	12	1	13	0	0	0	0	5	6	0	11	31
% App. Total	42.9	0	57.1		0	92.3	7.7		0	0	0		45.5	54.5	0		
PHF	.250	.000	.333	.292	.000	.750	.250	.813	.000	.000	.000	.000	.250	.750	.000	.393	.705

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City of Highland
N/S: Orange Street
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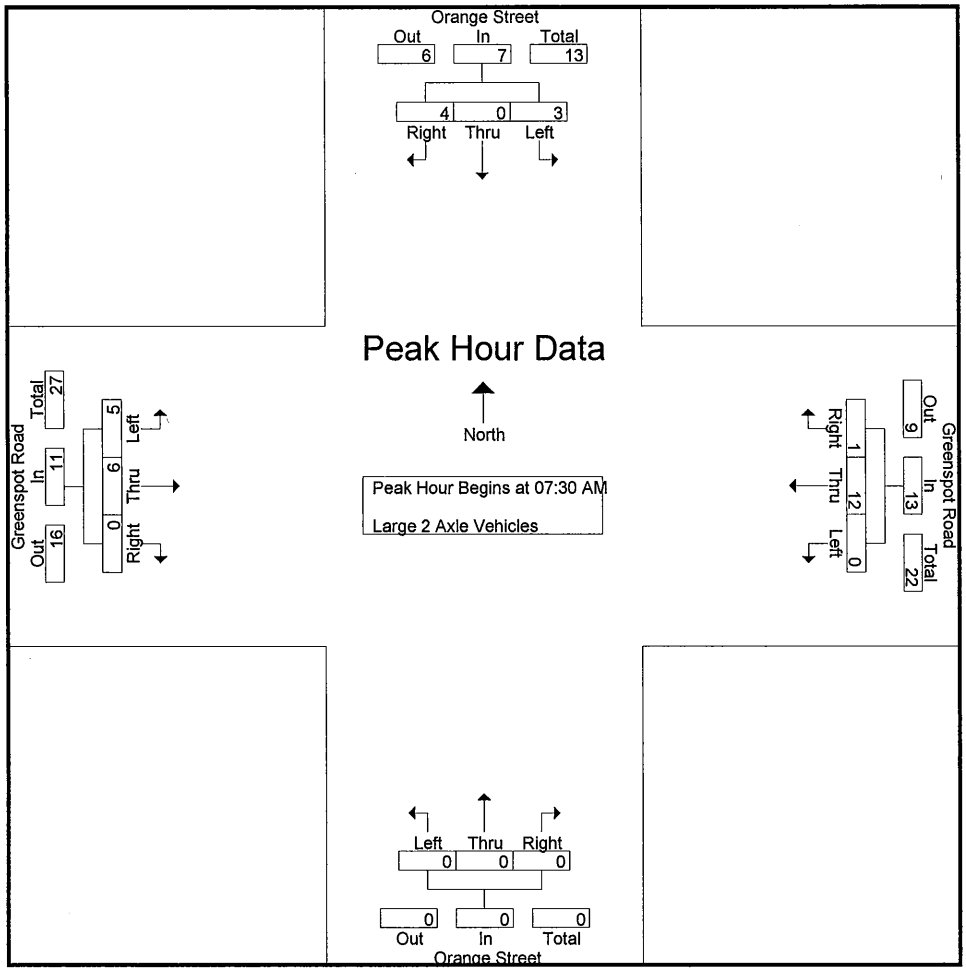

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	**3**	0	**3**	**6**	0	**4**	0	**4**	0	0	0	0	0	1	0	1
+15 mins.	0	0	0	0	0	3	0	3	0	0	0	0	0	1	0	1
+30 mins.	0	0	0	0	0	4	0	**4**	0	0	0	0	0	**2**	0	2
+45 mins.	0	0	1	1	0	1	**1**	2	0	0	0	0	**5**	2	0	**7**
Total Volume	3	0	4	7	0	12	1	13	0	0	0	0	5	6	0	11
% App. Total	42.9	0	57.1		0	92.3	7.7		0	0	0		45.5	54.5	0	
PHF	.250	.000	.333	.292	.000	.750	.250	.813	.000	.000	.000	.000	.250	.750	.000	.393

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Groups Printed- 3 Axle Vehicles

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
08:30 AM	0	0	0	0	0	6	0	6	0	0	0	0	0	3	0	3	9
08:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	7	0	7	10
Total	0	0	0	0	0	9	0	9	0	0	0	0	0	12	0	12	21
Grand Total	0	0	0	0	0	9	0	9	0	0	0	0	0	15	0	15	24
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	37.5	0	37.5	0	0	0	0	0	62.5	0	62.5	

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	0	**3**	**3**
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	5
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.417	.000	.417	.417

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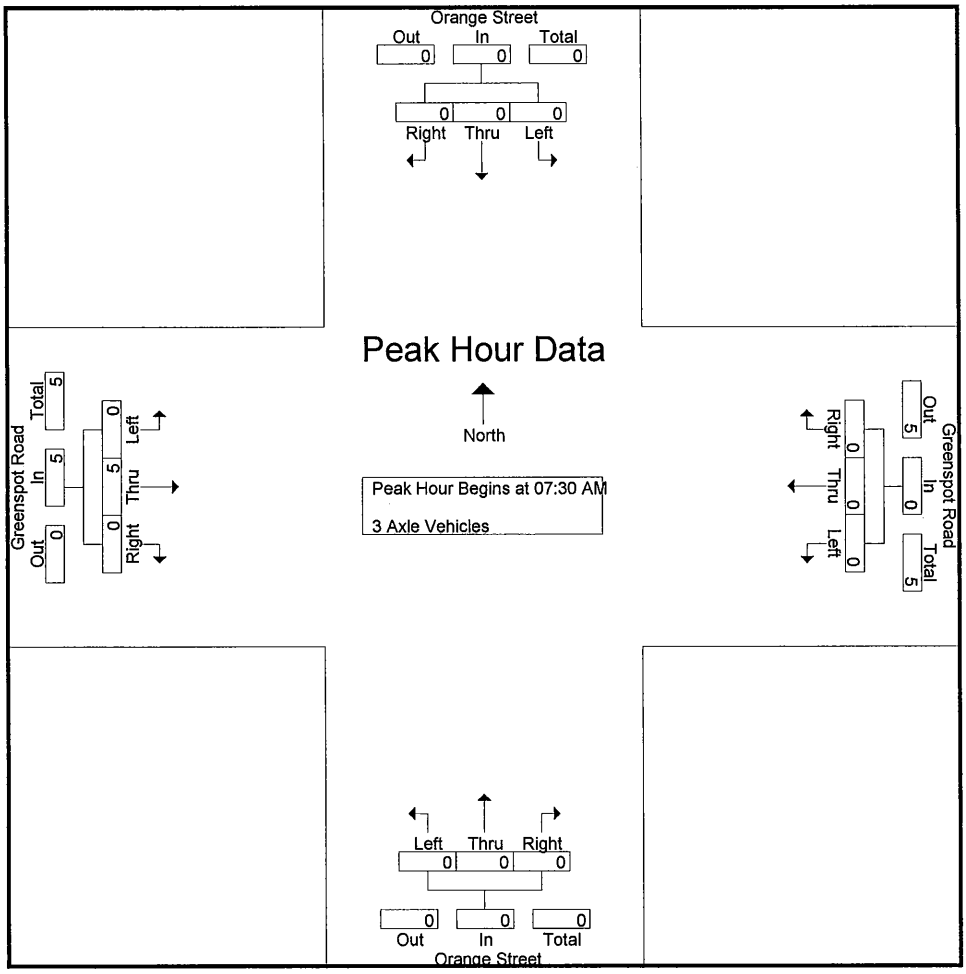

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	0	**3**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.417	.000	.417

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Groups Printed- 4+ Axle Trucks

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
Grand Total	0	0	0	0	0	2	0	2	0	0	0	0	0	5	0	5	7
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	28.6	0	28.6	0	0	0	0	0	71.4	0	71.4	

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	**2**	**2**
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.375

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City of Highland
N/S: Orange Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDORGRAM
Site Code : 99916000
Start Date : 12/6/2016
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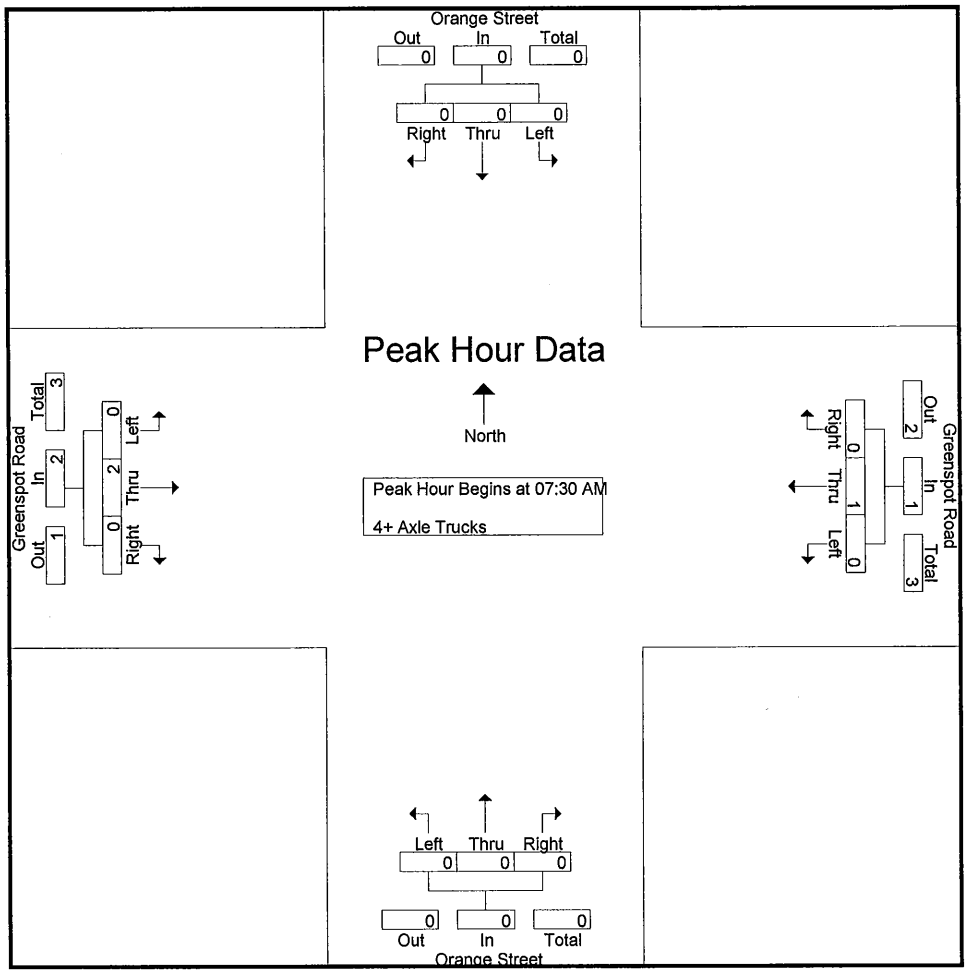

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	**2**
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250

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Weather: Clear

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Site Code : 99916000
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	0	28	36	1	184	1	186	3	1	1	5	16	252	5	273	500
04:15 PM	4	1	19	24	0	149	5	154	1	0	0	1	24	275	1	300	479
04:30 PM	10	1	32	43	0	163	9	172	0	0	0	0	18	257	0	275	490
04:45 PM	6	0	19	25	1	178	4	183	2	0	0	2	17	303	1	321	531
Total	28	2	98	128	2	674	19	695	6	1	1	8	75	1087	7	1169	2000
05:00 PM	8	0	12	20	0	174	5	179	0	0	0	0	23	321	1	345	544
05:15 PM	9	0	17	26	1	157	17	175	1	1	2	4	38	360	3	401	606
05:30 PM	9	0	23	32	1	178	25	204	1	0	0	1	43	321	2	366	603
05:45 PM	3	0	15	18	1	175	10	186	2	2	0	4	27	283	3	313	521
Total	29	0	67	96	3	684	57	744	4	3	2	9	131	1285	9	1425	2274
Grand Total	57	2	165	224	5	1358	76	1439	10	4	3	17	206	2372	16	2594	4274
Apprch %	25.4	0.9	73.7		0.3	94.4	5.3		58.8	23.5	17.6		7.9	91.4	0.6		
Total %	1.3	0	3.9	5.2	0.1	31.8	1.8	33.7	0.2	0.1	0.1	0.4	4.8	55.5	0.4	60.7	
Passenger Vehicles	57	2	163	222	5	1339	76	1420	10	4	3	17	205	2350	16	2571	4230
% Passenger Vehicles	100	100	98.8	99.1	100	98.6	100	98.7	100	100	100	100	99.5	99.1	100	99.1	99
Large 2 Axle Vehicles	0	0	2	2	0	17	0	17	0	0	0	0	1	19	0	20	39
% Large 2 Axle Vehicles	0	0	1.2	0.9	0	1.3	0	1.2	0	0	0	0	0.5	0.8	0	0.8	0.9
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
% 4+ Axle Trucks	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	0.1	0	0.1	0.1

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	6	0	19	25	**1**	**178**	4	183	**2**	0	0	2	17	303	1	321	531
05:00 PM	8	0	12	20	0	174	5	179	0	0	0	0	23	321	1	345	544
05:15 PM	**9**	0	17	26	1	157	17	175	1	**1**	**2**	**4**	38	**360**	**3**	**401**	**606**
05:30 PM	9	0	**23**	**32**	1	178	**25**	**204**	1	0	0	1	**43**	321	2	366	603
Total Volume	32	0	71	103	3	687	51	741	4	1	2	7	121	1305	7	1433	2284
% App. Total	31.1	0	68.9		0.4	92.7	6.9		57.1	14.3	28.6		8.4	91.1	0.5		
PHF	.889	.000	.772	.805	.750	.965	.510	.908	.500	.250	.250	.438	.703	.906	.583	.893	.942

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File Name : HLDORGRPM
Site Code : 99916000
Start Date : 12/6/2016
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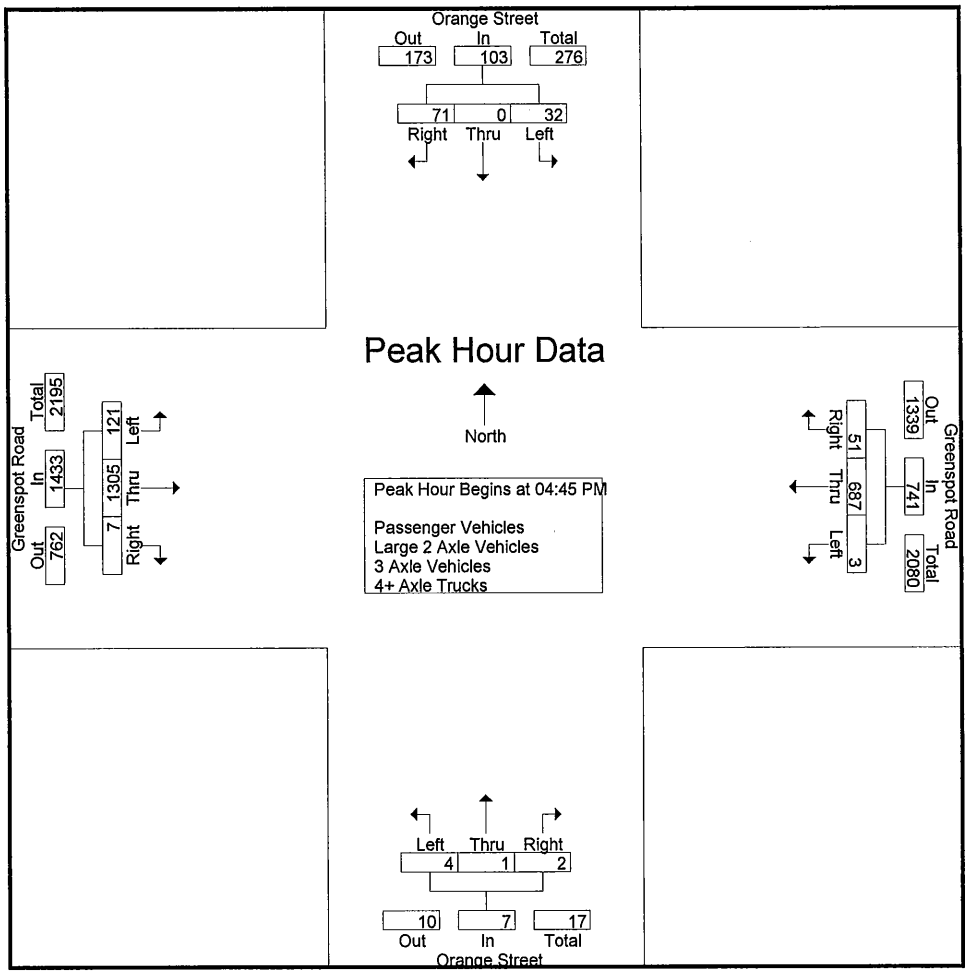

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				05:00 PM				04:45 PM			
+0 mins.	8	0	28	36	0	174	5	179	0	0	0	0	17	303	1	321
+15 mins.	4	**1**	19	24	**1**	157	17	175	1	1	**2**	**4**	23	321	1	345
+30 mins.	**10**	1	**32**	**43**	1	**178**	**25**	**204**	1	0	0	1	38	**360**	**3**	**401**
+45 mins.	6	0	19	25	1	175	10	186	**2**	**2**	0	4	**43**	321	2	366
Total Volume	28	2	98	128	3	684	57	744	4	3	2	9	121	1305	7	1433
% App. Total	21.9	1.6	76.6		0.4	91.9	7.7		44.4	33.3	22.2		8.4	91.1	0.5	
PHF	.700	.500	.766	.744	.750	.961	.570	.912	.500	.375	.250	.563	.703	.906	.583	.893

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Groups Printed- Passenger Vehicles

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	8	0	28	36	1	181	1	183	3	1	1	5	15	248	5	268	492
04:15 PM	4	1	18	23	0	147	5	152	1	0	0	1	24	271	1	296	472
04:30 PM	10	1	31	42	0	163	9	172	0	0	0	0	18	254	0	272	486
04:45 PM	6	0	19	25	1	175	4	180	2	0	0	2	17	303	1	321	528
Total	28	2	96	126	2	666	19	687	6	1	1	8	74	1076	7	1157	1978
05:00 PM	8	0	12	20	0	168	5	173	0	0	0	0	23	318	1	342	535
05:15 PM	9	0	17	26	1	155	17	173	1	1	2	4	38	356	3	397	600
05:30 PM	9	0	23	32	1	176	25	202	1	0	0	1	43	321	2	366	601
05:45 PM	3	0	15	18	1	174	10	185	2	2	0	4	27	279	3	309	516
Total	29	0	67	96	3	673	57	733	4	3	2	9	131	1274	9	1414	2252
Grand Total	57	2	163	222	5	1339	76	1420	10	4	3	17	205	2350	16	2571	4230
Apprch %	25.7	0.9	73.4		0.4	94.3	5.4		58.8	23.5	17.6		8	91.4	0.6		
Total %	1.3	0	3.9	5.2	0.1	31.7	1.8	33.6	0.2	0.1	0.1	0.4	4.8	55.6	0.4	60.8	

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	6	0	19	25	**1**	175	4	180	**2**	0	0	2	17	303	1	321	528
05:00 PM	8	0	12	20	0	168	5	173	0	0	0	0	23	318	1	342	535
05:15 PM	**9**	0	17	26	1	155	17	173	1	**1**	**2**	**4**	38	**356**	**3**	**397**	600
05:30 PM	9	0	**23**	**32**	1	**176**	**25**	**202**	1	0	0	1	**43**	321	2	366	**601**
Total Volume	32	0	71	103	3	674	51	728	4	1	2	7	121	1298	7	1426	2264
% App. Total	31.1	0	68.9		0.4	92.6	7		57.1	14.3	28.6		8.5	91	0.5		
PHF	.889	.000	.772	.805	.750	.957	.510	.901	.500	.250	.250	.438	.703	.912	.583	.898	.942

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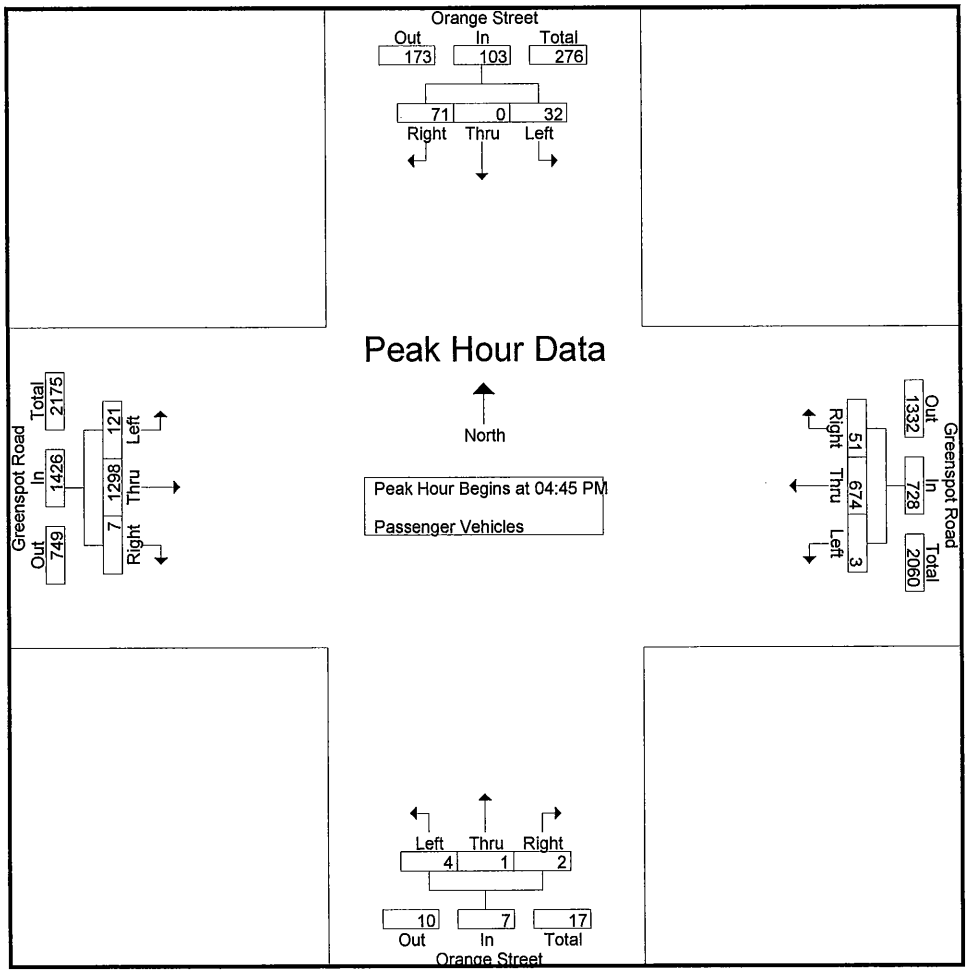

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	6	0	19	25	**1**	175	4	180	**2**	0	0	2	17	303	1	321
+15 mins.	8	0	12	20	0	168	5	173	0	0	0	0	23	318	1	342
+30 mins.	**9**	0	17	26	1	155	17	173	1	**1**	**2**	**4**	38	**356**	**3**	**397**
+45 mins.	9	0	**23**	**32**	1	**176**	**25**	**202**	1	0	0	1	**43**	321	2	366
Total Volume	32	0	71	103	3	674	51	728	4	1	2	7	121	1298	7	1426
% App. Total	31.1	0	68.9		0.4	92.6	7		57.1	14.3	28.6		8.5	91	0.5	
PHF	.889	.000	.772	.805	.750	.957	.510	.901	.500	.250	.250	.438	.703	.912	.583	.898

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Groups Printed- Large 2 Axle Vehicles

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	3	0	3	0	0	0	0	1	3	0	4	7
04:15 PM	0	0	1	1	0	2	0	2	0	0	0	0	0	3	0	3	6
04:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	2	3
04:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
Total	0	0	2	2	0	8	0	8	0	0	0	0	1	8	0	9	19
05:00 PM	0	0	0	0	0	5	0	5	0	0	0	0	0	3	0	3	8
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
05:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	4	0	4	5
Total	0	0	0	0	0	9	0	9	0	0	0	0	0	11	0	11	20
Grand Total	0	0	2	2	0	17	0	17	0	0	0	0	1	19	0	20	39
Apprch %	0	0	100		0	100	0		0	0	0		5	95	0		
Total %	0	0	5.1	5.1	0	43.6	0	43.6	0	0	0	0	2.6	48.7	0	51.3	

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0	3
05:00 PM	0	0	0	0	0	**5**	0	**5**	0	0	0	0	0	3	0	3	**8**
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	**4**	0	**4**	5
05:30 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Total Volume	0	0	0	0	0	11	0	11	0	0	0	0	0	7	0	7	18
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.550	.000	.550	.000	.000	.000	.000	.000	.438	.000	.438	.563

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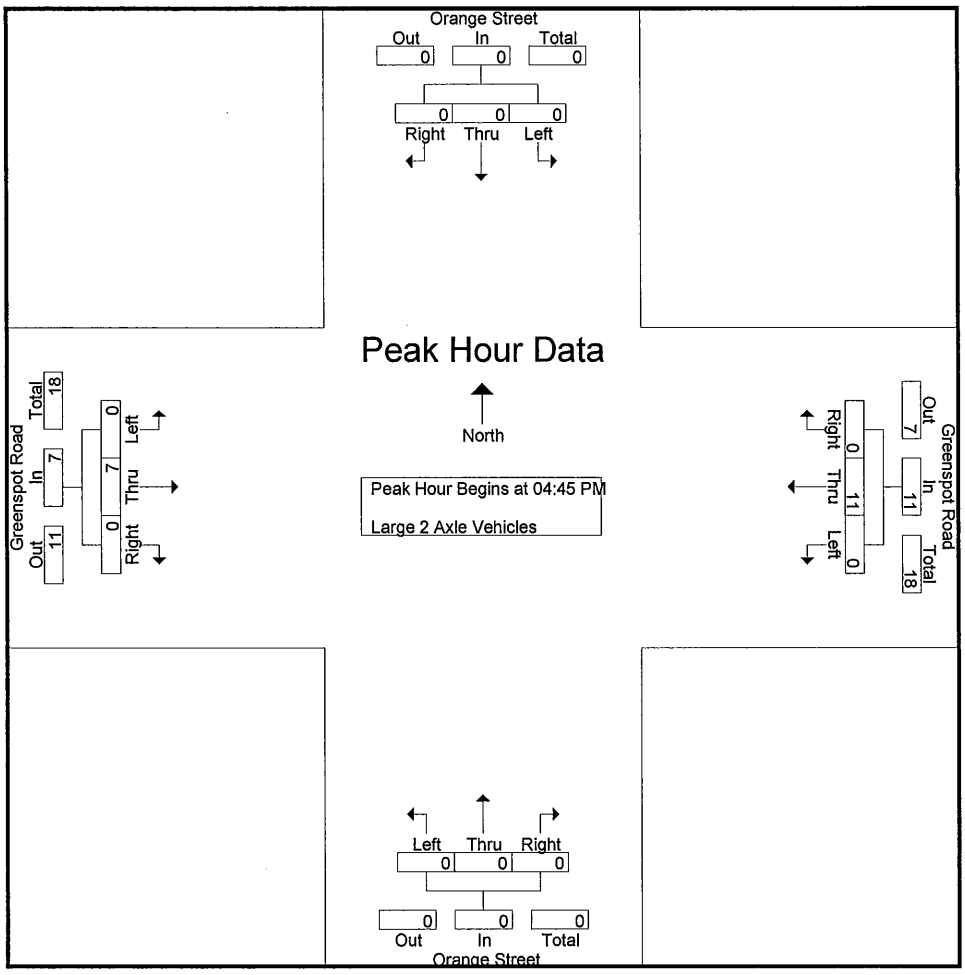

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	3	0	3	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	**5**	0	**5**	0	0	0	0	0	3	0	3
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	**4**	0	**4**
+45 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	11	0	11	0	0	0	0	0	7	0	7
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.550	.000	.550	.000	.000	.000	.000	.000	.438	.000	.438

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File Name : HLDORGRPM
Site Code : 99916000
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Groups Printed- 3 Axle Vehicles

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Apprch %	0	0	0		0	0	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	100	

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
N/S: Orange Street
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Weather: Clear

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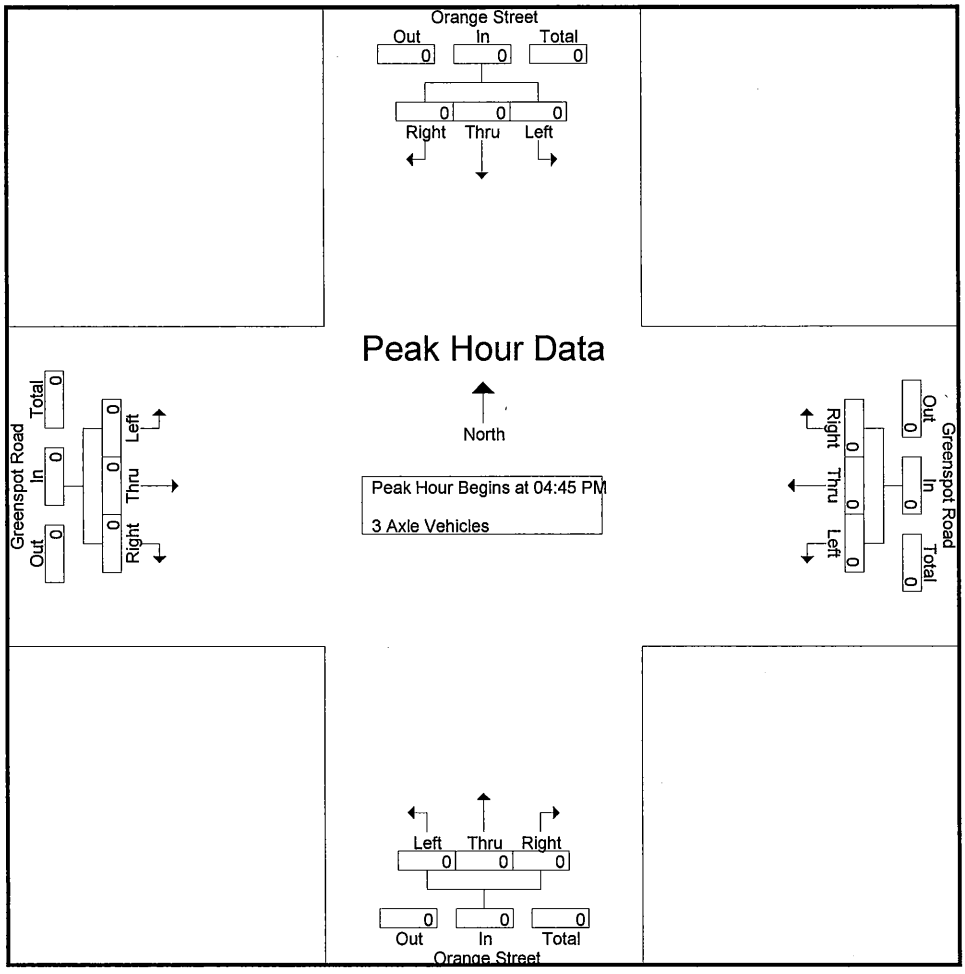

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- 4+ Axle Trucks

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
Grand Total	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	50	0	50	0	0	0	0	0	50	0	50	

	Orange Street Southbound				Greenspot Road Westbound				Orange Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000	.500

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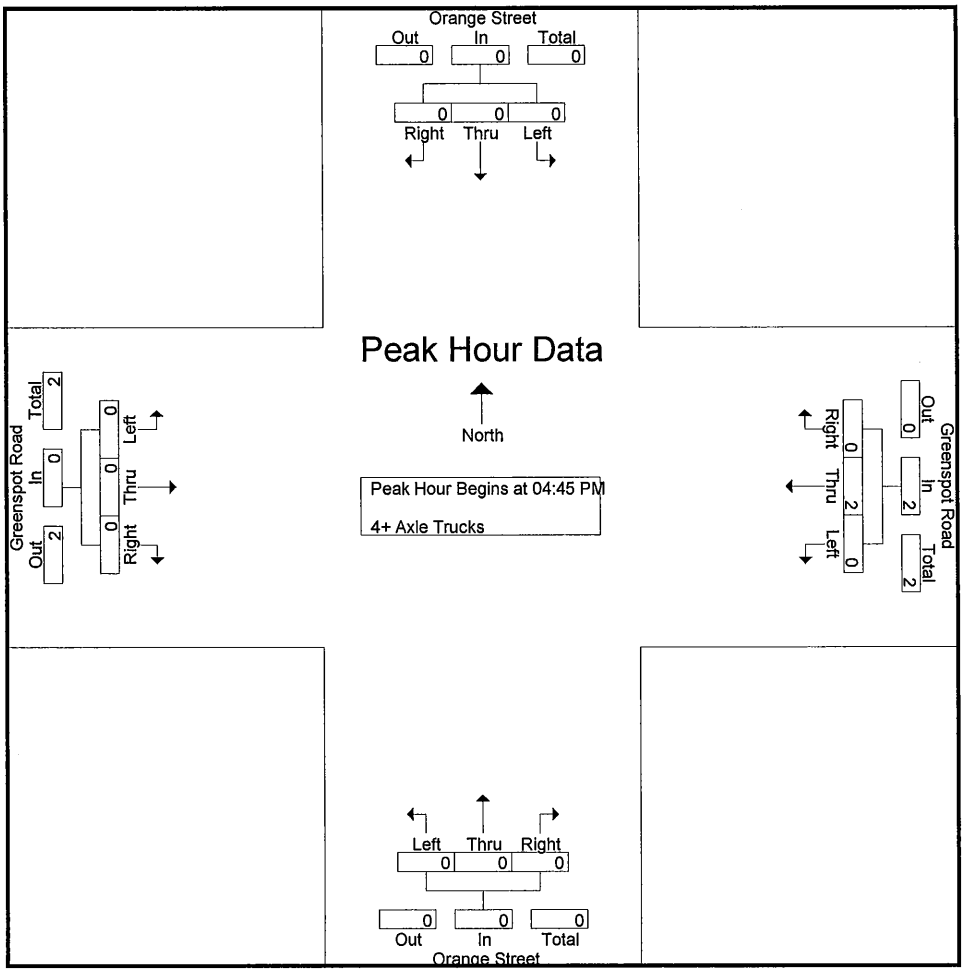

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	100	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.500	.000	.500	.000	.000	.000	.000	.000	.000	.000	.000

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	4	1	61	66	0	207	9	216	3	3	0	6	12	57	2	71	359
07:15 AM	7	0	52	59	0	270	11	281	6	1	0	7	32	82	2	116	463
07:30 AM	6	1	91	98	0	316	34	350	4	2	0	6	47	67	3	117	571
07:45 AM	11	2	84	97	1	294	44	339	5	7	3	15	80	61	2	143	594
Total	28	4	288	320	1	1087	98	1186	18	13	3	34	171	267	9	447	1987
08:00 AM	10	1	94	105	3	271	16	290	5	1	0	6	39	96	5	140	541
08:15 AM	6	3	63	72	1	198	8	207	7	2	0	9	60	118	5	183	471
08:30 AM	3	1	42	46	2	162	4	168	4	3	0	7	65	112	3	180	401
08:45 AM	6	2	48	56	0	106	7	113	3	2	0	5	36	67	4	107	281
Total	25	7	247	279	6	737	35	778	19	8	0	27	200	393	17	610	1694
Grand Total	53	11	535	599	7	1824	133	1964	37	21	3	61	371	660	26	1057	3681
Apprch %	8.8	1.8	89.3		0.4	92.9	6.8		60.7	34.4	4.9		35.1	62.4	2.5		
Total %	1.4	0.3	14.5	16.3	0.2	49.6	3.6	53.4	1	0.6	0.1	1.7	10.1	17.9	0.7	28.7	
Passenger Vehicles	49	11	527	587	7	1803	129	1939	36	21	3	60	360	636	23	1019	3605
% Passenger Vehicles	92.5	100	98.5	98	100	98.8	97	98.7	97.3	100	100	98.4	97	96.4	88.5	96.4	97.9
Large 2 Axle Vehicles	4	0	6	10	0	11	4	15	0	0	0	0	9	7	1	17	42
% Large 2 Axle Vehicles	7.5	0	1.1	1.7	0	0.6	3	0.8	0	0	0	0	2.4	1.1	3.8	1.6	1.1
3 Axle Vehicles	0	0	0	0	0	9	0	9	1	0	0	1	1	15	1	17	27
% 3 Axle Vehicles	0	0	0	0	0	0.5	0	0.5	2.7	0	0	1.6	0.3	2.3	3.8	1.6	0.7
4+ Axle Trucks	0	0	2	2	0	1	0	1	0	0	0	0	1	2	1	4	7
% 4+ Axle Trucks	0	0	0.4	0.3	0	0.1	0	0.1	0	0	0	0	0.3	0.3	3.8	0.4	0.2

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	6	1	91	98	0	**316**	34	**350**	**4**	2	0	6	47	67	3	117	571
07:45 AM	**11**	**2**	84	97	1	294	**44**	339	5	**7**	**3**	**15**	**80**	61	2	143	**594**
08:00 AM	10	1	**94**	**105**	**3**	271	16	290	5	1	0	6	39	96	**5**	140	541
08:15 AM	6	**3**	63	72	1	198	8	207	**7**	2	0	9	60	**118**	5	**183**	471
Total Volume	33	7	332	372	5	1079	102	1186	21	12	3	36	226	342	15	583	2177
% App. Total	8.9	1.9	89.2		0.4	91	8.6		58.3	33.3	8.3		38.8	58.7	2.6		
PHF	.750	.583	.883	.886	.417	.854	.580	.847	.750	.429	.250	.600	.706	.725	.750	.796	.916

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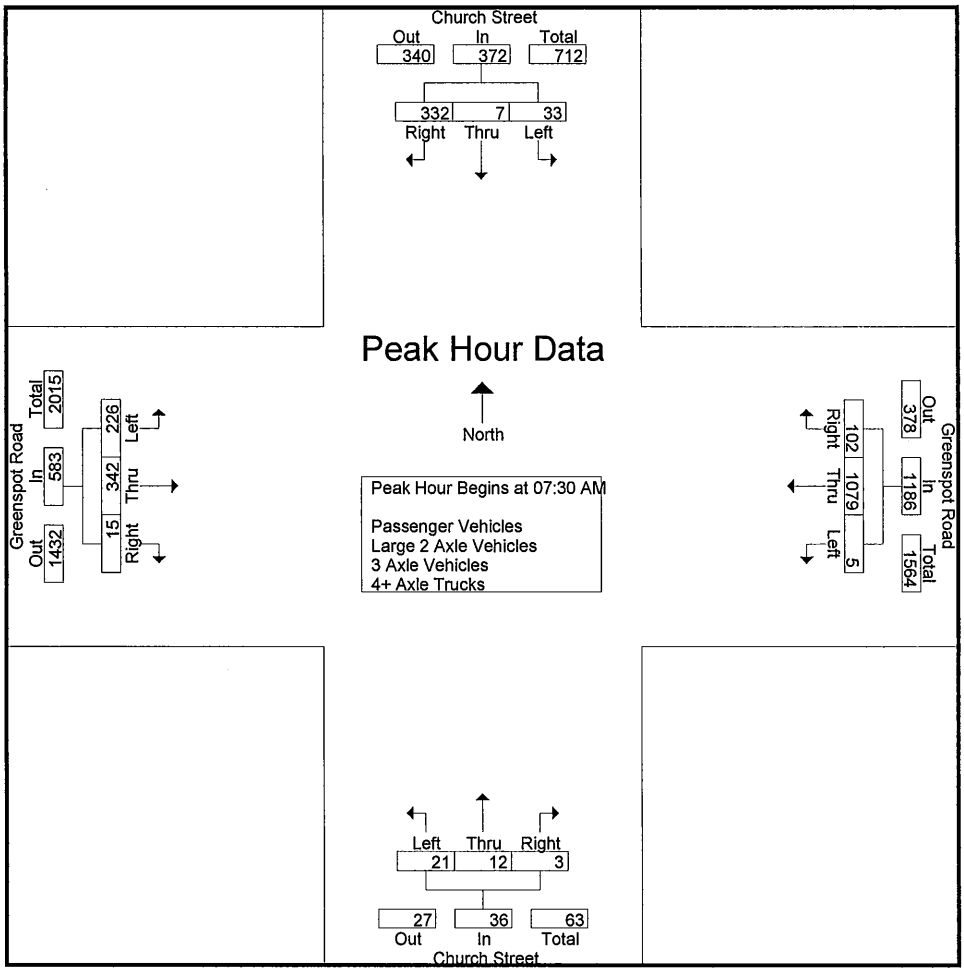

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:15 AM				07:45 AM				07:45 AM			
+0 mins.	6	1	91	98	0	270	11	281	5	**7**	**3**	**15**	**80**	61	2	143
+15 mins.	**11**	2	84	97	0	**316**	34	**350**	5	1	0	6	39	96	**5**	140
+30 mins.	10	1	**94**	**105**	1	294	**44**	339	**7**	2	0	9	60	**118**	5	**183**
+45 mins.	6	**3**	63	72	**3**	271	16	290	4	3	0	7	65	112	3	180
Total Volume	33	7	332	372	4	1151	105	1260	21	13	3	37	244	387	15	646
% App. Total	8.9	1.9	89.2		0.3	91.3	8.3		56.8	35.1	8.1		37.8	59.9	2.3	
PHF	.750	.583	.883	.886	.333	.911	.597	.900	.750	.464	.250	.617	.763	.820	.750	.883

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Groups Printed- Passenger Vehicles

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	1	61	65	0	205	9	214	3	3	0	6	10	56	2	68	353
07:15 AM	7	0	52	59	0	268	11	279	6	1	0	7	31	78	2	111	456
07:30 AM	6	1	89	96	0	314	32	346	4	2	0	6	46	64	3	113	561
07:45 AM	10	2	84	96	1	290	43	334	5	7	3	15	78	61	2	141	586
Total	26	4	286	316	1	1077	95	1173	18	13	3	34	165	259	9	433	1956
08:00 AM	9	1	92	102	3	270	15	288	5	1	0	6	39	93	5	137	533
08:15 AM	6	3	60	69	1	198	8	207	7	2	0	9	60	117	4	181	466
08:30 AM	3	1	41	45	2	155	4	161	3	3	0	6	62	107	2	171	383
08:45 AM	5	2	48	55	0	103	7	110	3	2	0	5	34	60	3	97	267
Total	23	7	241	271	6	726	34	766	18	8	0	26	195	377	14	586	1649
Grand Total	49	11	527	587	7	1803	129	1939	36	21	3	60	360	636	23	1019	3605
Apprch %	8.3	1.9	89.8		0.4	93	6.7		60	35	5		35.3	62.4	2.3		
Total %	1.4	0.3	14.6	16.3	0.2	50	3.6	53.8	1	0.6	0.1	1.7	10	17.6	0.6	28.3	

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	6	1	89	96	0	**314**	32	**346**	4	2	0	6	46	64	3	113	561
07:45 AM	**10**	2	84	96	1	290	**43**	334	5	**7**	**3**	**15**	**78**	61	2	141	**586**
08:00 AM	9	1	**92**	**102**	**3**	270	15	288	5	1	0	6	39	93	**5**	137	533
08:15 AM	6	**3**	60	69	1	198	8	207	**7**	2	0	9	60	**117**	4	**181**	466
Total Volume	31	7	325	363	5	1072	98	1175	21	12	3	36	223	335	14	572	2146
% App. Total	8.5	1.9	89.5		0.4	91.2	8.3		58.3	33.3	8.3		39	58.6	2.4		
PHF	.775	.583	.883	.890	.417	.854	.570	.849	.750	.429	.250	.600	.715	.716	.700	.790	.916

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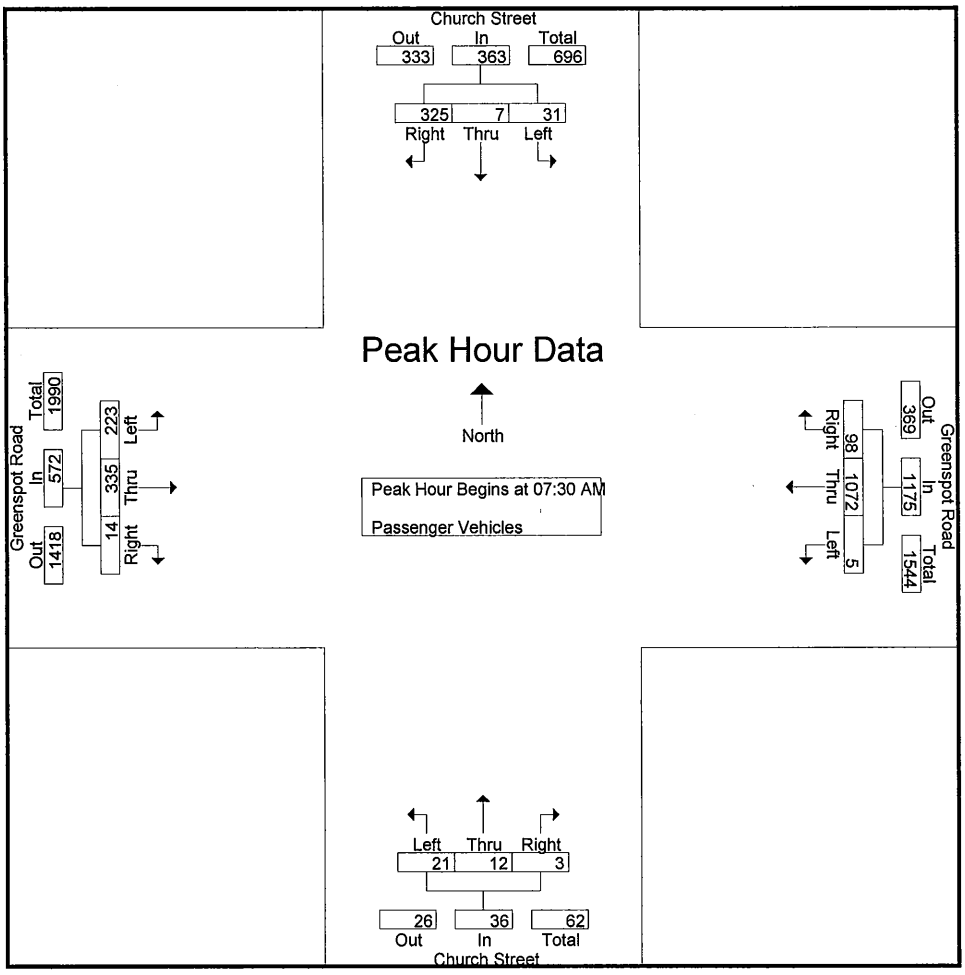

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	6	1	89	96	0	**314**	32	**346**	4	2	0	6	46	64	3	113
+15 mins.	**10**	2	84	96	1	290	**43**	334	5	**7**	**3**	**15**	**78**	61	2	141
+30 mins.	9	1	**92**	**102**	**3**	270	15	288	5	1	0	6	39	93	**5**	137
+45 mins.	6	**3**	60	69	1	198	8	207	**7**	2	0	9	60	**117**	4	**181**
Total Volume	31	7	325	363	5	1072	98	1175	21	12	3	36	223	335	14	572
% App. Total	8.5	1.9	89.5		0.4	91.2	8.3		58.3	33.3	8.3		39	58.6	2.4	
PHF	.775	.583	.883	.890	.417	.854	.570	.849	.750	.429	.250	.600	.715	.716	.700	.790

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Groups Printed- Large 2 Axle Vehicles

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	1	0	0	1	0	2	0	2	0	0	0	0	2	1	0	3	6
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	1	1	0	2	3
07:30 AM	0	0	2	2	0	2	2	4	0	0	0	0	1	3	0	4	10
07:45 AM	1	0	0	1	0	4	1	5	0	0	0	0	2	0	0	2	8
Total	2	0	2	4	0	9	3	12	0	0	0	0	6	5	0	11	27
08:00 AM	1	0	1	2	0	1	1	2	0	0	0	0	0	1	0	1	5
08:15 AM	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
08:30 AM	0	0	1	1	0	1	0	1	0	0	0	0	1	1	1	3	5
08:45 AM	1	0	0	1	0	0	0	0	0	0	0	0	2	0	0	2	3
Total	2	0	4	6	0	2	1	3	0	0	0	0	3	2	1	6	15
Grand Total	4	0	6	10	0	11	4	15	0	0	0	0	9	7	1	17	42
Apprch %	40	0	60		0	73.3	26.7		0	0	0		52.9	41.2	5.9		
Total %	9.5	0	14.3	23.8	0	26.2	9.5	35.7	0	0	0	0	21.4	16.7	2.4	40.5	

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	**2**	**2**	0	2	**2**	4	0	0	0	0	**1**	**3**	0	**4**	**10**
07:45 AM	**1**	0	0	1	0	**4**	1	**5**	0	0	0	0	**2**	0	0	2	8
08:00 AM	1	0	1	2	0	1	1	2	0	0	0	0	0	1	0	1	5
08:15 AM	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	2
Total Volume	2	0	5	7	0	7	4	11	0	0	0	0	3	4	0	7	25
% App. Total	28.6	0	71.4		0	63.6	36.4		0	0	0		42.9	57.1	0		
PHF	.500	.000	.625	.875	.000	.438	.500	.550	.000	.000	.000	.000	.375	.333	.000	.438	.625

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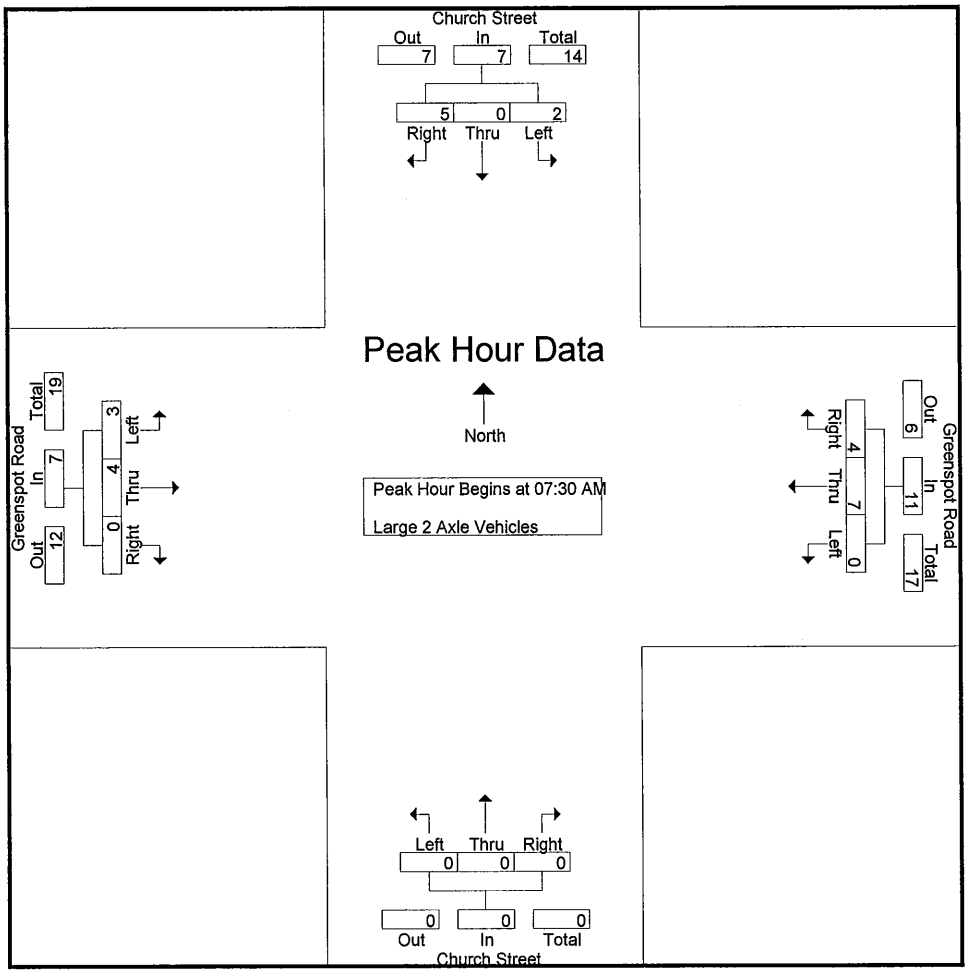

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	**2**	**2**	0	2	**2**	4	0	0	0	0	1	**3**	0	**4**
+15 mins.	**1**	0	0	1	0	**4**	1	**5**	0	0	0	0	**2**	0	0	2
+30 mins.	1	0	1	2	0	1	1	2	0	0	0	0	0	1	0	1
+45 mins.	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	2	0	5	7	0	7	4	11	0	0	0	0	3	4	0	7
% App. Total	28.6	0	71.4		0	63.6	36.4		0	0	0		42.9	57.1	0	
PHF	.500	.000	.625	.875	.000	.438	.500	.550	.000	.000	.000	.000	.375	.333	.000	.438

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City of Highland
N/S: Church Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCHGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
08:30 AM	0	0	0	0	0	6	0	6	1	0	0	1	1	4	0	5	12
08:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	7	0	7	10
Total	0	0	0	0	0	9	0	9	1	0	0	1	1	12	1	14	24
Grand Total	0	0	0	0	0	9	0	9	1	0	0	1	1	15	1	17	27
Apprch %	0	0	0		0	100	0		100	0	0		5.9	88.2	5.9		
Total %	0	0	0	0	0	33.3	0	33.3	3.7	0	0	3.7	3.7	55.6	3.7	63	

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2	2
% App. Total	0	0	0		0	0	0		0	0	0		0	50	50		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.250	.250

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City of Highland
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Start Date : 12/6/2016
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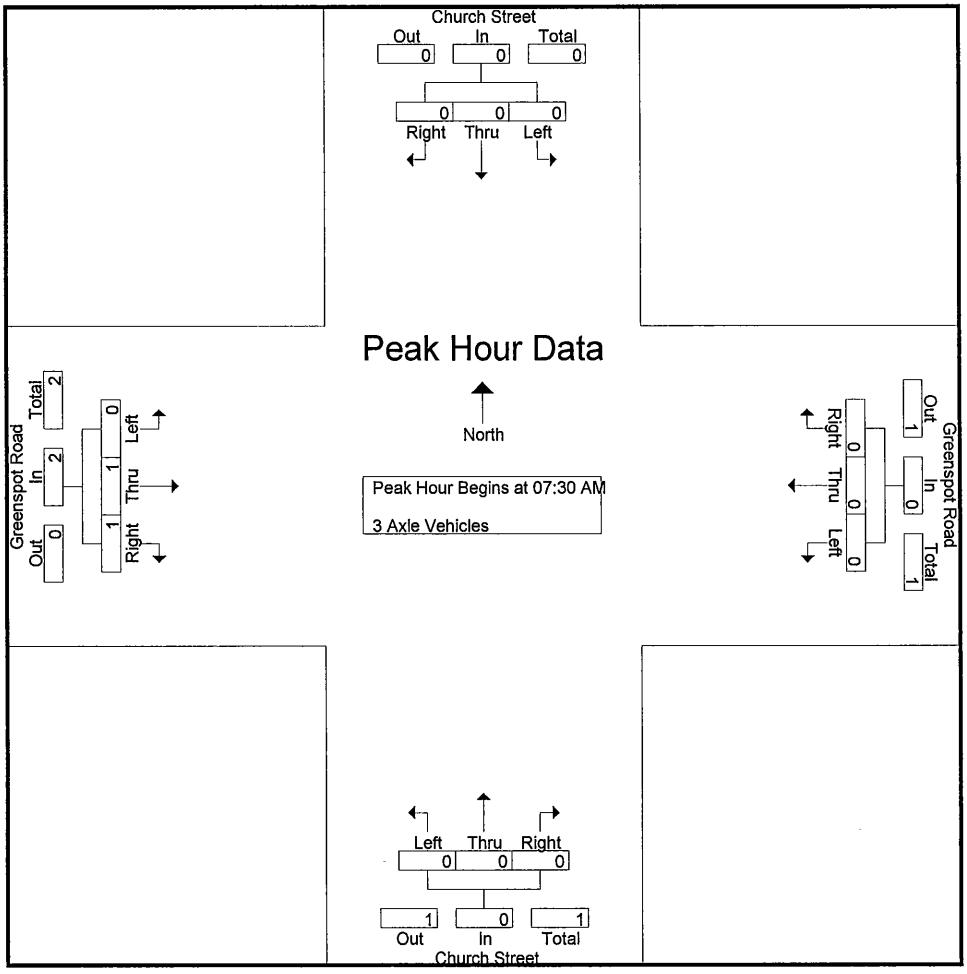

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	**1**	**2**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
% App. Total	0	0	0		0	0	0		0	0	0		0	50	50	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.250	.250

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N/S: Church Street
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Weather: Clear

File Name : HLDCHGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	2	3
08:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
Total	0	0	2	2	0	0	0	0	0	0	0	0	1	2	1	4	6
Grand Total	0	0	2	2	0	1	0	1	0	0	0	0	1	2	1	4	7
Apprch %	0	0	100		0	100	0		0	0	0		25	50	25		
Total %	0	0	28.6	28.6	0	14.3	0	14.3	0	0	0	0	14.3	28.6	14.3	57.1	

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	**2**	0	**2**	**3**
08:15 AM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	0	0	2	2	0	0	0	0	0	0	0	0	0	2	0	2	4
% App. Total	0	0	100		0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.500	.500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.333

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City of Highland
N/S: Church Street
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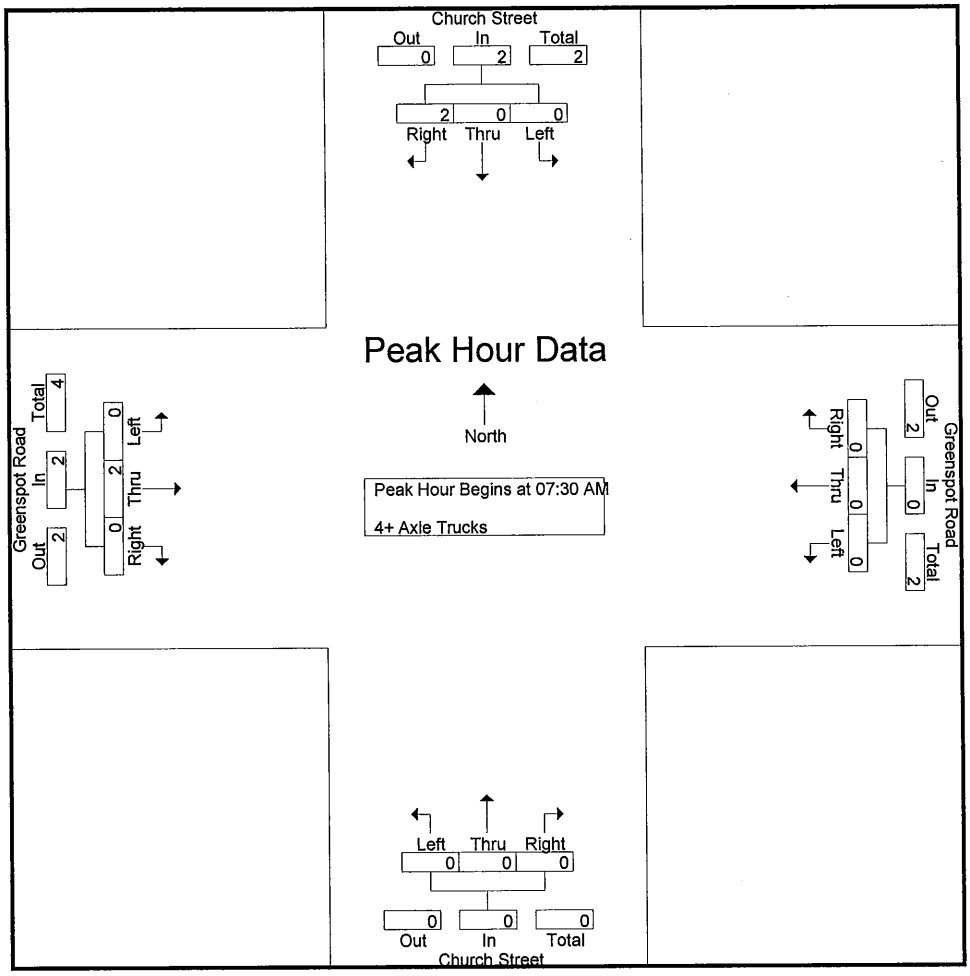

Peak Hour Analysis From 07:30 AM to 08:15 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	**2**	0	**2**
+45 mins.	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	2	2	0	0	0	0	0	0	0	0	0	2	0	2
% App. Total	0	0	100		0	0	0		0	0	0		0	100	0	
PHF	.000	.000	.500	.500	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250

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N/S: Church Street
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File Name : HLDCHGRPM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	13	2	53	68	0	119	14	133	6	2	0	8	54	176	5	235	444
04:15 PM	11	0	43	54	1	102	7	110	4	0	0	4	77	182	5	264	432
04:30 PM	14	1	59	74	0	113	13	126	2	2	2	6	49	188	4	241	447
04:45 PM	4	5	51	60	0	141	12	153	3	0	1	4	75	212	7	294	511
Total	42	8	206	256	1	475	46	522	15	4	3	22	255	758	21	1034	1834
05:00 PM	17	1	51	69	1	122	12	135	8	1	0	9	72	234	4	310	523
05:15 PM	9	2	58	69	1	114	10	125	1	0	0	1	89	250	1	340	535
05:30 PM	18	4	68	90	0	120	11	131	6	2	0	8	77	226	3	306	535
05:45 PM	8	3	42	53	0	139	16	155	5	4	0	9	69	195	3	267	484
Total	52	10	219	281	2	495	49	546	20	7	0	27	307	905	11	1223	2077
Grand Total	94	18	425	537	3	970	95	1068	35	11	3	49	562	1663	32	2257	3911
Apprch %	17.5	3.4	79.1		0.3	90.8	8.9		71.4	22.4	6.1		24.9	73.7	1.4		
Total %	2.4	0.5	10.9	13.7	0.1	24.8	2.4	27.3	0.9	0.3	0.1	1.3	14.4	42.5	0.8	57.7	
Passenger Vehicles	93	18	415	526	3	966	95	1064	33	11	3	47	555	1655	30	2240	3877
% Passenger Vehicles	98.9	100	97.6	98	100	99.6	100	99.6	94.3	100	100	95.9	98.8	99.5	93.8	99.2	99.1
Large 2 Axle Vehicles	1	0	9	10	0	4	0	4	2	0	0	2	5	7	2	14	30
% Large 2 Axle Vehicles	1.1	0	2.1	1.9	0	0.4	0	0.4	5.7	0	0	4.1	0.9	0.4	6.2	0.6	0.8
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0
4+ Axle Trucks	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	2	3
% 4+ Axle Trucks	0	0	0.2	0.2	0	0	0	0	0	0	0	0	0.4	0	0	0.1	0.1

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	4	**5**	51	60	0	**141**	**12**	**153**	3	0	**1**	4	75	212	**7**	294	511
05:00 PM	17	1	51	69	**1**	122	12	135	**8**	1	0	**9**	72	234	4	310	523
05:15 PM	9	2	58	69	1	114	10	125	1	0	0	1	**89**	**250**	1	**340**	**535**
05:30 PM	**18**	4	**68**	**90**	0	120	11	131	6	**2**	0	8	77	226	3	306	535
Total Volume	48	12	228	288	2	497	45	544	18	3	1	22	313	922	15	1250	2104
% App. Total	16.7	4.2	79.2		0.4	91.4	8.3		81.8	13.6	4.5		25	73.8	1.2		
PHF	.667	.600	.838	.800	.500	.881	.938	.889	.563	.375	.250	.611	.879	.922	.536	.919	.983

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Weather: Clear

File Name : HLDCHGRPM
Site Code : 99916000
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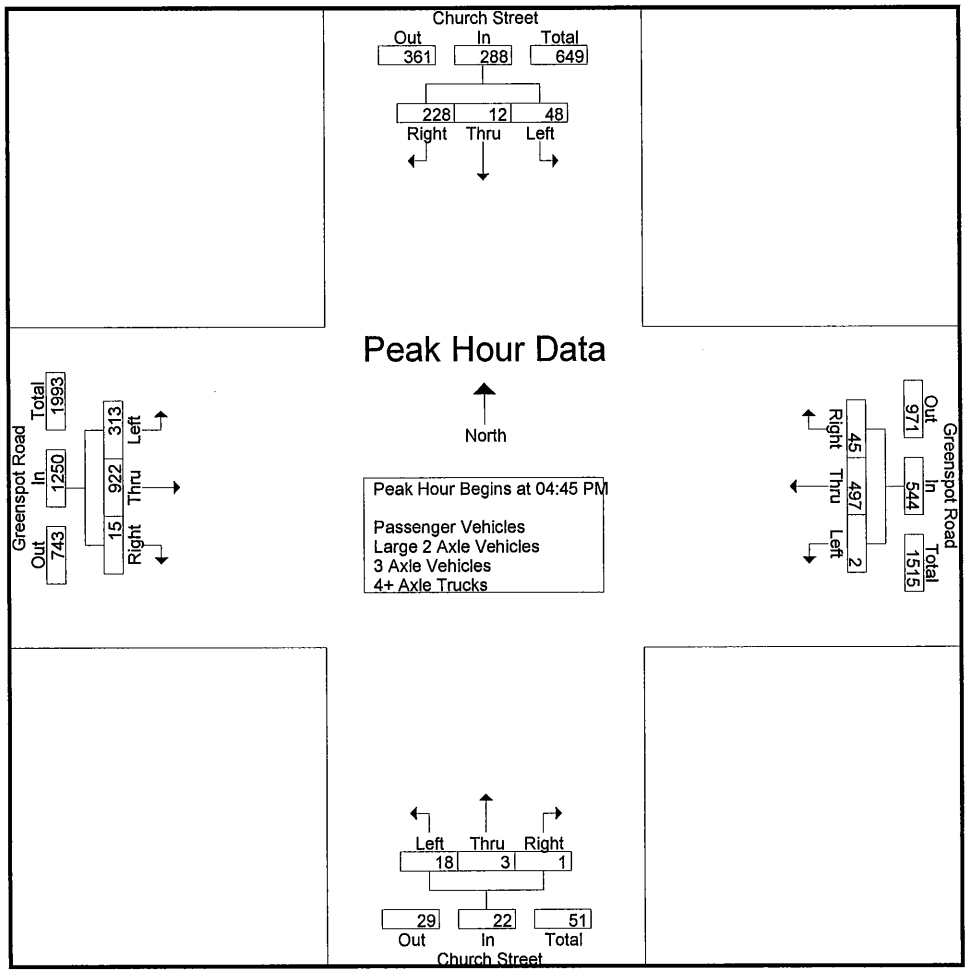

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				05:00 PM				04:45 PM			
+0 mins.	4	**5**	51	60	**1**	122	12	135	**8**	1	0	**9**	75	212	**7**	294
+15 mins.	17	1	51	69	1	114	10	125	1	0	0	1	72	234	4	310
+30 mins.	9	2	58	69	0	120	11	131	6	2	0	8	**89**	**250**	1	**340**
+45 mins.	**18**	4	**68**	**90**	0	**139**	**16**	**155**	5	**4**	0	9	77	226	3	306
Total Volume	48	12	228	288	2	495	49	546	20	7	0	27	313	922	15	1250
% App. Total	16.7	4.2	79.2		0.4	90.7	9		74.1	25.9	0		25	73.8	1.2	
PHF	.667	.600	.838	.800	.500	.890	.766	.881	.625	.438	.000	.750	.879	.922	.536	.919

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City of Highland
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File Name : HLDCHGRPM
Site Code : 99916000
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Groups Printed- Passenger Vehicles

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	13	2	51	66	0	118	14	132	6	2	0	8	52	174	5	231	437
04:15 PM	10	0	43	53	1	101	7	109	4	0	0	4	76	181	5	262	428
04:30 PM	14	1	59	74	0	113	13	126	2	2	2	6	48	187	3	238	444
04:45 PM	4	5	50	59	0	141	12	153	2	0	1	3	74	212	7	293	508
Total	41	8	203	252	1	473	46	520	14	4	3	21	250	754	20	1024	1817
05:00 PM	17	1	48	66	1	120	12	133	7	1	0	8	71	234	4	309	516
05:15 PM	9	2	56	67	1	114	10	125	1	0	0	1	89	248	1	338	531
05:30 PM	18	4	67	89	0	120	11	131	6	2	0	8	77	226	2	305	533
05:45 PM	8	3	41	52	0	139	16	155	5	4	0	9	68	193	3	264	480
Total	52	10	212	274	2	493	49	544	19	7	0	26	305	901	10	1216	2060
Grand Total	93	18	415	526	3	966	95	1064	33	11	3	47	555	1655	30	2240	3877
Apprch %	17.7	3.4	78.9		0.3	90.8	8.9		70.2	23.4	6.4		24.8	73.9	1.3		
Total %	2.4	0.5	10.7	13.6	0.1	24.9	2.5	27.4	0.9	0.3	0.1	1.2	14.3	42.7	0.8	57.8	

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	4	**5**	50	59	0	**141**	**12**	**153**	2	0	**1**	3	74	212	**7**	293	508
05:00 PM	17	1	48	66	**1**	120	12	133	**7**	1	0	**8**	71	234	4	309	516
05:15 PM	9	2	56	67	1	114	10	125	1	0	0	1	**89**	**248**	1	**338**	531
05:30 PM	**18**	4	**67**	**89**	0	120	11	131	6	**2**	0	8	77	226	2	305	**533**
Total Volume	48	12	221	281	2	495	45	542	16	3	1	20	311	920	14	1245	2088
% App. Total	17.1	4.3	78.6		0.4	91.3	8.3		80	15	5		25	73.9	1.1		
PHF	.667	.600	.825	.789	.500	.878	.938	.886	.571	.375	.250	.625	.874	.927	.500	.921	.979

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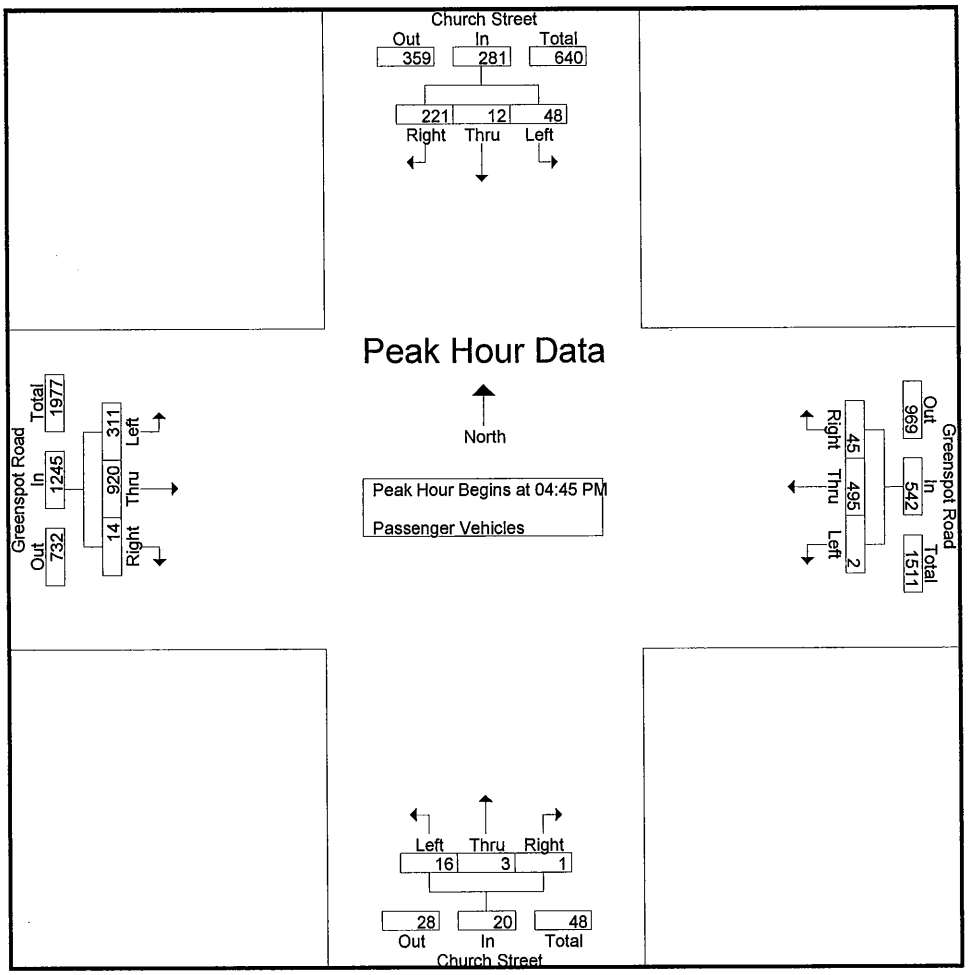

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	4	**5**	50	59	0	**141**	**12**	**153**	2	0	**1**	3	74	212	**7**	293
+15 mins.	17	1	48	66	**1**	120	12	133	**7**	1	0	**8**	71	234	4	309
+30 mins.	9	2	56	67	1	114	10	125	1	0	0	1	**89**	**248**	1	**338**
+45 mins.	**18**	4	**67**	**89**	0	120	11	131	6	**2**	0	8	77	226	2	305
Total Volume	48	12	221	281	2	495	45	542	16	3	1	20	311	920	14	1245
% App. Total	17.1	4.3	78.6		0.4	91.3	8.3		80	15	5		25	73.9	1.1	
PHF	.667	.600	.825	.789	.500	.878	.938	.886	.571	.375	.250	.625	.874	.927	.500	.921

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Groups Printed- Large 2 Axle Vehicles

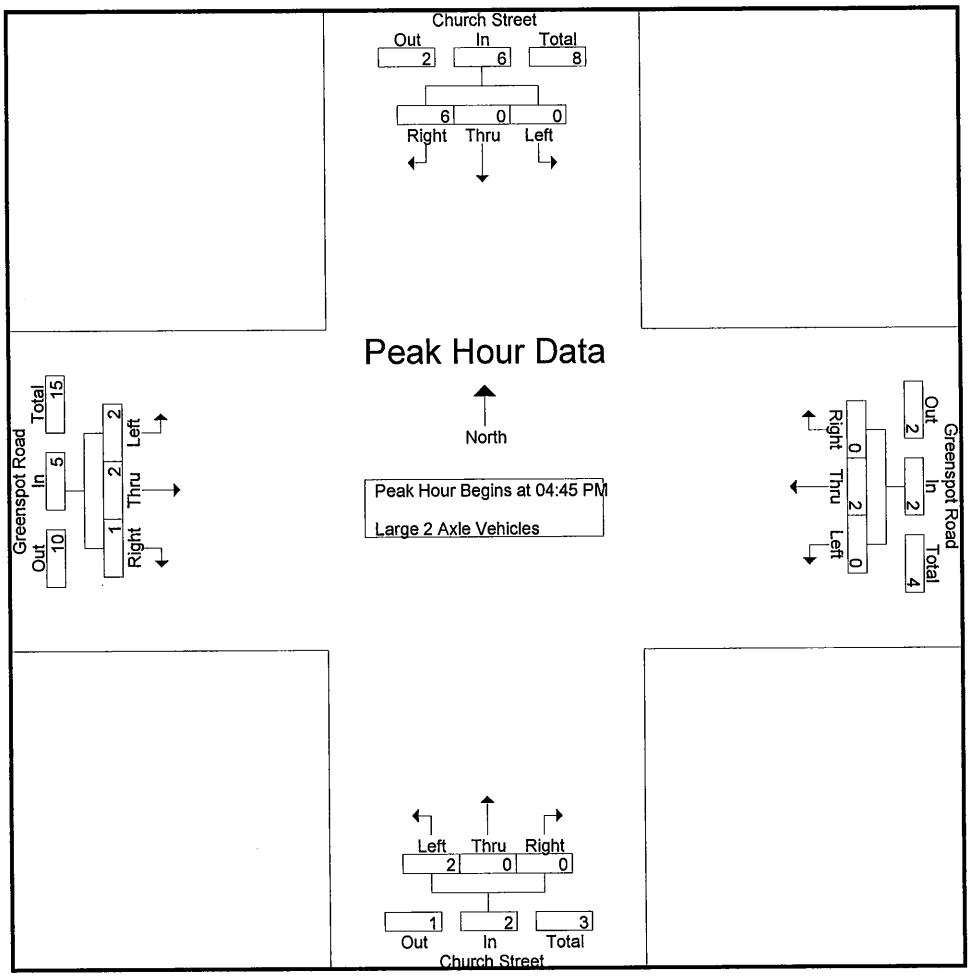
	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	2	2	0	1	0	1	0	0	0	0	1	2	0	3	6
04:15 PM	1	0	0	1	0	1	0	1	0	0	0	0	0	1	0	1	3
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2	2
04:45 PM	0	0	1	1	0	0	0	0	1	0	0	1	1	0	0	1	3
Total	1	0	3	4	0	2	0	2	1	0	0	1	3	3	1	7	14
05:00 PM	0	0	3	3	0	2	0	2	1	0	0	1	1	0	0	1	7
05:15 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	2	0	2	3
05:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	2
05:45 PM	0	0	1	1	0	0	0	0	0	0	0	0	1	2	0	3	4
Total	0	0	6	6	0	2	0	2	1	0	0	1	2	4	1	7	16
Grand Total	1	0	9	10	0	4	0	4	2	0	0	2	5	7	2	14	30
Apprch %	10	0	90		0	100	0		100	0	0		35.7	50	14.3		
Total %	3.3	0	30	33.3	0	13.3	0	13.3	6.7	0	0	6.7	16.7	23.3	6.7	46.7	

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	1	1	0	0	0	0	**1**	0	0	**1**	**1**	0	0	1	3
05:00 PM	0	0	**3**	**3**	0	**2**	0	**2**	1	0	0	1	1	0	0	1	**7**
05:15 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	**2**	0	**2**	3
05:30 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	**1**	1	2
Total Volume	0	0	6	6	0	2	0	2	2	0	0	2	2	2	1	5	15
% App. Total	0	0	100		0	100	0		100	0	0		40	40	20		
PHF	.000	.000	.500	.500	.000	.250	.000	.250	.500	.000	.000	.500	.500	.250	.250	.625	.536

Counts Unlimited
PO Box 1178
Corona, CA 92878
(951) 268-6268

City of Highland
N/S: Church Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCHGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	1	1	0	0	0	0	**1**	0	0	**1**	**1**	0	0	1
+15 mins.	0	0	**3**	**3**	0	**2**	0	**2**	1	0	0	1	1	0	0	1
+30 mins.	0	0	1	1	0	0	0	0	0	0	0	0	0	**2**	0	**2**
+45 mins.	0	0	1	1	0	0	0	0	0	0	0	0	0	0	**1**	1
Total Volume	0	0	6	6	0	2	0	2	2	0	0	2	2	2	1	5
% App. Total	0	0	100		0	100	0		100	0	0		40	40	20	
PHF	.000	.000	.500	.500	.000	.250	.000	.250	.500	.000	.000	.500	.500	.250	.250	.625

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Groups Printed- 3 Axle Vehicles

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Apprch %	0	0	0		0	0	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	100	

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
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E/W: Greenspot Road
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File Name : HLDCHGRPM
Site Code : 99916000
Start Date : 12/6/2016
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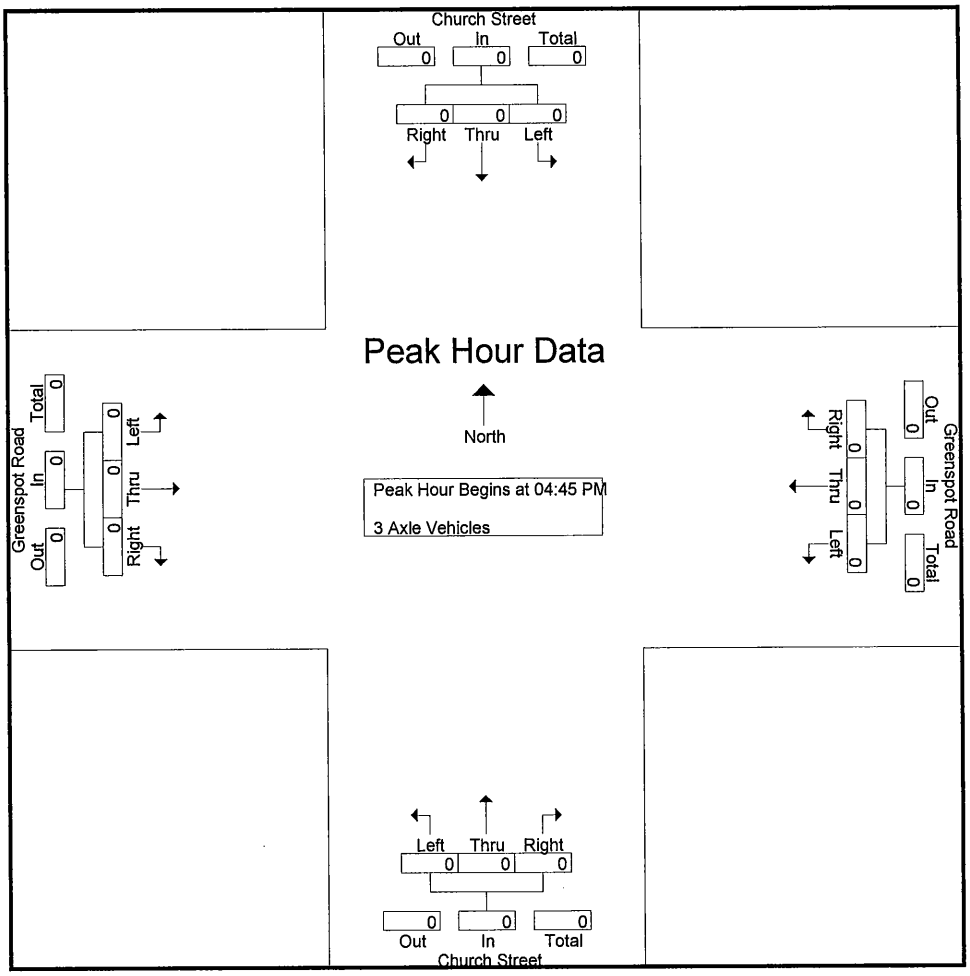

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
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Site Code : 99916000
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Groups Printed- 4+ Axle Trucks

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	1	1	0	0	0	0	0	0	0	0	2	0	0	2	3
Apprch %	0	0	100		0	0	0		0	0	0		100	0	0		
Total %	0	0	33.3	33.3	0	0	0	0	0	0	0	0	66.7	0	0	66.7	

	Church Street Southbound				Greenspot Road Westbound				Church Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:45 PM																	
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1
% App. Total	0	0	100		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250

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City of Highland
N/S: Church Street
E/W: Greenspot Road
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File Name : HLDCHGRPM
Site Code : 99916000
Start Date : 12/6/2016
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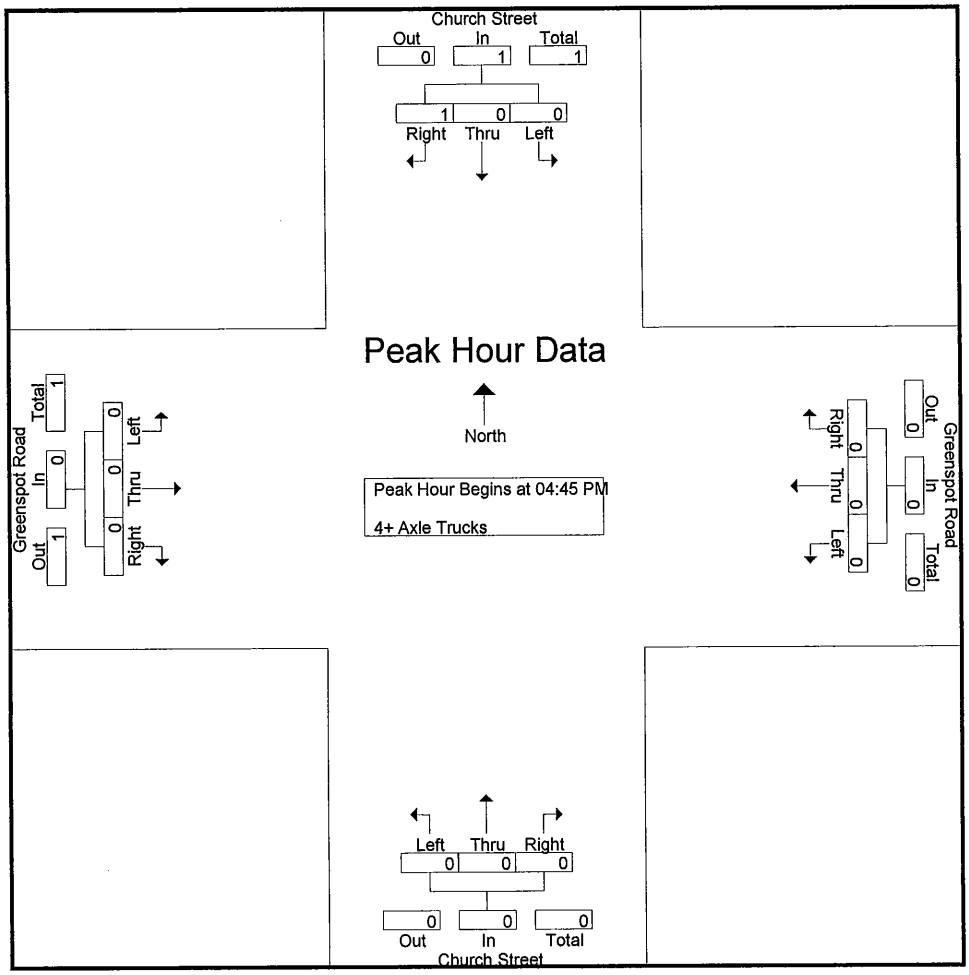

Peak Hour Analysis From 04:45 PM to 05:30 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:45 PM				04:45 PM				04:45 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	**1**	**1**	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	100		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.250	.250	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

8

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City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCLGRAM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	52	52	0	180	1	181	0	1	0	1	11	54	1	66	300
07:15 AM	1	0	49	50	1	231	2	234	0	0	0	0	7	81	0	88	372
07:30 AM	1	1	70	72	1	262	3	266	0	0	0	0	12	64	0	76	414
07:45 AM	3	0	67	70	0	265	3	268	1	0	3	4	13	54	0	67	409
Total	5	1	238	244	2	938	9	949	1	1	3	5	43	253	1	297	1495
08:00 AM	4	0	45	49	0	228	4	232	1	0	0	1	20	86	1	107	389
08:15 AM	0	1	43	44	0	140	0	140	0	0	0	0	24	96	0	120	304
08:30 AM	0	0	25	25	0	125	1	126	0	0	0	0	22	90	0	112	263
08:45 AM	1	0	21	22	0	84	0	84	1	0	1	2	12	60	2	74	182
Total	5	1	134	140	0	577	5	582	2	0	1	3	78	332	3	413	1138
Grand Total	10	2	372	384	2	1515	14	1531	3	1	4	8	121	585	4	710	2633
Apprch %	2.6	0.5	96.9		0.1	99	0.9		37.5	12.5	50		17	82.4	0.6		
Total %	0.4	0.1	14.1	14.6	0.1	57.5	0.5	58.1	0.1	0	0.2	0.3	4.6	22.2	0.2	27	
Passenger Vehicles	9	1	369	379	2	1478	13	1493	3	0	4	7	119	548	2	669	2548
% Passenger Vehicles	90	50	99.2	98.7	100	97.6	92.9	97.5	100	0	100	87.5	98.3	93.7	50	94.2	96.8
Large 2 Axle Vehicles	1	1	3	5	0	27	1	28	0	1	0	1	2	20	2	24	58
% Large 2 Axle Vehicles	10	50	0.8	1.3	0	1.8	7.1	1.8	0	100	0	12.5	1.7	3.4	50	3.4	2.2
3 Axle Vehicles	0	0	0	0	0	9	0	9	0	0	0	0	0	14	0	14	23
% 3 Axle Vehicles	0	0	0	0	0	0.6	0	0.6	0	0	0	0	0	2.4	0	2	0.9
4+ Axle Trucks	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
% 4+ Axle Trucks	0	0	0	0	0	0.1	0	0.1	0	0	0	0	0	0.5	0	0.4	0.2

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	1	0	49	50	**1**	231	2	234	0	0	0	0	7	81	0	88	372
07:30 AM	1	**1**	**70**	**72**	1	262	3	266	0	0	0	0	12	64	0	76	**414**
07:45 AM	3	0	67	70	0	**265**	3	**268**	**1**	0	**3**	**4**	13	54	0	67	409
08:00 AM	**4**	0	45	49	0	228	**4**	232	1	0	0	1	**20**	**86**	**1**	**107**	389
Total Volume	9	1	231	241	2	986	12	1000	2	0	3	5	52	285	1	338	1584
% App. Total	3.7	0.4	95.9		0.2	98.6	1.2		40	0	60		15.4	84.3	0.3		
PHF	.563	.250	.825	.837	.500	.930	.750	.933	.500	.000	.250	.313	.650	.828	.250	.790	.957

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File Name : HLDCLGRAM
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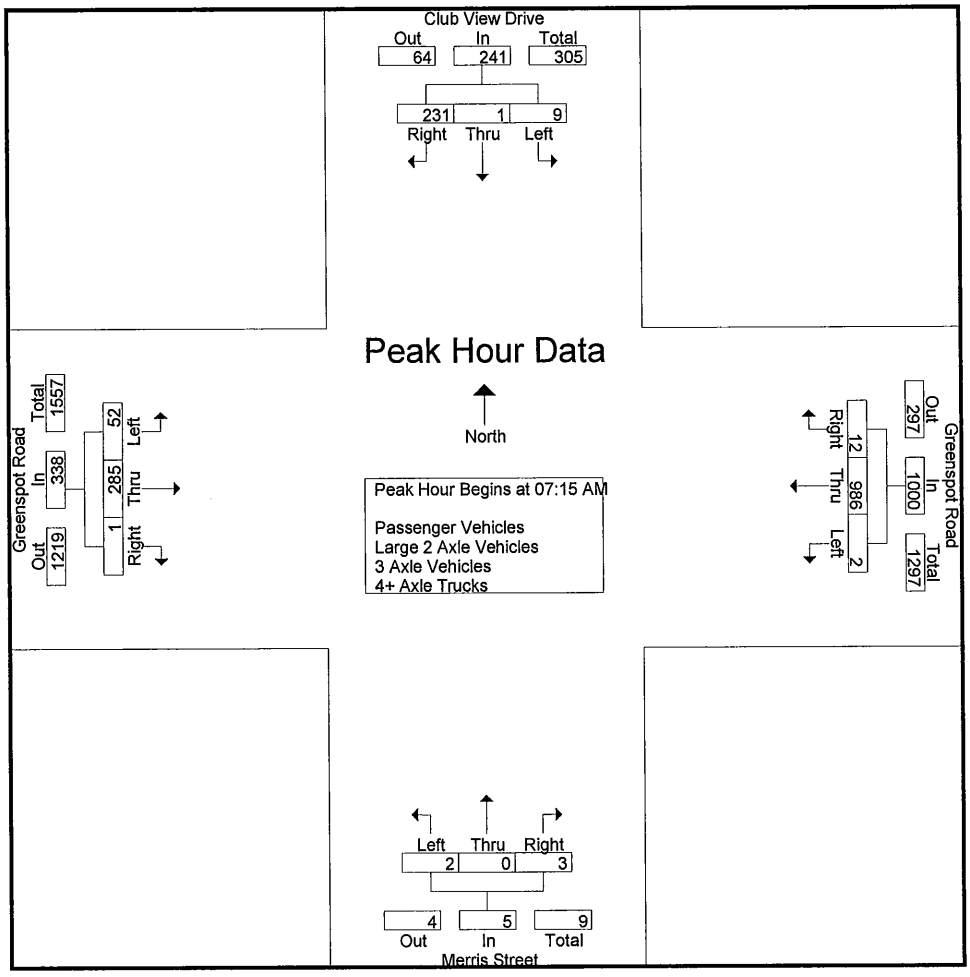

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM				07:15 AM				07:00 AM				08:00 AM			
+0 mins.	0	0	52	52	**1**	231	2	234	0	**1**	0	1	20	86	1	107
+15 mins.	1	0	49	50	1	262	3	266	0	0	0	0	**24**	**96**	0	**120**
+30 mins.	1	**1**	**70**	**72**	0	**265**	3	**268**	0	0	0	0	22	90	0	112
+45 mins.	**3**	0	67	70	0	228	**4**	232	**1**	0	**3**	**4**	12	60	**2**	74
Total Volume	5	1	238	244	2	986	12	1000	1	1	3	5	78	332	3	413
% App. Total	2	0.4	97.5		0.2	98.6	1.2		20	20	60		18.9	80.4	0.7	
PHF	.417	.250	.850	.847	.500	.930	.750	.933	.250	.250	.250	.313	.813	.865	.375	.860

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City of Highland
N/S: Club View Drive/Merris Street
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Site Code : 99916000
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Groups Printed- Passenger Vehicles

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	52	52	0	177	1	178	0	0	0	0	11	52	0	63	293
07:15 AM	1	0	49	50	1	229	2	232	0	0	0	0	7	77	0	84	366
07:30 AM	1	0	68	69	1	258	2	261	0	0	0	0	11	61	0	72	402
07:45 AM	3	0	67	70	0	257	3	260	1	0	3	4	13	50	0	63	397
Total	5	0	236	241	2	921	8	931	1	0	3	4	42	240	0	282	1458
08:00 AM	4	0	44	48	0	226	4	230	1	0	0	1	20	81	1	102	381
08:15 AM	0	1	43	44	0	137	0	137	0	0	0	0	23	93	0	116	297
08:30 AM	0	0	25	25	0	114	1	115	0	0	0	0	22	82	0	104	244
08:45 AM	0	0	21	21	0	80	0	80	1	0	1	2	12	52	1	65	168
Total	4	1	133	138	0	557	5	562	2	0	1	3	77	308	2	387	1090
Grand Total	9	1	369	379	2	1478	13	1493	3	0	4	7	119	548	2	669	2548
Apprch %	2.4	0.3	97.4		0.1	99	0.9		42.9	0	57.1		17.8	81.9	0.3		
Total %	0.4	0	14.5	14.9	0.1	58	0.5	58.6	0.1	0	0.2	0.3	4.7	21.5	0.1	26.3	

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	1	0	49	50	**1**	229	2	232	0	0	0	0	7	77	0	84	366
07:30 AM	1	0	**68**	69	1	**258**	2	**261**	0	0	0	0	11	61	0	72	**402**
07:45 AM	3	0	67	**70**	0	257	3	260	**1**	0	**3**	**4**	13	50	0	63	397
08:00 AM	**4**	0	44	48	0	226	**4**	230	1	0	0	1	**20**	**81**	**1**	**102**	381
Total Volume	9	0	228	237	2	970	11	983	2	0	3	5	51	269	1	321	1546
% App. Total	3.8	0	96.2		0.2	98.7	1.1		40	0	60		15.9	83.8	0.3		
PHF	.563	.000	.838	.846	.500	.940	.688	.942	.500	.000	.250	.313	.638	.830	.250	.787	.961

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City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
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File Name : HLDCLGRAM
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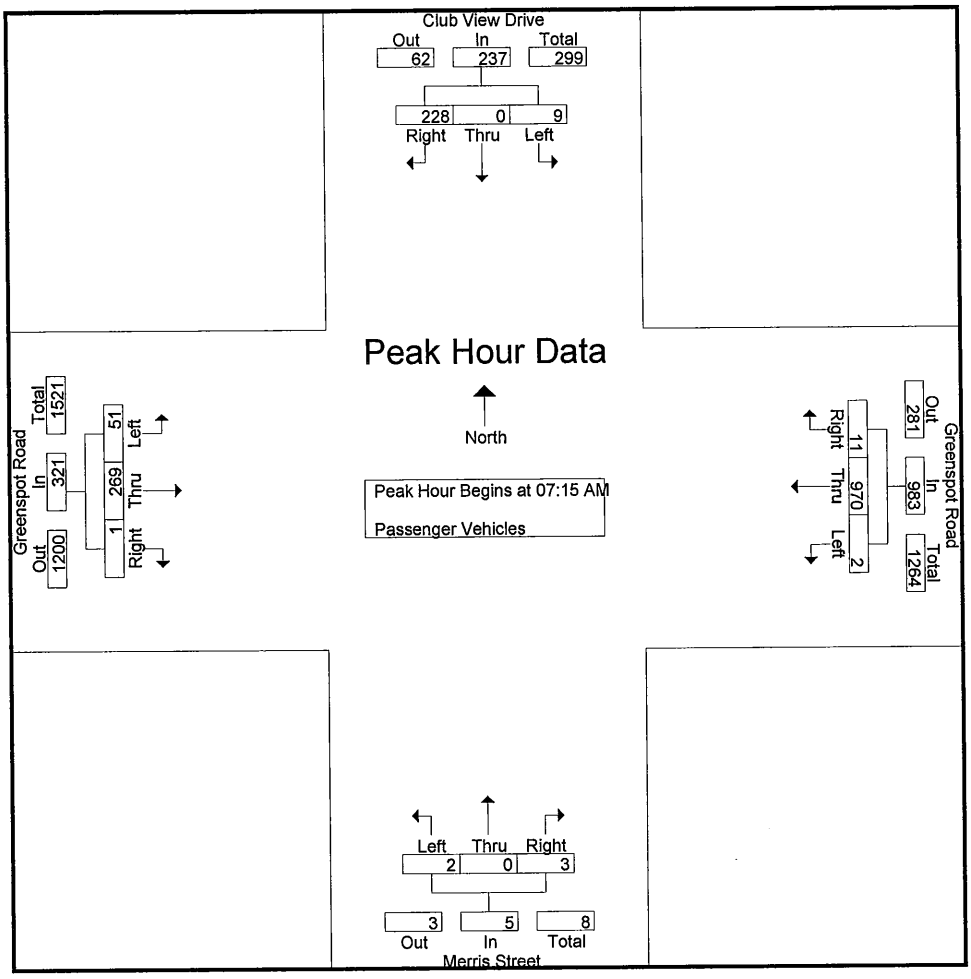

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	1	0	49	50	**1**	229	2	232	0	0	0	0	7	77	0	84
+15 mins.	1	0	**68**	69	1	**258**	2	**261**	0	0	0	0	11	61	0	72
+30 mins.	3	0	67	**70**	0	257	3	260	**1**	0	**3**	**4**	13	50	0	63
+45 mins.	**4**	0	44	48	0	226	**4**	230	1	0	0	1	**20**	**81**	**1**	**102**
Total Volume	9	0	228	237	2	970	11	983	2	0	3	5	51	269	1	321
% App. Total	3.8	0	96.2		0.2	98.7	1.1		40	0	60		15.9	83.8	0.3	
PHF	.563	.000	.838	.846	.500	.940	.688	.942	.500	.000	.250	.313	.638	.830	.250	.787

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Groups Printed- Large 2 Axle Vehicles

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	3	0	3	0	1	0	1	0	2	1	3	7
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
07:30 AM	0	1	2	3	0	4	1	5	0	0	0	0	1	3	0	4	12
07:45 AM	0	0	0	0	0	8	0	8	0	0	0	0	0	4	0	4	12
Total	0	1	2	3	0	16	1	17	0	1	0	1	1	10	1	12	33
08:00 AM	0	0	1	1	0	2	0	2	0	0	0	0	0	3	0	3	6
08:15 AM	0	0	0	0	0	3	0	3	0	0	0	0	1	2	0	3	6
08:30 AM	0	0	0	0	0	5	0	5	0	0	0	0	0	4	0	4	9
08:45 AM	1	0	0	1	0	1	0	1	0	0	0	0	0	1	1	2	4
Total	1	0	1	2	0	11	0	11	0	0	0	0	1	10	1	12	25
Grand Total	1	1	3	5	0	27	1	28	0	1	0	1	2	20	2	24	58
Apprch %	20	20	60		0	96.4	3.6		0	100	0		8.3	83.3	8.3		
Total %	1.7	1.7	5.2	8.6	0	46.6	1.7	48.3	0	1.7	0	1.7	3.4	34.5	3.4	41.4	

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1	2
07:30 AM	0	**1**	**2**	**3**	0	4	**1**	5	0	0	0	0	**1**	3	0	**4**	**12**
07:45 AM	0	0	0	0	0	**8**	0	**8**	0	0	0	0	0	**4**	0	4	12
08:00 AM	0	0	1	1	0	2	0	2	0	0	0	0	0	3	0	3	6
Total Volume	0	1	3	4	0	15	1	16	0	0	0	0	1	11	0	12	32
% App. Total	0	25	75		0	93.8	6.2		0	0	0		8.3	91.7	0		
PHF	.000	.250	.375	.333	.000	.469	.250	.500	.000	.000	.000	.000	.250	.688	.000	.750	.667

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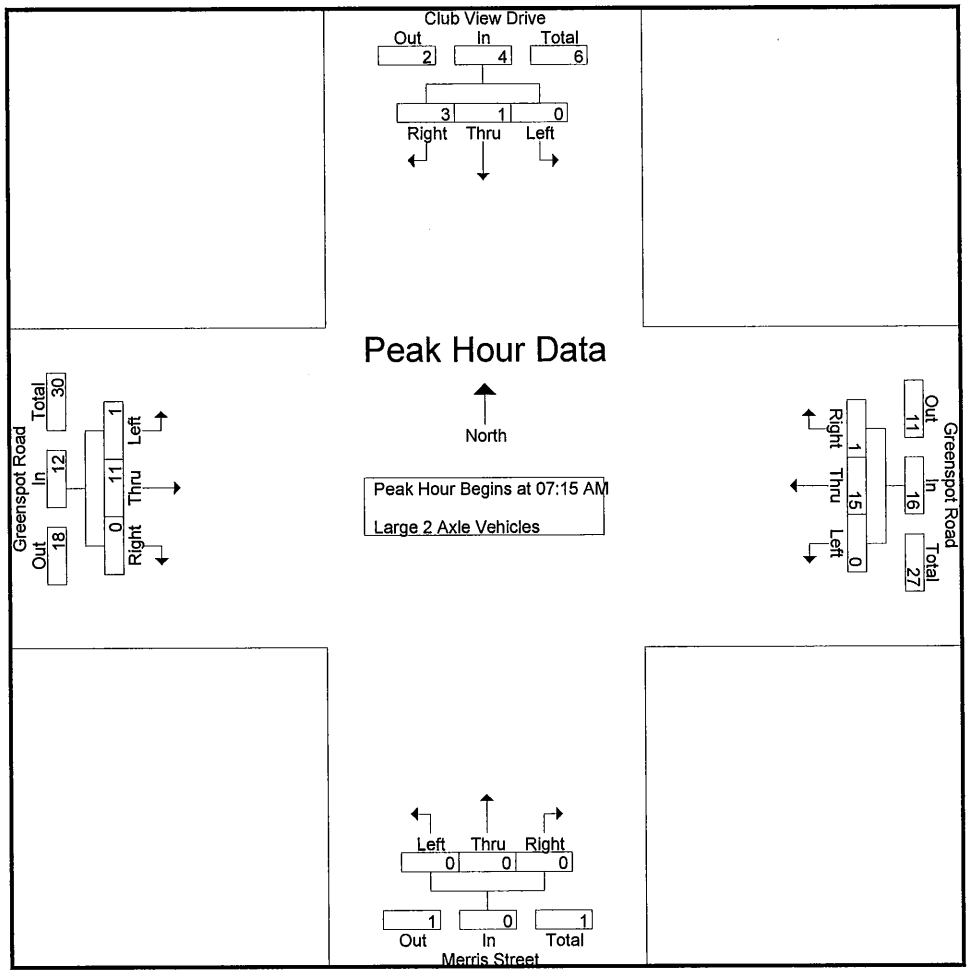

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	1	0	1	0	0	0	0	0	1	0	1
+15 mins.	0	**1**	**2**	**3**	0	**4**	**1**	5	0	0	0	0	**1**	3	0	**4**
+30 mins.	0	0	0	0	0	**8**	0	**8**	0	0	0	0	0	**4**	0	4
+45 mins.	0	0	1	1	0	2	0	2	0	0	0	0	0	3	0	3
Total Volume	0	1	3	4	0	15	1	16	0	0	0	0	1	11	0	12
% App. Total	0	25	75		0	93.8	6.2		0	0	0		8.3	91.7	0	
PHF	.000	.250	.375	.333	.000	.469	.250	.500	.000	.000	.000	.000	.250	.688	.000	.750

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Groups Printed- 3 Axle Vehicles

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:30 AM	0	0	0	0	0	6	0	6	0	0	0	0	0	3	0	3	9
08:45 AM	0	0	0	0	0	3	0	3	0	0	0	0	0	7	0	7	10
Total	0	0	0	0	0	9	0	9	0	0	0	0	0	11	0	11	20
Grand Total	0	0	0	0	0	9	0	9	0	0	0	0	0	14	0	14	23
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	39.1	0	39.1	0	0	0	0	0	60.9	0	60.9	

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	0	**3**	**3**
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250	.250

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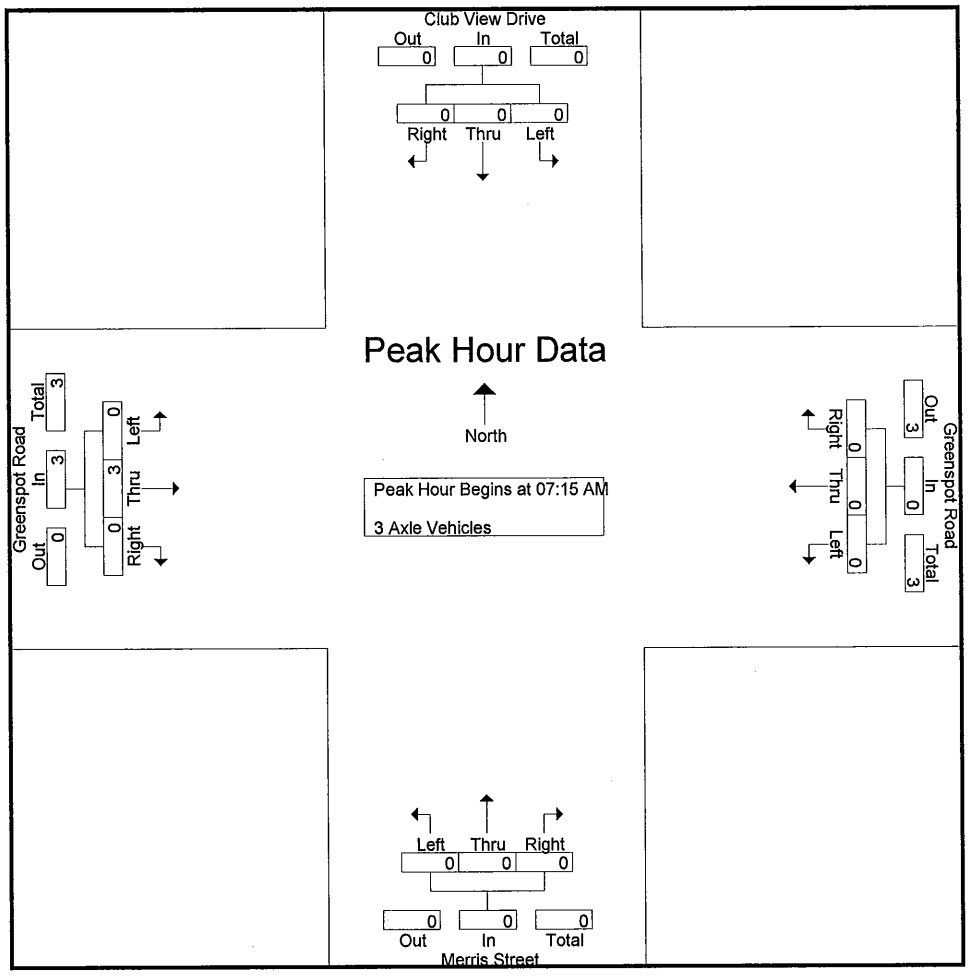

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**3**	0	**3**
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
% App. Total	0	0	0		0	0	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.250

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Groups Printed- 4+ Axle Trucks

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	3
Grand Total	0	0	0	0	0	1	0	1	0	0	0	0	0	3	0	3	4
Apprch %	0	0	0		0	100	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	25	0	25	0	0	0	0	0	75	0	75	

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0	1
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	**2**	**2**
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2	3
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250	.375

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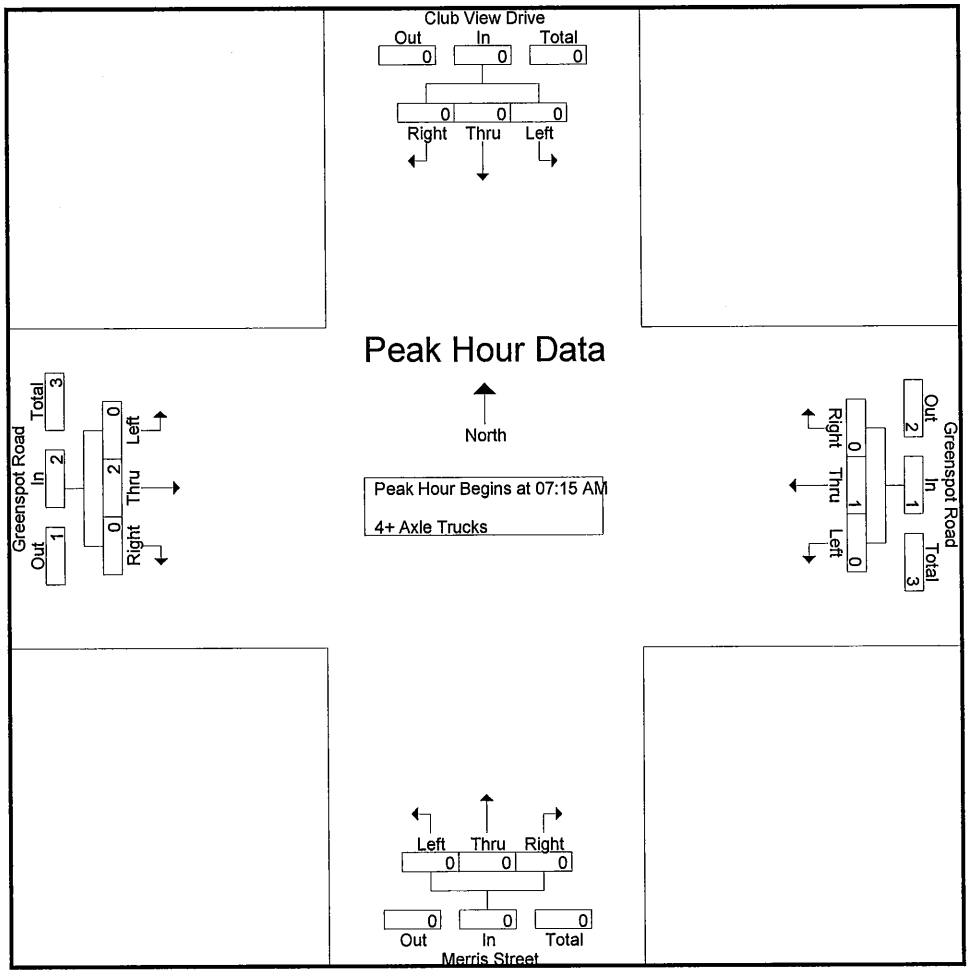

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM				07:15 AM				07:15 AM				07:15 AM			
+0 mins.	0	0	0	0	0	**1**	0	**1**	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	**2**
Total Volume	0	0	0	0	0	1	0	1	0	0	0	0	0	2	0	2
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.250

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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	3	0	25	28	0	105	2	107	0	0	1	1	35	166	0	201	337
04:15 PM	2	0	12	14	0	86	0	86	1	0	0	1	44	137	1	182	283
04:30 PM	1	0	22	23	1	87	3	91	0	0	0	0	45	170	0	215	329
04:45 PM	2	0	24	26	0	87	4	91	1	0	0	1	43	157	2	202	320
Total	8	0	83	91	1	365	9	375	2	0	1	3	167	630	3	800	1269
05:00 PM	1	0	32	33	1	93	1	95	0	0	0	0	48	187	0	235	363
05:15 PM	1	0	22	23	0	90	1	91	0	0	1	1	46	198	0	244	359
05:30 PM	1	0	27	28	0	110	2	112	0	0	0	0	66	171	1	238	378
05:45 PM	1	0	18	19	2	113	0	115	0	0	2	2	43	156	2	201	337
Total	4	0	99	103	3	406	4	413	0	0	3	3	203	712	3	918	1437
Grand Total	12	0	182	194	4	771	13	788	2	0	4	6	370	1342	6	1718	2706
Apprch %	6.2	0	93.8		0.5	97.8	1.6		33.3	0	66.7		21.5	78.1	0.3		
Total %	0.4	0	6.7	7.2	0.1	28.5	0.5	29.1	0.1	0	0.1	0.2	13.7	49.6	0.2	63.5	
Passenger Vehicles	11	0	182	193	4	765	13	782	2	0	4	6	369	1329	6	1704	2685
% Passenger Vehicles	91.7	0	100	99.5	100	99.2	100	99.2	100	0	100	100	99.7	99	100	99.2	99.2
Large 2 Axle Vehicles	1	0	0	1	0	6	0	6	0	0	0	0	1	12	0	13	20
% Large 2 Axle Vehicles	8.3	0	0	0.5	0	0.8	0	0.8	0	0	0	0	0.3	0.9	0	0.8	0.7
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0.1	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	0	**32**	**33**	1	93	1	95	0	0	0	0	48	187	0	235	363
05:15 PM	1	0	22	23	0	90	1	91	0	0	1	1	46	**198**	0	**244**	359
05:30 PM	1	0	27	28	0	110	**2**	112	0	0	0	0	**66**	171	1	238	**378**
05:45 PM	1	0	18	19	**2**	**113**	0	**115**	0	0	**2**	**2**	43	156	**2**	201	337
Total Volume	4	0	99	103	3	406	4	413	0	0	3	3	203	712	3	918	1437
% App. Total	3.9	0	96.1		0.7	98.3	1		0	0	100		22.1	77.6	0.3		
PHF	1.00	.000	.773	.780	.375	.898	.500	.898	.000	.000	.375	.375	.769	.899	.375	.941	.950

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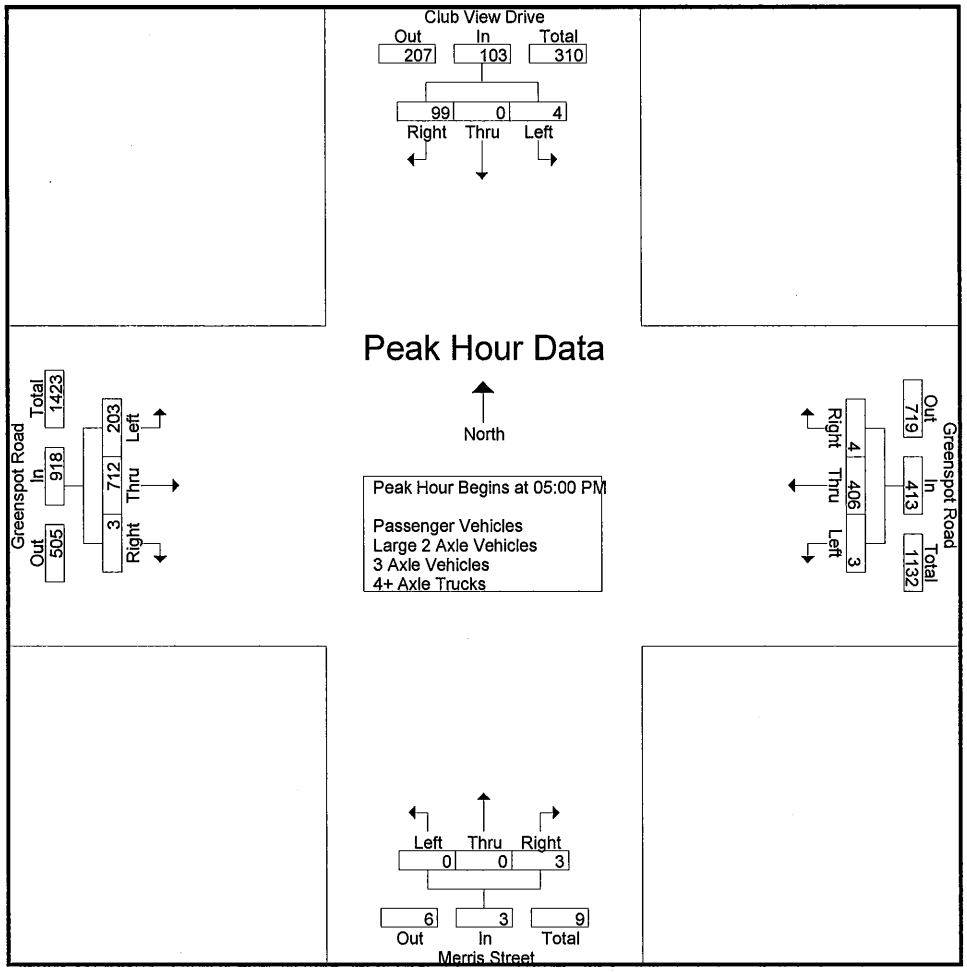

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				05:00 PM				04:00 PM				04:45 PM			
+0 mins.	**2**	0	24	26	1	93	1	95	0	0	**1**	**1**	43	157	**2**	202
+15 mins.	1	0	**32**	**33**	0	90	1	91	**1**	0	0	1	48	187	0	235
+30 mins.	1	0	22	23	0	110	**2**	112	0	0	0	0	46	**198**	0	**244**
+45 mins.	1	0	27	28	**2**	**113**	0	**115**	1	0	0	1	**66**	171	1	238
Total Volume	5	0	105	110	3	406	4	413	2	0	1	3	203	713	3	919
% App. Total	4.5	0	95.5		0.7	98.3	1		66.7	0	33.3		22.1	77.6	0.3	
PHF	.625	.000	.820	.833	.375	.898	.500	.898	.500	.000	.250	.750	.769	.900	.375	.942

Counts Unlimited
PO Box 1178
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City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCLGRPM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- Passenger Vehicles

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	2	0	25	27	0	104	2	106	0	0	1	1	35	164	0	199	333
04:15 PM	2	0	12	14	0	84	0	84	1	0	0	1	44	135	1	180	279
04:30 PM	1	0	22	23	1	87	3	91	0	0	0	0	44	170	0	214	328
04:45 PM	2	0	24	26	0	86	4	90	1	0	0	1	43	156	2	201	318
Total	7	0	83	90	1	361	9	371	2	0	1	3	166	625	3	794	1258
05:00 PM	1	0	32	33	1	91	1	93	0	0	0	0	48	185	0	233	359
05:15 PM	1	0	22	23	0	90	1	91	0	0	1	1	46	194	0	240	355
05:30 PM	1	0	27	28	0	110	2	112	0	0	0	0	66	171	1	238	378
05:45 PM	1	0	18	19	2	113	0	115	0	0	2	2	43	154	2	199	335
Total	4	0	99	103	3	404	4	411	0	0	3	3	203	704	3	910	1427
Grand Total	11	0	182	193	4	765	13	782	2	0	4	6	369	1329	6	1704	2685
Apprch %	5.7	0	94.3		0.5	97.8	1.7		33.3	0	66.7		21.7	78	0.4		
Total %	0.4	0	6.8	7.2	0.1	28.5	0.5	29.1	0.1	0	0.1	0.2	13.7	49.5	0.2	63.5	

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	**1**	0	**32**	**33**	1	91	1	93	0	0	0	0	48	185	0	233	359
05:15 PM	1	0	22	23	0	90	1	91	0	0	1	1	46	**194**	0	**240**	355
05:30 PM	1	0	27	28	0	110	**2**	112	0	0	0	0	**66**	171	1	238	**378**
05:45 PM	1	0	18	19	**2**	**113**	0	**115**	0	0	**2**	**2**	43	154	**2**	199	335
Total Volume	4	0	99	103	3	404	4	411	0	0	3	3	203	704	3	910	1427
% App. Total	3.9	0	96.1		0.7	98.3	1		0	0	100		22.3	77.4	0.3		
PHF	1.00	.000	.773	.780	.375	.894	.500	.893	.000	.000	.375	.375	.769	.907	.375	.948	.944

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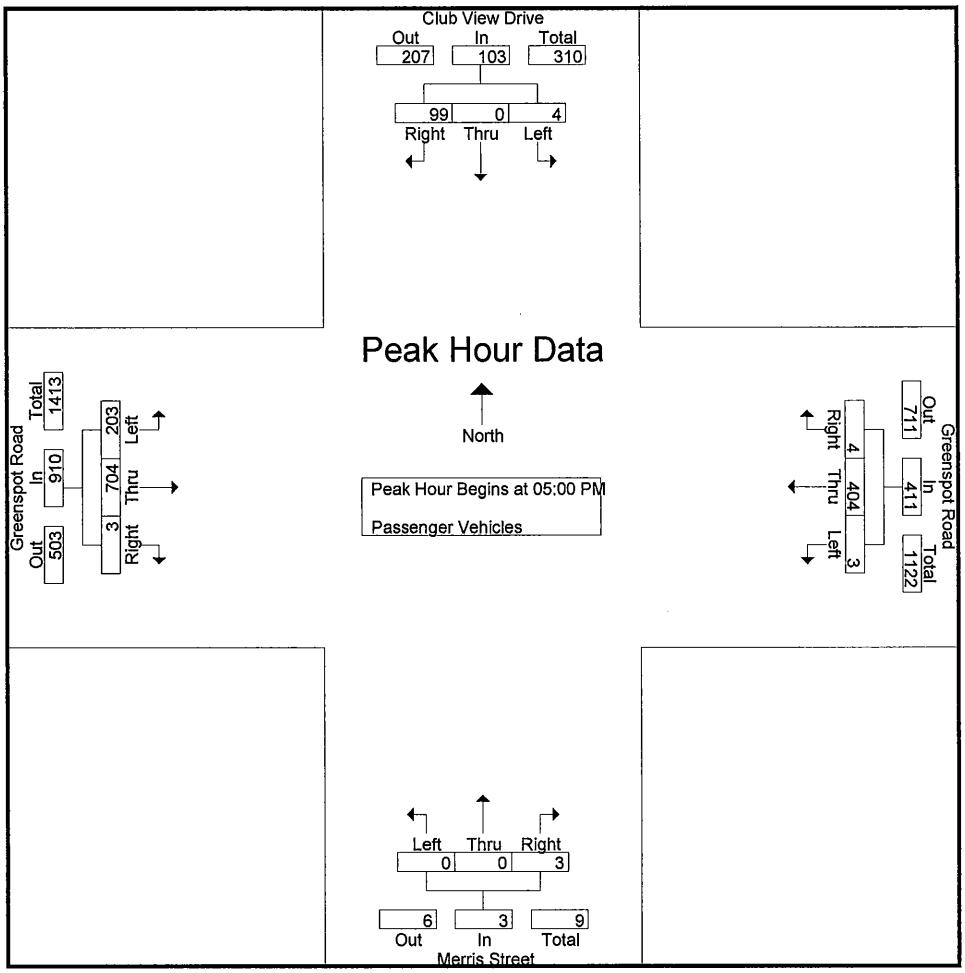
City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCLGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	**1**	0	**32**	**33**	1	91	1	93	0	0	0	0	48	185	0	233
+15 mins.	1	0	22	23	0	90	1	91	0	0	1	1	46	**194**	0	**240**
+30 mins.	1	0	27	28	0	110	**2**	112	0	0	0	0	**66**	171	1	238
+45 mins.	1	0	18	19	**2**	**113**	0	**115**	0	0	**2**	**2**	43	154	**2**	199
Total Volume	4	0	99	103	3	404	4	411	0	0	3	3	203	704	3	910
% App. Total	3.9	0	96.1		0.7	98.3	1		0	0	100		22.3	77.4	0.3	
PHF	1.000	.000	.773	.780	.375	.894	.500	.893	.000	.000	.375	.375	.769	.907	.375	.948

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City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCLGRPM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- Large 2 Axle Vehicles

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	1	0	0	1	0	1	0	1	0	0	0	0	0	2	0	2	4
04:15 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
04:45 PM	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	1
Total	1	0	0	1	0	4	0	4	0	0	0	0	1	4	0	5	10
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	4
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total	0	0	0	0	0	2	0	2	0	0	0	0	0	8	0	8	10
Grand Total	1	0	0	1	0	6	0	6	0	0	0	0	1	12	0	13	20
Apprch %	100	0	0		0	100	0		0	0	0		7.7	92.3	0		
Total %	5	0	0	5	0	30	0	30	0	0	0	0	5	60	0	65	

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	2	0	2	**4**
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	0	**4**	4
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	8	0	8	10
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0		
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.500	.000	.500	.625

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City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCLGRPM
Site Code : 99916000
Start Date : 12/6/2016
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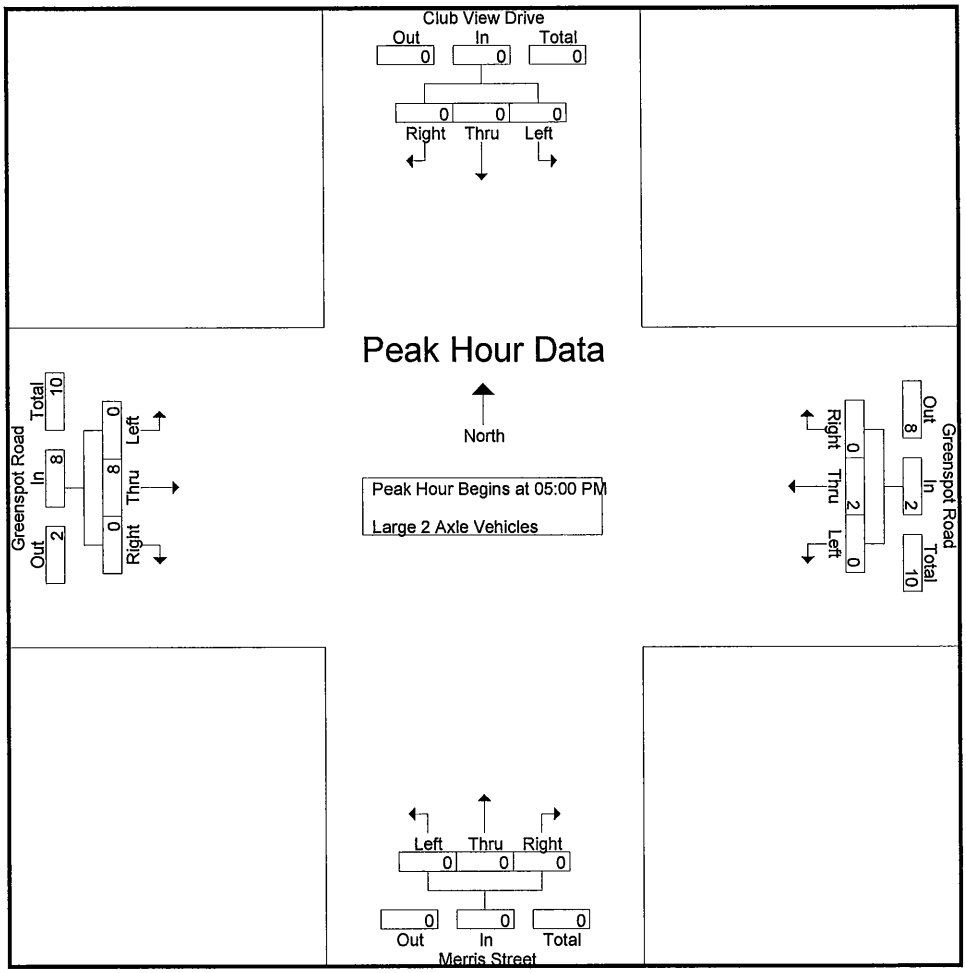

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	**2**	0	**2**	0	0	0	0	0	2	0	2
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	**4**	0	**4**
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Total Volume	0	0	0	0	0	2	0	2	0	0	0	0	0	8	0	8
% App. Total	0	0	0		0	100	0		0	0	0		0	100	0	
PHF	.000	.000	.000	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.500	.000	.500

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City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCLGRPM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- 3 Axle Vehicles

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Apprch %	0	0	0		0	0	0		0	0	0		0	100	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	100	

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCLGRPM
Site Code : 99916000
Start Date : 12/6/2016
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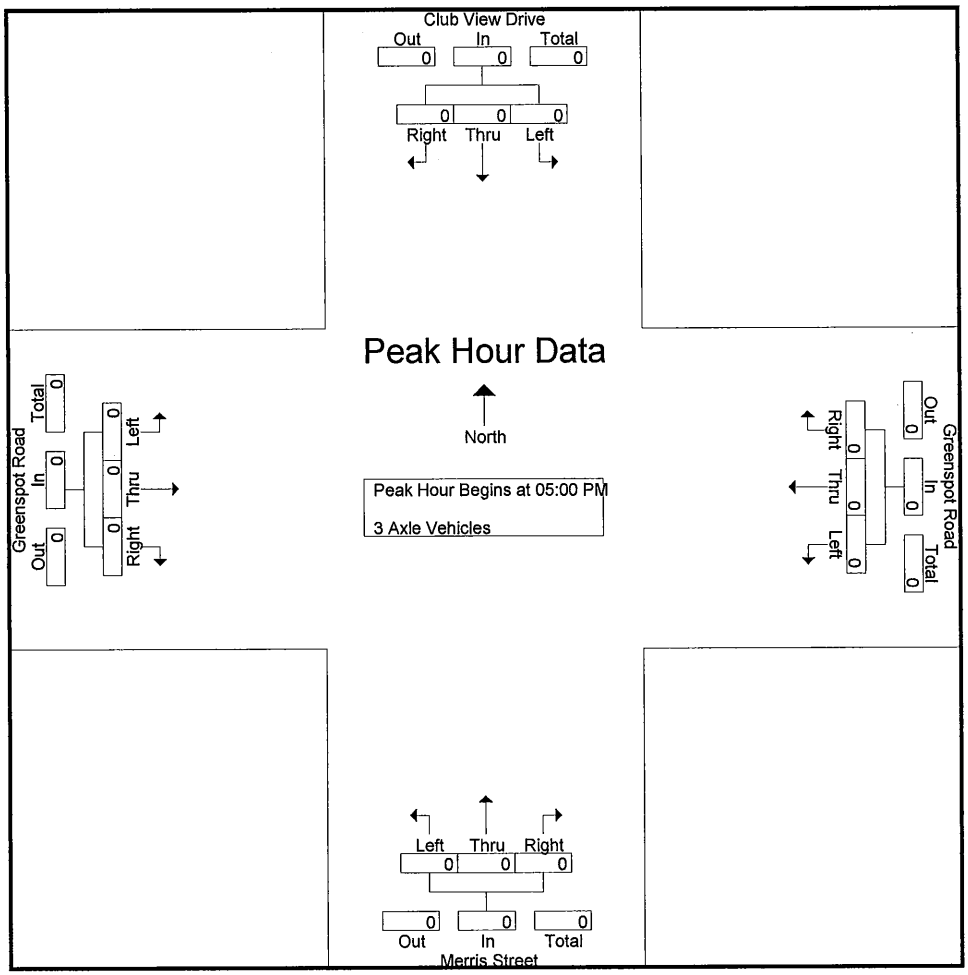

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCLGRPM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- 4+ Axle Trucks

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0		0	0	0		0	0	0		0	0	0		
Total %																	

	Club View Drive Southbound				Greenspot Road Westbound				Merris Street Northbound				Greenspot Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
N/S: Club View Drive/Merris Street
E/W: Greenspot Road
Weather: Clear

File Name : HLDCLGRPM
Site Code : 99916000
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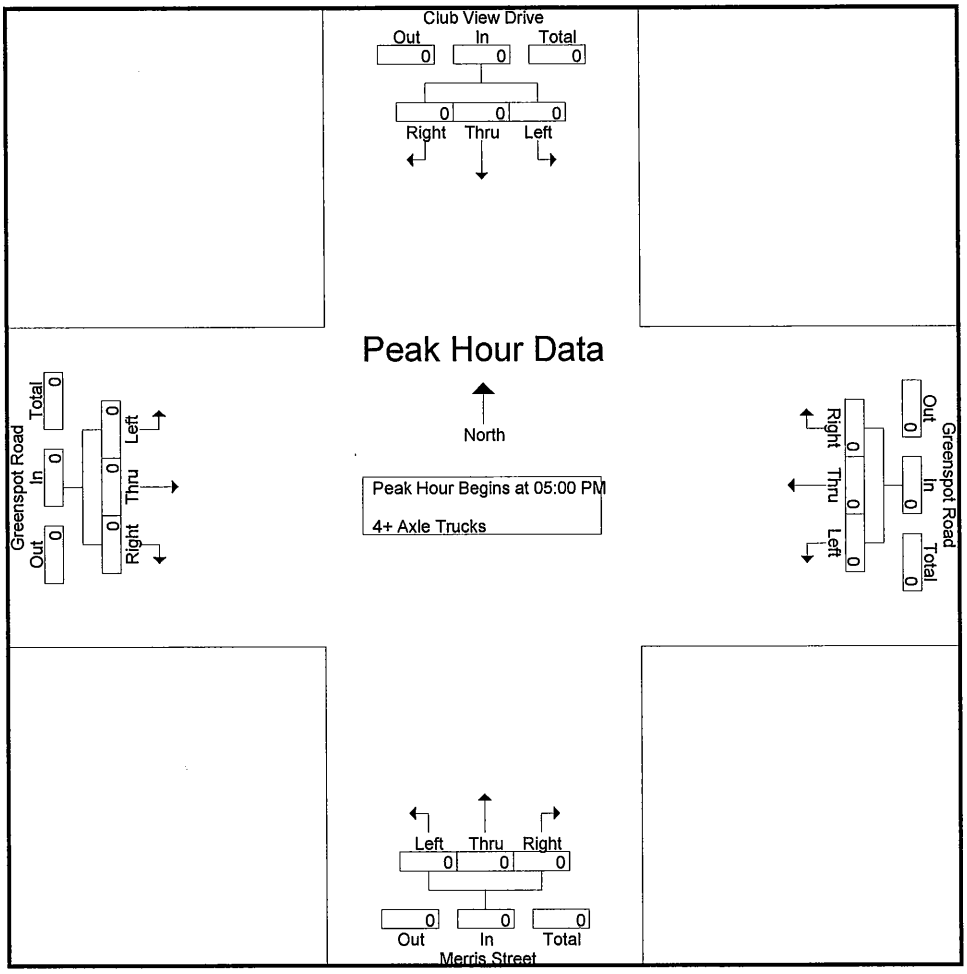

Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				05:00 PM				05:00 PM				05:00 PM			
+0 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		0	0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

File Name : HLDGOGRAM
Site Code : 99916000
Start Date : 12/6/2016
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	13	13	169	0	169	4	50	54	236
07:15 AM	0	20	20	215	0	215	3	75	78	313
07:30 AM	0	20	20	245	0	245	1	66	67	332
07:45 AM	0	29	29	246	0	246	7	52	59	334
Total	0	82	82	875	0	875	15	243	258	1215
08:00 AM	0	23	23	208	0	208	9	79	88	319
08:15 AM	0	10	10	124	0	124	14	86	100	234
08:30 AM	1	14	15	115	0	115	10	80	90	220
08:45 AM	0	3	3	80	0	80	5	59	64	147
Total	1	50	51	527	0	527	38	304	342	920
Grand Total	1	132	133	1402	0	1402	53	547	600	2135
Apprch %	0.8	99.2		100	0		8.8	91.2		
Total %	0	6.2	6.2	65.7	0	65.7	2.5	25.6	28.1	
Passenger Vehicles	1	130	131	1371	0	1371	52	513	565	2067
% Passenger Vehicles	100	98.5	98.5	97.8	0	97.8	98.1	93.8	94.2	96.8
Large 2 Axle Vehicles	0	2	2	21	0	21	1	16	17	40
% Large 2 Axle Vehicles	0	1.5	1.5	1.5	0	1.5	1.9	2.9	2.8	1.9
3 Axle Vehicles	0	0	0	4	0	4	0	10	10	14
% 3 Axle Vehicles	0	0	0	0.3	0	0.3	0	1.8	1.7	0.7
4+ Axle Trucks	0	0	0	6	0	6	0	8	8	14
% 4+ Axle Trucks	0	0	0	0.4	0	0.4	0	1.5	1.3	0.7

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	20	20	215	0	215	3	75	78	313
07:30 AM	0	20	20	245	0	245	1	66	67	332
07:45 AM	0	**29**	**29**	**246**	0	**246**	7	52	59	**334**
08:00 AM	0	23	23	208	0	208	**9**	**79**	**88**	319
Total Volume	0	92	92	914	0	914	20	272	292	1298
% App. Total	0	100		100	0		6.8	93.2		
PHF	.000	.793	.793	.929	.000	.929	.556	.861	.830	.972

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City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

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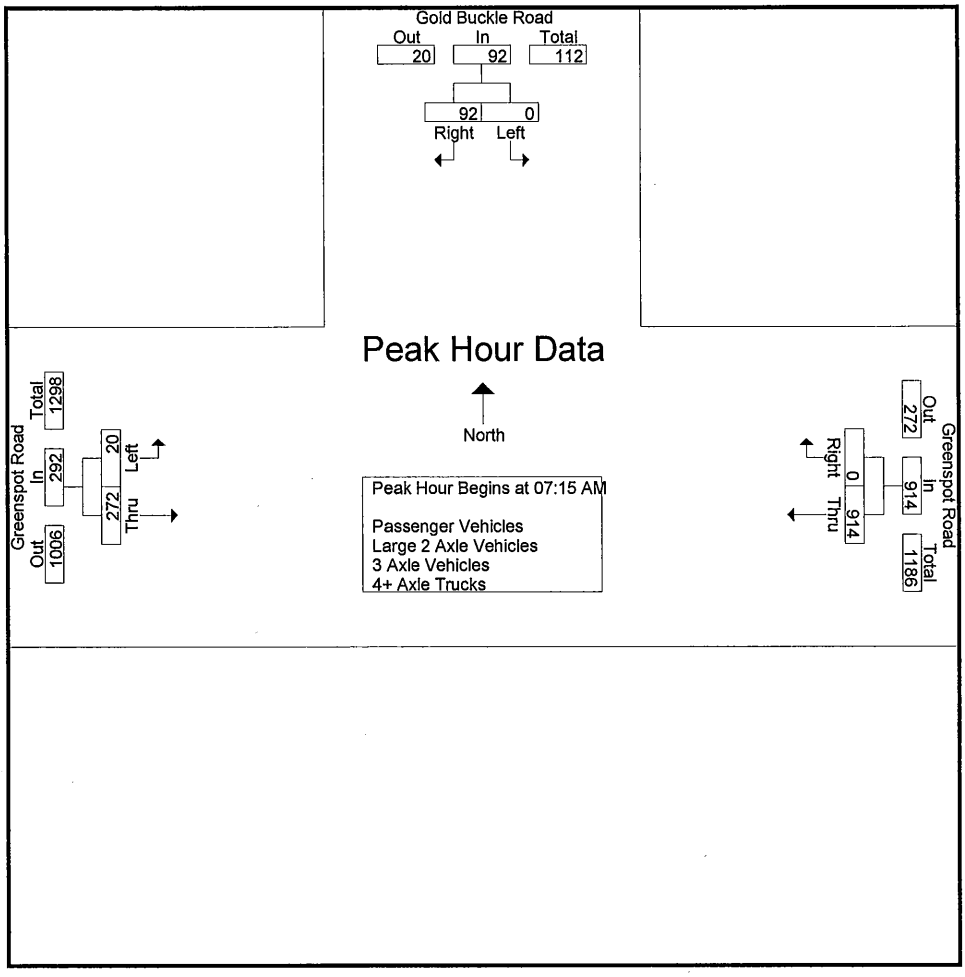

Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			08:00 AM		
+0 mins.	0	20	20	215	0	215	9	79	88
+15 mins.	0	20	20	245	0	245	**14**	**86**	**100**
+30 mins.	0	**29**	**29**	**246**	0	**246**	10	80	90
+45 mins.	0	23	23	208	0	208	5	59	64
Total Volume	0	92	92	914	0	914	38	304	342
% App. Total	0	100		100	0		11.1	88.9	
PHF	.000	.793	.793	.929	.000	.929	.679	.884	.855

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City of Highland
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Groups Printed- Passenger Vehicles

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	13	13	167	0	167	4	47	51	231
07:15 AM	0	20	20	212	0	212	3	70	73	305
07:30 AM	0	20	20	240	0	240	1	64	65	325
07:45 AM	0	29	29	240	0	240	7	49	56	325
Total	0	82	82	859	0	859	15	230	245	1186
08:00 AM	0	21	21	206	0	206	9	74	83	310
08:15 AM	0	10	10	123	0	123	14	83	97	230
08:30 AM	1	14	15	106	0	106	9	74	83	204
08:45 AM	0	3	3	77	0	77	5	52	57	137
Total	1	48	49	512	0	512	37	283	320	881
Grand Total	1	130	131	1371	0	1371	52	513	565	2067
Apprch %	0.8	99.2		100	0		9.2	90.8		
Total %	0	6.3	6.3	66.3	0	66.3	2.5	24.8	27.3	

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	20	20	212	0	212	3	70	73	305
07:30 AM	0	20	20	**240**	0	**240**	1	64	65	**325**
07:45 AM	0	**29**	**29**	240	0	240	7	49	56	325
08:00 AM	0	21	21	206	0	206	**9**	**74**	**83**	310
Total Volume	0	90	90	898	0	898	20	257	277	1265
% App. Total	0	100		100	0		7.2	92.8		
PHF	.000	.776	.776	.935	.000	.935	.556	.868	.834	.973

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City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

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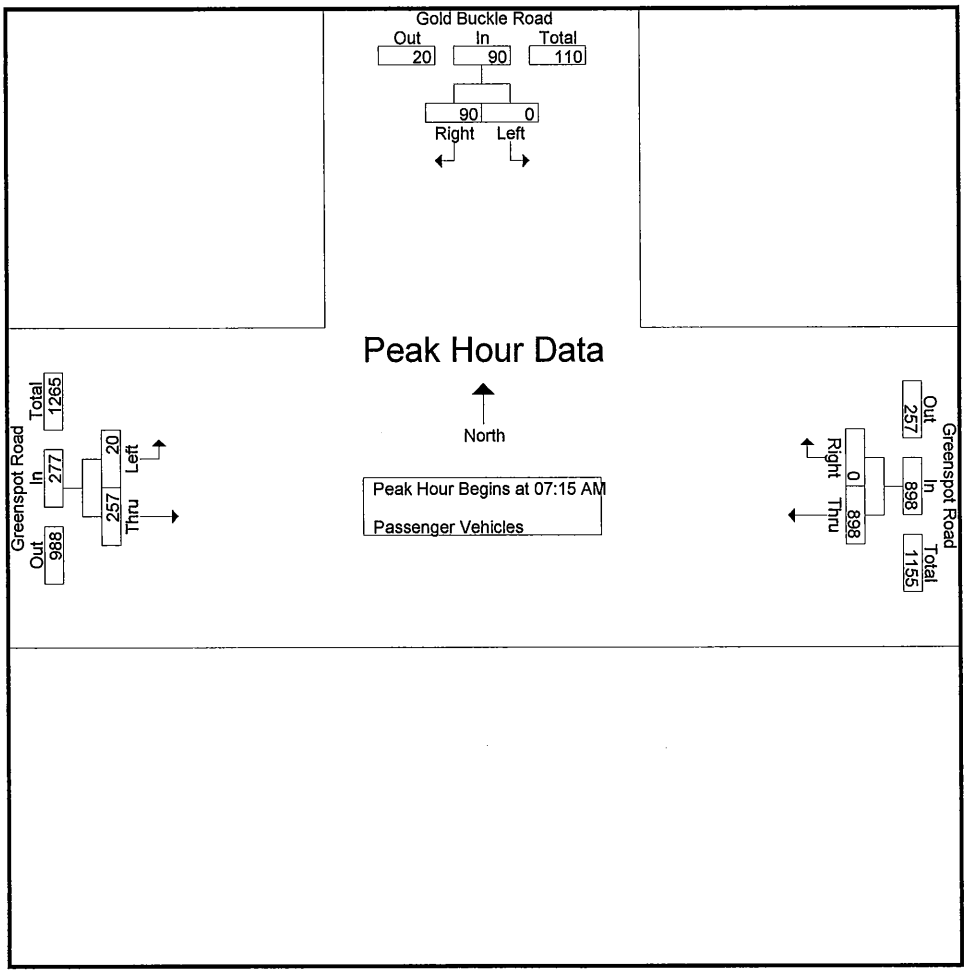

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	20	20	212	0	212	3	70	73
+15 mins.	0	20	20	**240**	0	**240**	1	64	65
+30 mins.	0	**29**	**29**	240	0	240	7	49	56
+45 mins.	0	21	21	206	0	206	**9**	**74**	**83**
Total Volume	0	90	90	898	0	898	20	257	277
% App. Total	0	100		100	0		7.2	92.8	
PHF	.000	.776	.776	.935	.000	.935	.556	.868	.834

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City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

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Groups Printed- Large 2 Axle Vehicles

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	2	0	2	0	3	3	5
07:15 AM	0	0	0	3	0	3	0	1	1	4
07:30 AM	0	0	0	5	0	5	0	2	2	7
07:45 AM	0	0	0	5	0	5	0	3	3	8
Total	0	0	0	15	0	15	0	9	9	24
08:00 AM	0	2	2	2	0	2	0	3	3	7
08:15 AM	0	0	0	1	0	1	0	2	2	3
08:30 AM	0	0	0	3	0	3	1	2	3	6
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	2	2	6	0	6	1	7	8	16
Grand Total	0	2	2	21	0	21	1	16	17	40
Apprch %	0	100		100	0		5.9	94.1		
Total %	0	5	5	52.5	0	52.5	2.5	40	42.5	

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	3	0	3	0	1	1	4
07:30 AM	0	0	0	**5**	0	**5**	0	2	2	7
07:45 AM	0	0	0	5	0	5	0	**3**	**3**	**8**
08:00 AM	0	**2**	**2**	2	0	2	0	3	3	7
Total Volume	0	2	2	15	0	15	0	9	9	26
% App. Total	0	100		100	0		0	100		
PHF	.000	.250	.250	.750	.000	.750	.000	.750	.750	.813

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City of Highland
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Weather: Clear

File Name : HLDGOGRAM
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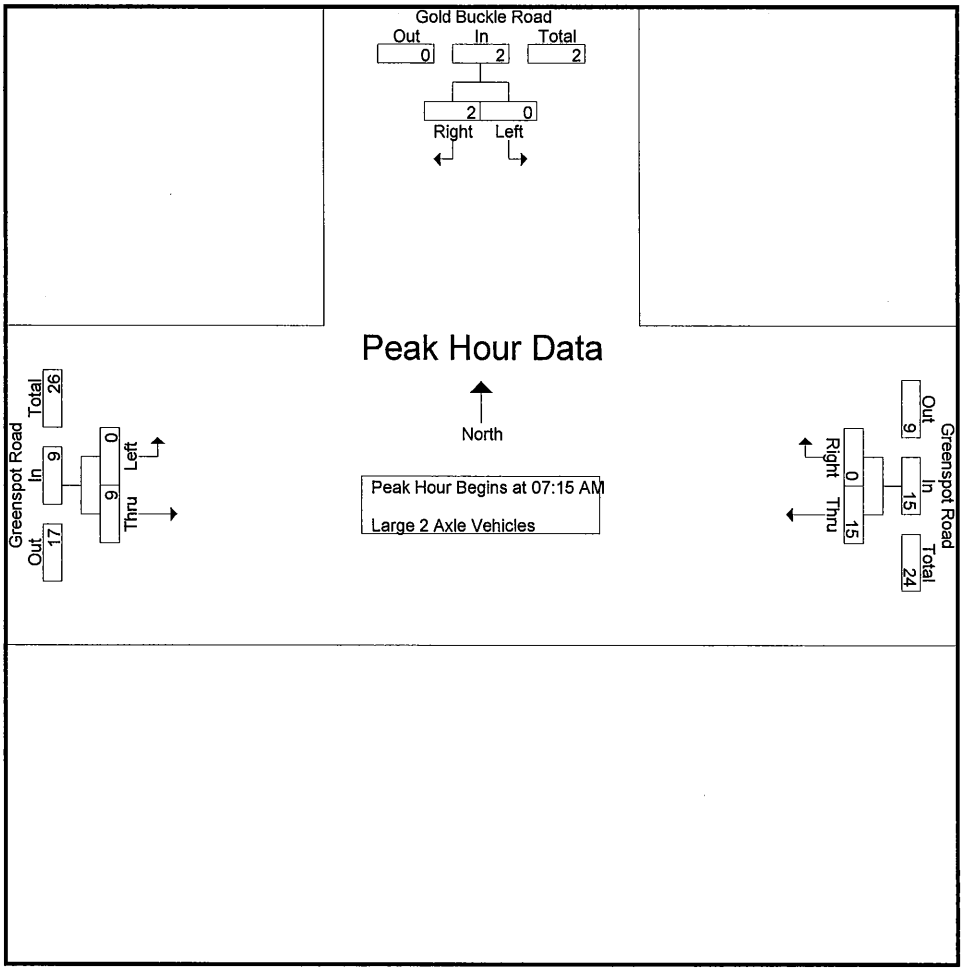

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	3	0	3	0	1	1
+15 mins.	0	0	0	**5**	0	**5**	0	2	2
+30 mins.	0	0	0	5	0	5	0	**3**	**3**
+45 mins.	0	**2**	**2**	2	0	2	0	3	3
Total Volume	0	2	2	15	0	15	0	9	9
% App. Total	0	100		100	0		0	100	
PHF	.000	.250	.250	.750	.000	.750	.000	.750	.750

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City of Highland
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Groups Printed- 3 Axle Vehicles

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	2	2	2
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	2	2	2
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	1	1	1
08:30 AM	0	0	0	2	0	2	0	3	3	5
08:45 AM	0	0	0	2	0	2	0	4	4	6
Total	0	0	0	4	0	4	0	8	8	12
Grand Total	0	0	0	4	0	4	0	10	10	14
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	28.6	0	28.6	0	71.4	71.4	

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	**2**	**2**	**2**
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	2	2	2
% App. Total	0	0		0	0		0	100		
PHF	.000	.000	.000	.000	.000	.000	.000	.250	.250	.250

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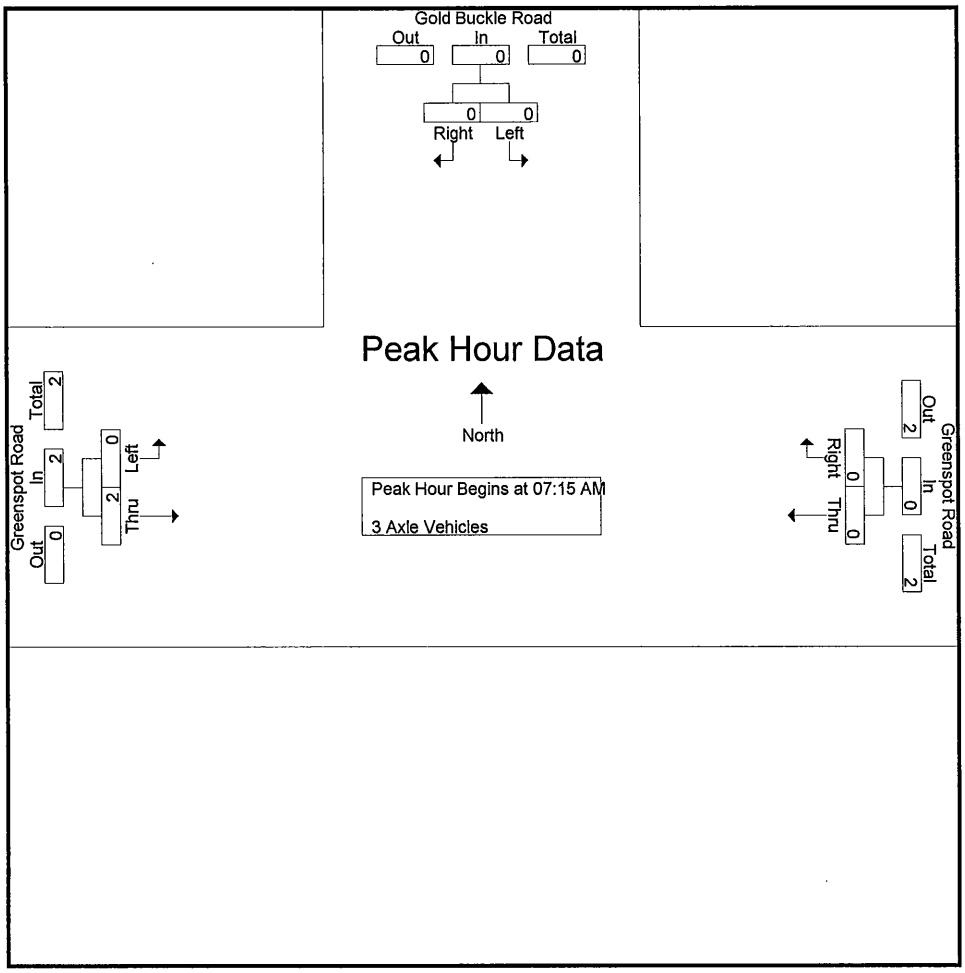

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	0	0	0	**2**	**2**
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	2	2
% App. Total	0	0		0	0		0	100	
PHF	.000	.000	.000	.000	.000	.000	.000	.250	.250

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Groups Printed- 4+ Axle Trucks

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	2	2	2
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	1	0	1	0	0	0	1
Total	0	0	0	1	0	1	0	2	2	3
08:00 AM	0	0	0	0	0	0	0	2	2	2
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	4	0	4	0	1	1	5
08:45 AM	0	0	0	1	0	1	0	3	3	4
Total	0	0	0	5	0	5	0	6	6	11
Grand Total	0	0	0	6	0	6	0	8	8	14
Apprch %	0	0		100	0		0	100		
Total %	0	0	0	42.9	0	42.9	0	57.1	57.1	

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:15 AM										
07:15 AM	0	0	0	0	0	0	0	**2**	**2**	**2**
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	**1**	0	**1**	0	0	0	1
08:00 AM	0	0	0	0	0	0	0	2	2	2
Total Volume	0	0	0	1	0	1	0	4	4	5
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.250	.000	.250	.000	.500	.500	.625

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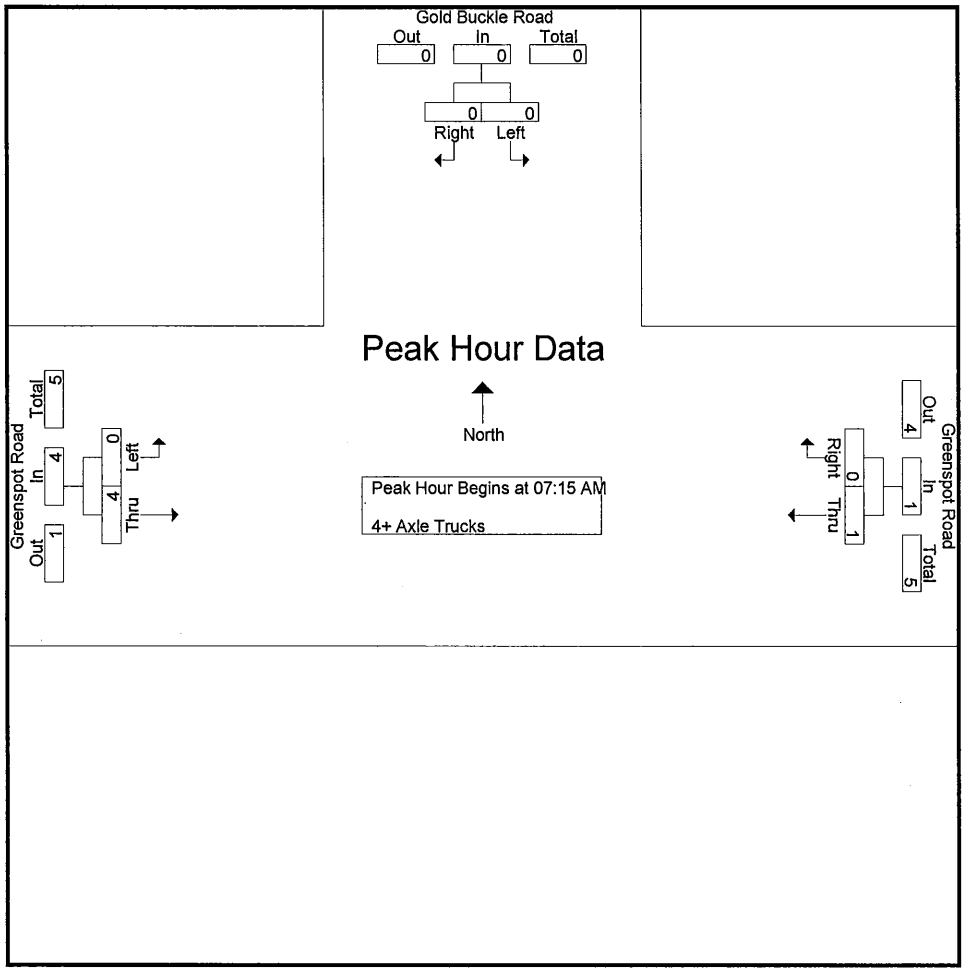

Peak Hour Analysis From 07:15 AM to 08:00 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:15 AM			07:15 AM			07:15 AM		
+0 mins.	0	0	0	0	0	0	0	**2**	**2**
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	**1**	0	**1**	0	0	0
+45 mins.	0	0	0	0	0	0	0	2	2
Total Volume	0	0	0	1	0	1	0	4	4
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.250	.000	.250	.000	.500	.500

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City of Highland
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Groups Printed- Passenger Vehicles - Large 2 Axle Vehicles - 3 Axle Vehicles - 4+ Axle Trucks

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	10	10	98	0	98	16	153	169	277
04:15 PM	1	13	14	74	0	74	17	126	143	231
04:30 PM	1	6	7	87	0	87	18	150	168	262
04:45 PM	0	10	10	83	0	83	15	146	161	254
Total	2	39	41	342	0	342	66	575	641	1024
05:00 PM	0	13	13	80	5	85	11	178	189	287
05:15 PM	0	10	10	81	0	81	14	183	197	288
05:30 PM	1	12	13	102	0	102	17	152	169	284
05:45 PM	0	12	12	102	0	102	11	152	163	277
Total	1	47	48	365	5	370	53	665	718	1136
Grand Total	3	86	89	707	5	712	119	1240	1359	2160
Apprch %	3.4	96.6		99.3	0.7		8.8	91.2		
Total %	0.1	4	4.1	32.7	0.2	33	5.5	57.4	62.9	
Passenger Vehicles	3	84	87	701	5	706	118	1229	1347	2140
% Passenger Vehicles	100	97.7	97.8	99.2	100	99.2	99.2	99.1	99.1	99.1
Large 2 Axle Vehicles	0	2	2	6	0	6	1	11	12	20
% Large 2 Axle Vehicles	0	2.3	2.2	0.8	0	0.8	0.8	0.9	0.9	0.9
3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
% 3 Axle Vehicles	0	0	0	0	0	0	0	0	0	0
4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0
% 4+ Axle Trucks	0	0	0	0	0	0	0	0	0	0

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	**13**	**13**	80	**5**	85	11	178	189	287
05:15 PM	0	10	10	81	0	81	14	**183**	**197**	**288**
05:30 PM	**1**	12	13	**102**	0	**102**	**17**	152	169	284
05:45 PM	0	12	12	102	0	102	11	152	163	277
Total Volume	1	47	48	365	5	370	53	665	718	1136
% App. Total	2.1	97.9		98.6	1.4		7.4	92.6		
PHF	.250	.904	.923	.895	.250	.907	.779	.908	.911	.986

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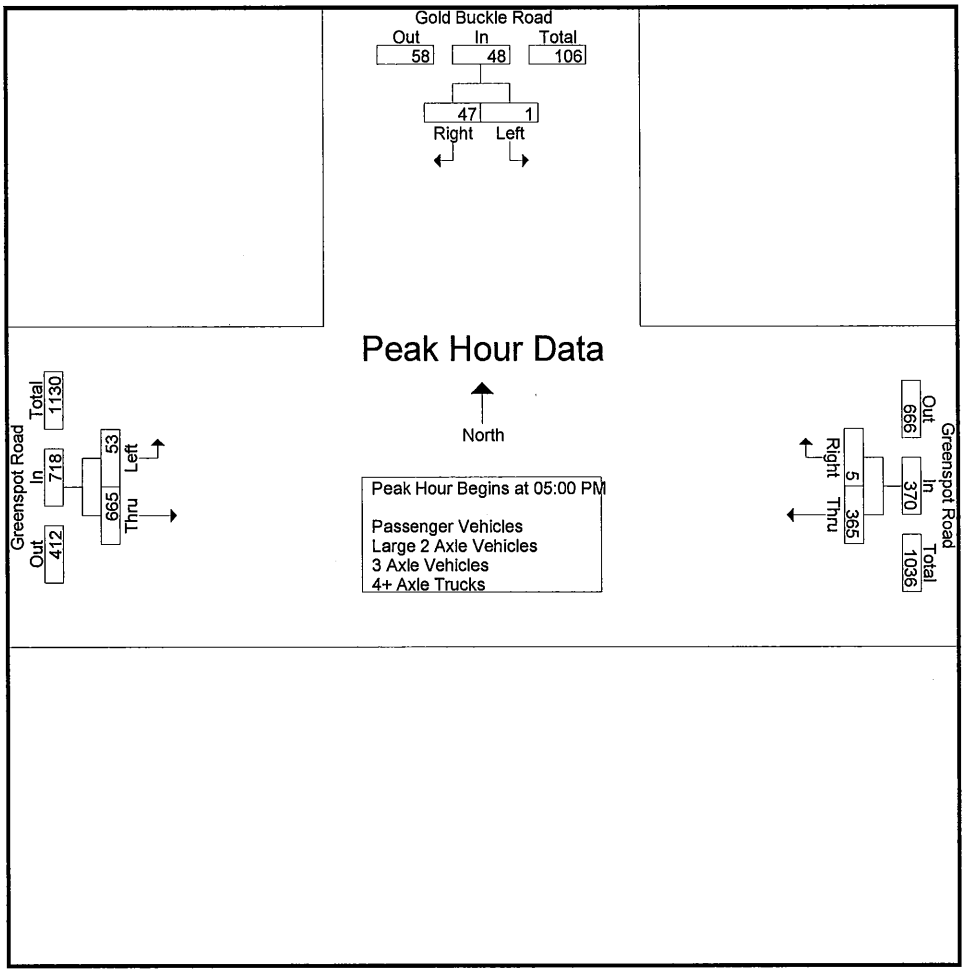

Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	**13**	**13**	80	**5**	85	11	178	189
+15 mins.	0	10	10	81	0	81	14	**183**	**197**
+30 mins.	**1**	12	13	**102**	0	**102**	**17**	152	169
+45 mins.	0	12	12	102	0	102	11	152	163
Total Volume	1	47	48	365	5	370	53	665	718
% App. Total	2.1	97.9		98.6	1.4		7.4	92.6	
PHF	.250	.904	.923	.895	.250	.907	.779	.908	.911

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Groups Printed- Passenger Vehicles

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	9	9	98	0	98	15	151	166	273
04:15 PM	1	12	13	72	0	72	17	124	141	226
04:30 PM	1	6	7	87	0	87	18	150	168	262
04:45 PM	0	10	10	82	0	82	15	146	161	253
Total	2	37	39	339	0	339	65	571	636	1014
05:00 PM	0	13	13	78	5	83	11	176	187	283
05:15 PM	0	10	10	80	0	80	14	179	193	283
05:30 PM	1	12	13	102	0	102	17	152	169	284
05:45 PM	0	12	12	102	0	102	11	151	162	276
Total	1	47	48	362	5	367	53	658	711	1126
Grand Total	3	84	87	701	5	706	118	1229	1347	2140
Apprch %	3.4	96.6		99.3	0.7		8.8	91.2		
Total %	0.1	3.9	4.1	32.8	0.2	33	5.5	57.4	62.9	

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	**13**	**13**	78	**5**	83	11	176	187	283
05:15 PM	0	10	10	80	0	80	14	**179**	**193**	283
05:30 PM	**1**	12	13	**102**	0	**102**	**17**	152	169	**284**
05:45 PM	0	12	12	102	0	102	11	151	162	276
Total Volume	1	47	48	362	5	367	53	658	711	1126
% App. Total	2.1	97.9		98.6	1.4		7.5	92.5		
PHF	.250	.904	.923	.887	.250	.900	.779	.919	.921	.991

Counts Unlimited
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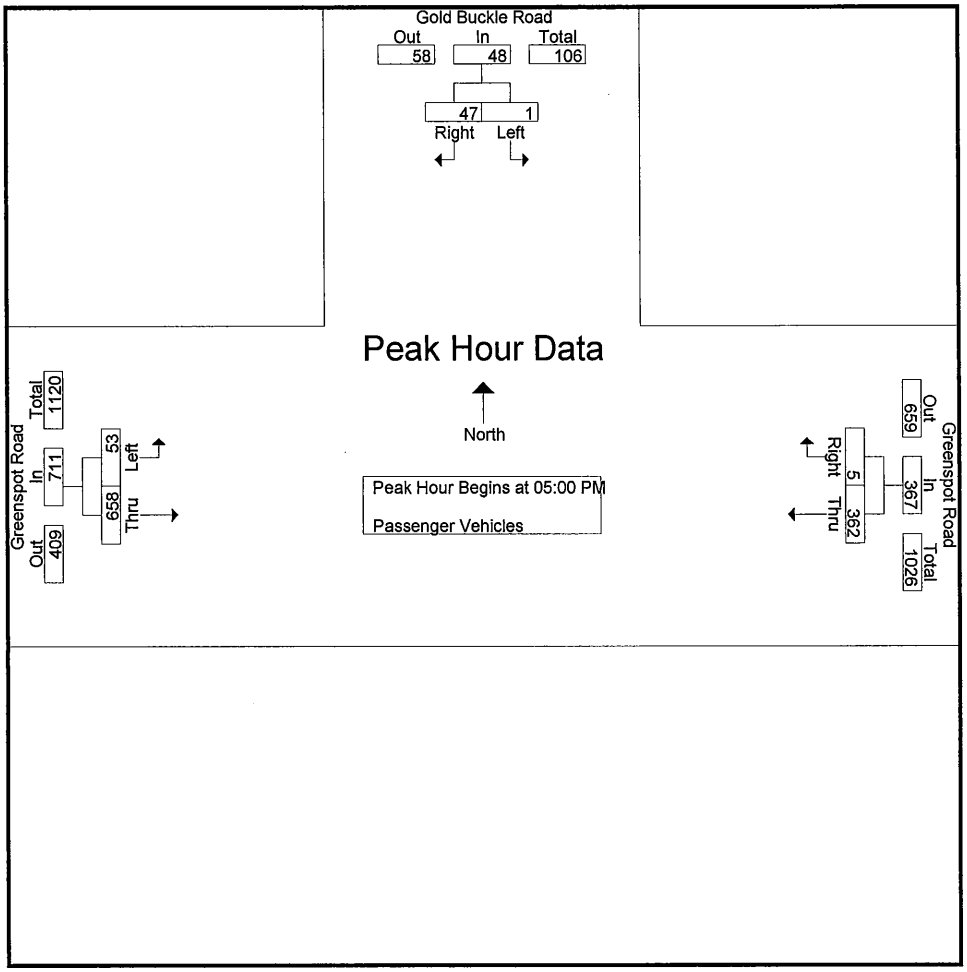
Corona, CA 92878
(951) 268-6268

City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

File Name : HLDGOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	**13**	**13**	78	**5**	83	11	176	187
+15 mins.	0	10	10	80	0	80	14	**179**	**193**
+30 mins.	**1**	12	13	**102**	0	**102**	**17**	152	169
+45 mins.	0	12	12	102	0	102	11	151	162
Total Volume	1	47	48	362	5	367	53	658	711
% App. Total	2.1	97.9		98.6	1.4		7.5	92.5	
PHF	.250	.904	.923	.887	.250	.900	.779	.919	.921

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City of Highland
N/S: Gold Buckle Road
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Weather: Clear

File Name : HLDGOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- Large 2 Axle Vehicles

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	1	1	0	0	0	1	2	3	4
04:15 PM	0	1	1	2	0	2	0	2	2	5
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	1	0	1	0	0	0	1
Total	0	2	2	3	0	3	1	4	5	10
05:00 PM	0	0	0	2	0	2	0	2	2	4
05:15 PM	0	0	0	1	0	1	0	4	4	5
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	1	1	1
Total	0	0	0	3	0	3	0	7	7	10
Grand Total	0	2	2	6	0	6	1	11	12	20
Apprch %	0	100		100	0		8.3	91.7		
Total %	0	10	10	30	0	30	5	55	60	

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	**2**	0	**2**	0	2	2	4
05:15 PM	0	0	0	1	0	1	0	**4**	**4**	**5**
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	1	1	1
Total Volume	0	0	0	3	0	3	0	7	7	10
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.375	.000	.375	.000	.438	.438	.500

Counts Unlimited
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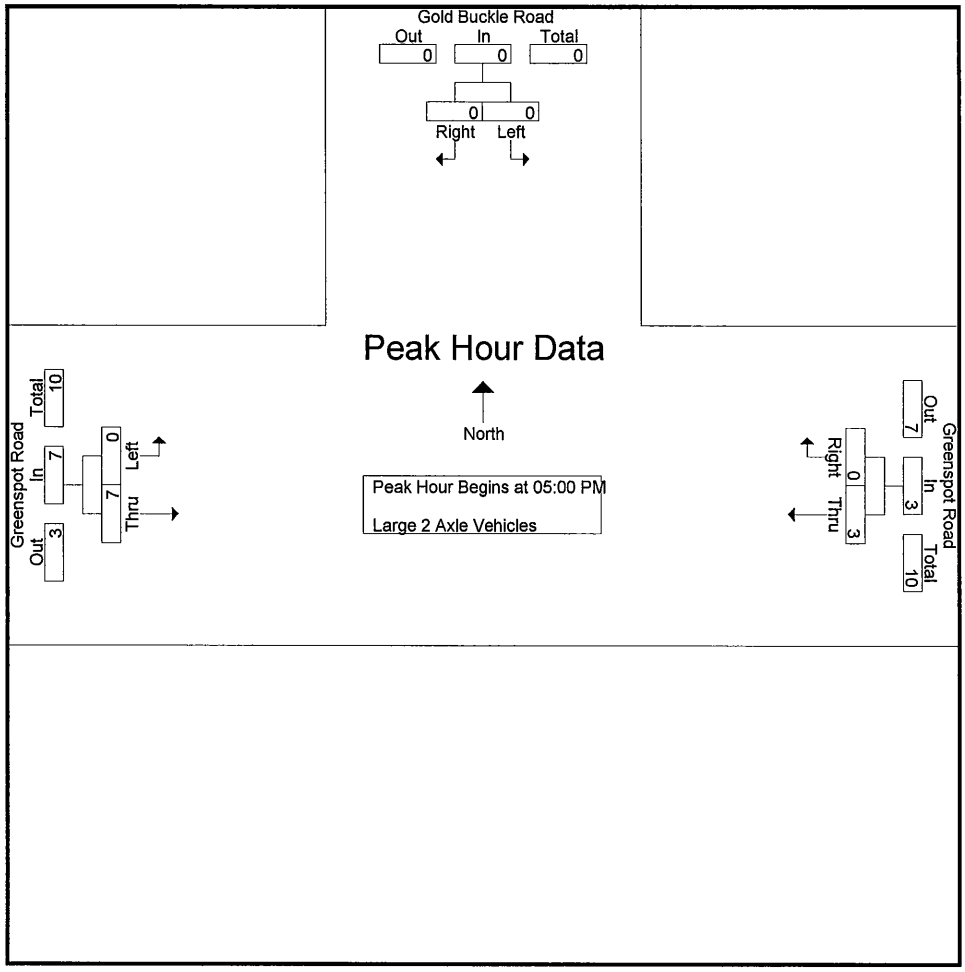
City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

File Name : HLDGOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	**2**	0	**2**	0	2	2
+15 mins.	0	0	0	1	0	1	0	**4**	**4**
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	1	1
Total Volume	0	0	0	3	0	3	0	7	7
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.375	.000	.375	.000	.438	.438

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City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

File Name : HLDGOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 3 Axle Vehicles

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Counts Unlimited
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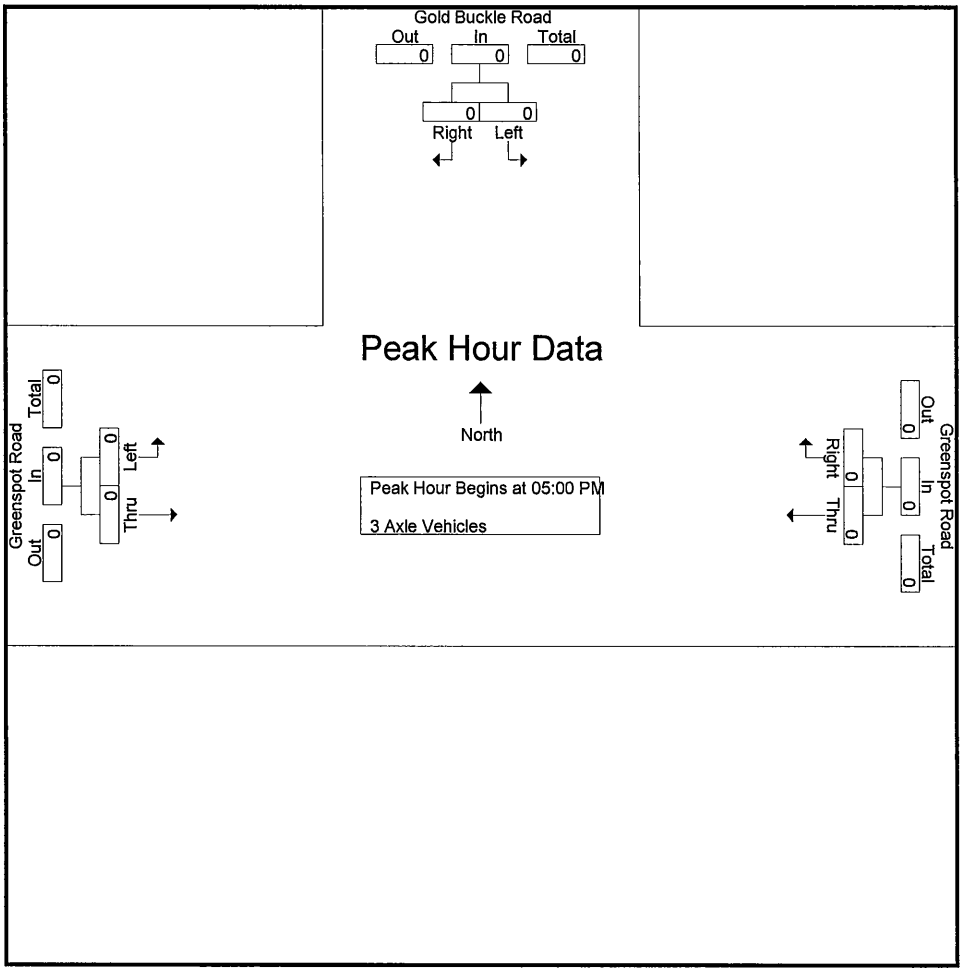
City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

File Name : HLDGOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

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City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

File Name : HLDGOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 1

Groups Printed- 4+ Axle Trucks

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0		0	0		0	0		
Total %										

	Gold Buckle Road Southbound			Greenspot Road Westbound			Greenspot Road Eastbound			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Counts Unlimited
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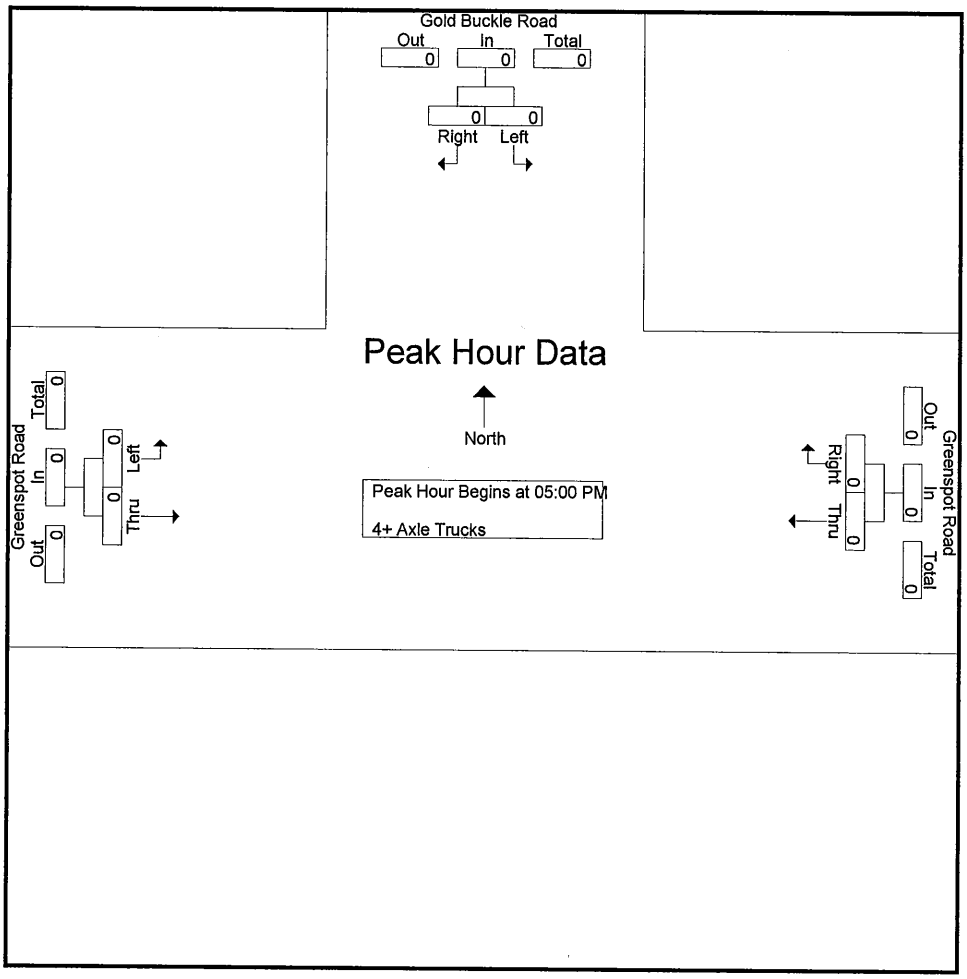
City of Highland
N/S: Gold Buckle Road
E/W: Greenspot Road
Weather: Clear

File Name : HLDGOGRPM
Site Code : 99916000
Start Date : 12/6/2016
Page No : 2



Peak Hour Analysis From 05:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM			05:00 PM			05:00 PM		
+0 mins.	0	0	0	0	0	0	0	0	0
+15 mins.	0	0	0	0	0	0	0	0	0
+30 mins.	0	0	0	0	0	0	0	0	0
+45 mins.	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0
% App. Total	0	0		0	0		0	0	
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000

APPENDIX C-II

PCE CONVERSION SHEETS

TABLE A

TRAFFIC COUNT CONVERSION TO P.C.E.'S - 2016 AM PEAK HOUR

2.16.3773.1 - HEATHERGLEN RESIDENTIAL, HIGHLAND

1. SR-210 EB Ramps at 5th Street

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBL	126	2	1.5	3	0	2.0	0	0	3.0	0	129
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	88	2	1.5	3	4	2.0	8	9	3.0	27	126
EBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBT	316	6	1.5	9	5	2.0	10	7	3.0	21	356
EBR	286	12	1.5	18	7	2.0	14	11	3.0	33	351
WBL	807	6	1.5	9	1	2.0	2	10	3.0	30	848
WBT	870	13	1.5	20	5	2.0	10	9	3.0	27	927
WBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0

2. SR-210 WB Ramps at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	315	11	1.5	17	3	2.0	6	8	3.0	24	362
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	280	11	1.5	17	0	2.0	0	15	3.0	45	342
SBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBL	46	6	1.5	9	2	2.0	4	7	3.0	21	80
EBT	398	5	1.5	8	5	2.0	10	0	3.0	0	416
EBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBT	1359	10	1.5	15	1	2.0	2	11	3.0	33	1409
WBR	296	4	1.5	6	0	2.0	0	0	3.0	0	302

3. Lowes Center at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	58	1	1.5	2	0	2.0	0	0	3.0	0	60
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	12	0	1.5	0	0	2.0	0	0	3.0	0	12
SBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBL	1	0	1.5	0	0	2.0	0	0	3.0	0	1
EBT	604	14	1.5	21	5	2.0	10	15	3.0	45	680
EBR	77	2	1.5	3	0	2.0	0	0	3.0	0	80
WBL	17	0	1.5	0	0	2.0	0	0	3.0	0	17
WBT	1594	10	1.5	15	1	2.0	2	11	3.0	33	1644
WBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0

4. Shopping Center at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	66	2	1.5	3	1	2.0	2	1	3.0	3	74
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	24	0	1.5	0	0	2.0	0	0	3.0	0	24
SBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBT	547	9	1.5	14	3	2.0	6	13	3.0	39	606
EBR	66	4	1.5	6	1	2.0	2	0	3.0	0	74
WBL	53	1	1.5	2	0	2.0	0	0	3.0	0	55
WBT	1540	14	1.5	21	1	2.0	2	8	3.0	24	1587
WBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0

5. Boulder Avenue at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	160	3	1.5	5	1	2.0	2	7	3.0	21	188
NBT	197	1	1.5	2	0	2.0	0	0	3.0	0	199
NBR	231	2	1.5	3	0	2.0	0	0	3.0	0	234
SBL	37	1	1.5	2	0	2.0	0	0	3.0	0	39
SBT	321	2	1.5	3	0	2.0	0	0	3.0	0	324
SBR	2	0	1.5	0	0	2.0	0	2	3.0	6	8
EBL	15	0	1.5	0	0	2.0	0	0	3.0	0	15
EBT	369	6	1.5	9	3	2.0	6	0	3.0	0	384
EBR	88	3	1.5	5	0	2.0	0	13	3.0	39	132
WBL	419	0	1.5	0	0	2.0	0	1	3.0	3	422
WBT	1255	9	1.5	14	0	2.0	0	1	3.0	3	1272
WBR	71	5	1.5	8	0	2.0	0	0	3.0	0	79

TABLE A

TRAFFIC COUNT CONVERSION TO P.C.E.'S - 2016 AM PEAK HOUR

2.16.3773.1 - HEATHERGLEN RESIDENTIAL, HIGHLAND

6. Orange Street at Greenspot Road

Movements	Vehicles	Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			Total
		Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	
NBL	5	0	1.5	0	0	2.0	0	0	3.0	0	5
NBT	7	0	1.5	0	0	2.0	0	0	3.0	0	7
NBR	1	0	1.5	0	0	2.0	0	0	3.0	0	1
SBL	115	3	1.5	5	0	2.0	0	0	3.0	0	120
SBT	3	0	1.5	0	0	2.0	0	0	3.0	0	3
SBR	412	4	1.5	6	0	2.0	0	0	3.0	0	418
EBL	140	5	1.5	8	0	2.0	0	0	3.0	0	148
EBT	488	6	1.5	9	5	2.0	10	2	3.0	6	513
EBR	2	0	1.5	0	0	2.0	0	0	3.0	0	2
WBL	2	0	1.5	0	0	2.0	0	0	3.0	0	2
WBT	1326	12	1.5	18	0	2.0	0	1	3.0	3	1347
WBR	105	1	1.5	2	0	2.0	0	0	3.0	0	107

7. Church Street at Greenspot Road

Movements	Vehicles	Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			Total
		Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	
NBL	21	0	1.5	0	0	2.0	0	0	3.0	0	21
NBT	12	0	1.5	0	0	2.0	0	0	3.0	0	12
NBR	3	0	1.5	0	0	2.0	0	0	3.0	0	3
SBL	31	2	1.5	3	0	2.0	0	0	3.0	0	34
SBT	7	0	1.5	0	0	2.0	0	0	3.0	0	7
SBR	325	5	1.5	8	0	2.0	0	2	3.0	6	339
EBL	223	3	1.5	5	0	2.0	0	0	3.0	0	228
EBT	335	4	1.5	6	1	2.0	2	2	3.0	6	349
EBR	14	0	1.5	0	1	2.0	2	0	3.0	0	16
WBL	5	0	1.5	0	0	2.0	0	0	3.0	0	5
WBT	1072	7	1.5	11	0	2.0	0	0	3.0	0	1083
WBR	98	4	1.5	6	0	2.0	0	0	3.0	0	104

8. Club View Drive/Merris Street at Greenspot Road

Movements	Vehicles	Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			Total
		Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	
NBL	2	0	1.5	0	0	2.0	0	0	3.0	0	2
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	3	0	1.5	0	0	2.0	0	0	3.0	0	3
SBL	9	0	1.5	0	0	2.0	0	0	3.0	0	9
SBT	0	1	1.5	2	0	2.0	0	0	3.0	0	2
SBR	228	3	1.5	5	0	2.0	0	0	3.0	0	233
EBL	51	1	1.5	2	0	2.0	0	0	3.0	0	53
EBT	269	11	1.5	17	3	2.0	6	2	3.0	6	298
EBR	1	0	1.5	0	0	2.0	0	0	3.0	0	1
WBL	2	0	1.5	0	0	2.0	0	0	3.0	0	2
WBT	970	15	1.5	23	0	2.0	0	1	3.0	3	996
WBR	11	1	1.5	2	0	2.0	0	0	3.0	0	13

9. Gold Buckle Road at Greenspot Road

Movements	Vehicles	Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			Total
		Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	
NBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	90	2	1.5	3	0	2.0	0	0	3.0	0	93
EBL	20	0	1.5	0	0	2.0	0	0	3.0	0	20
EBT	257	9	1.5	14	2	2.0	4	4	3.0	12	287
EBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBT	898	15	1.5	23	0	2.0	0	1	3.0	3	924
WBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0

10. Project Dwy 2 at Greenspot Road

Movements	Vehicles	Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			Total
		Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	
NBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBT	257	9	1.5	14	2	2.0	4	4	3.0	12	287
EBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBT	898	15	1.5	23	0	2.0	0	1	3.0	3	924
WBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0

TABLE A

TRAFFIC COUNT CONVERSION TO P.C.E.'S - 2016 PM PEAK HOUR

2.16.3773.1 - HEATHERGLEN RESIDENTIAL, HIGHLAND

1. SR-210 EB Ramps at 5th Street

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBL	320	3	1.5	5	0	2.0	0	0	3.0	0	325
SBT	2	0	1.5	0	0	2.0	0	0	3.0	0	2
SBR	109	3	1.5	5	1	2.0	2	19	3.0	57	173
EBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBT	916	5	1.5	8	2	2.0	4	10	3.0	30	958
EBR	459	1	1.5	2	0	2.0	0	14	3.0	42	503
WBL	331	3	1.5	5	0	2.0	0	1	3.0	3	339
WBT	415	5	1.5	8	2	2.0	4	6	3.0	18	445
WBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0

2. SR-210 WB Ramps at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	152	5	1.5	8	2	2.0	4	3	3.0	9	173
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	482	2	1.5	3	0	2.0	0	0	3.0	0	485
SBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBL	197	2	1.5	3	1	2.0	2	12	3.0	36	238
EBT	1067	2	1.5	3	0	2.0	0	0	3.0	0	1070
EBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBT	607	5	1.5	8	0	2.0	0	2	3.0	6	621
WBR	290	3	1.5	5	0	2.0	0	0	3.0	0	295

3. Lowes Center at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	129	0	1.5	0	0	2.0	0	0	3.0	0	129
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	51	0	1.5	0	0	2.0	0	0	3.0	0	51
SBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBT	1395	4	1.5	6	0	2.0	0	0	3.0	0	1401
EBR	137	0	1.5	0	0	2.0	0	0	3.0	0	137
WBL	29	0	1.5	0	0	2.0	0	0	3.0	0	29
WBT	755	7	1.5	11	0	2.0	0	3	3.0	9	775
WBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0

4. Shopping Center at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	144	1	1.5	2	0	2.0	0	1	3.0	3	149
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	78	1	1.5	2	0	2.0	0	0	3.0	0	80
SBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBL	3	0	1.5	0	0	2.0	0	0	3.0	0	3
EBT	1279	3	1.5	5	0	2.0	0	0	3.0	0	1284
EBR	142	1	1.5	2	0	2.0	0	0	3.0	0	144
WBL	81	1	1.5	2	0	2.0	0	0	3.0	0	83
WBT	644	6	1.5	9	0	2.0	0	2	3.0	6	659
WBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0

5. Boulder Avenue at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	161	2	1.5	3	0	2.0	0	0	3.0	0	164
NBT	311	1	1.5	2	0	2.0	0	0	3.0	0	313
NBR	503	2	1.5	3	0	2.0	0	0	3.0	0	506
SBL	59	0	1.5	0	0	2.0	0	0	3.0	0	59
SBT	307	0	1.5	0	0	2.0	0	0	3.0	0	307
SBR	11	0	1.5	0	0	2.0	0	0	3.0	0	11
EBL	27	0	1.5	0	0	2.0	0	0	3.0	0	27
EBT	879	3	1.5	5	0	2.0	0	0	3.0	0	884
EBR	288	0	1.5	0	0	2.0	0	0	3.0	0	288
WBL	230	5	1.5	8	0	2.0	0	0	3.0	0	238
WBT	483	5	1.5	8	0	2.0	0	2	3.0	6	497
WBR	54	0	1.5	0	0	2.0	0	0	3.0	0	54

TABLE A

TRAFFIC COUNT CONVERSION TO P.C.E.'S - 2016 PM PEAK HOUR

2.16.3773.1 - HEATHERGLEN RESIDENTIAL, HIGHLAND

6. Orange Street at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	4	0	1.5	0	0	2.0	0	0	3.0	0	4
NBT	1	0	1.5	0	0	2.0	0	0	3.0	0	1
NBR	2	0	1.5	0	0	2.0	0	0	3.0	0	2
SBL	32	0	1.5	0	0	2.0	0	0	3.0	0	32
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	71	0	1.5	0	0	2.0	0	0	3.0	0	71
EBL	121	0	1.5	0	0	2.0	0	0	3.0	0	121
EBT	1298	7	1.5	11	0	2.0	0	0	3.0	0	1309
EBR	7	0	1.5	0	0	2.0	0	0	3.0	0	7
WBL	3	0	1.5	0	0	2.0	0	0	3.0	0	3
WBT	674	11	1.5	17	0	2.0	0	2	3.0	6	697
WBR	51	0	1.5	0	0	2.0	0	0	3.0	0	51

7. Church Street at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	16	2	1.5	3	0	2.0	0	0	3.0	0	19
NBT	3	0	1.5	0	0	2.0	0	0	3.0	0	3
NBR	1	0	1.5	0	0	2.0	0	0	3.0	0	1
SBL	48	0	1.5	0	0	2.0	0	0	3.0	0	48
SBT	12	0	1.5	0	0	2.0	0	0	3.0	0	12
SBR	221	6	1.5	9	0	2.0	0	1	3.0	3	233
EBL	311	2	1.5	3	0	2.0	0	0	3.0	0	314
EBT	920	2	1.5	3	0	2.0	0	0	3.0	0	923
EBR	14	1	1.5	2	0	2.0	0	0	3.0	0	16
WBL	2	0	1.5	0	0	2.0	0	0	3.0	0	2
WBT	495	2	1.5	3	0	2.0	0	0	3.0	0	498
WBR	45	0	1.5	0	0	2.0	0	0	3.0	0	45

8. Club View Drive/Merris Street at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	3	0	1.5	0	0	2.0	0	0	3.0	0	3
SBL	4	0	1.5	0	0	2.0	0	0	3.0	0	4
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	99	0	1.5	0	0	2.0	0	0	3.0	0	99
EBL	203	0	1.5	0	0	2.0	0	0	3.0	0	203
EBT	704	8	1.5	12	0	2.0	0	0	3.0	0	716
EBR	3	0	1.5	0	0	2.0	0	0	3.0	0	3
WBL	3	0	1.5	0	0	2.0	0	0	3.0	0	3
WBT	404	2	1.5	3	0	2.0	0	0	3.0	0	407
WBR	4	0	1.5	0	0	2.0	0	0	3.0	0	4

9. Gold Buckle Road at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBL	1	0	1.5	0	0	2.0	0	0	3.0	0	1
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	47	0	1.5	0	0	2.0	0	0	3.0	0	47
EBL	53	0	1.5	0	0	2.0	0	0	3.0	0	53
EBT	658	7	1.5	11	0	2.0	0	0	3.0	0	669
EBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBT	362	3	1.5	5	0	2.0	0	0	3.0	0	367
WBR	5	0	1.5	0	0	2.0	0	0	3.0	0	5

10. Project Dwy 2 at Greenspot Road

		Large 2-Axle Trucks			3-Axle Trucks			4+ Axle Trucks			
Movements	Vehicles	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Volume	Factor	P.C.E.	Total
NBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
NBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBT	0	0	1.5	0	0	2.0	0	0	3.0	0	0
SBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
EBT	659	7	1.5	11	0	2.0	0	0	3.0	0	670
EBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBL	0	0	1.5	0	0	2.0	0	0	3.0	0	0
WBT	367	3	1.5	5	0	2.0	0	0	3.0	0	372
WBR	0	0	1.5	0	0	2.0	0	0	3.0	0	0

APPENDIX C-III

EXISTING FREEWAY TRAFFIC INFORMATION

2015 Traffic Volumes on California State Highways

Dist	Route		County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak Month	Ahead AADT
08	210		SBD	R	28.664	SAN BERNARDINO, JCT. RTE. 330	6300	72000	70000	5500	73000	71500
08	210		SBD	R	29.322	HIGHLAND, BASELINE STREET	5500	73000	71500	5900	79000	77500
08	210		SBD	R	30.232	HIGHLAND, FIFTH STREET	5900	79000	77500	7300	97000	95000
08	210		SBD	R	32.343	REDLANDS, SAN BERNARDINO AVE	7300	97000	95000	6000	80000	78500
08	210		SBD	R	33.18	JCT. RTE. 10, END OF ROUTE	6000	80000	78500			
08	210	U	SBD		15.767	SIERRA AVENUE	950	10000	9800	1150	12300	12000
08	210	U	SBD		19.521	RIALTO, RIVERSIDE AVENUE	1850	19400	19000	2650	28000	27500
08	210	U	SBD		20.02	ACACIA AVENUE	2650	28000	27500	2700	28500	28000
08	210	U	SBD		21.68	CAJON BOULEVARD	2700	28500	28000	2700	28500	28000
08	210	U	SBD		21.773	CALIFORNIA STREET	2700	28500	28000	3300	35000	34000
08	210	U	SBD		22	ROUTE 210 LEFT TURN AT HIGHLAND AVENUE	3300	35000	34000			
01	211		HUM		73.2	FERNDALE, OCEAN AVENUE				640	6600	6400
01	211		HUM	R	74.192	FERNDALE, VAN NESS AVENUE	640	6600	6400	630	6500	6300
01	211		HUM	R	75.782	SAGE ROAD	560	5800	5600	580	6000	5800
01	211		HUM	R	76.688	GOBLE LN-WADDINGTON RD	580	6000	5800	530	5600	5400
01	211		HUM		79.275	JCT. RTE. 101	590	5600	5400			
07	213		LA		0	LOS ANGELES, 25TH STREET				2650	29000	28500
07	213		LA		3.458	RANCHO PALOS VERDES, AVENDIA APPRENDA RD	3150	35000	34000	3500	39000	38500
07	213		LA		4.314	LOMITA, PALOS VERDES DRIVE NORTH	3500	39000	38500	2000	23300	23000
07	213		LA		5.085	LOS ANGELES, JCT. RTE. 1	2600	31000	30500	2050	21800	21300
07	213		LA		5.667	LOS ANGELES, LOMITA BOULEVARD	2250	23900	23400	2800	29500	29000
07	213		LA		6.996	LOS ANGELES, SEPULVEDA BOULEVARD	2800	29500	29000	3000	31500	31000
07	213		LA		7.983	CARSON STREET	3000	31500	31000	3000	31500	31000
07	213		LA		8.973	W 204TH STREET	3000	31500	31000			
08	215		RIV	R	8.998	MURRIETA, JCT. RTE. 15				6100	90000	85000
08	215		RIV	R	9.507	MURRIETA HOT SPRINGS ROAD	6100	87000	85000	6700	95000	93000
08	215		RIV	R	10.652	MURRIETA, LOS ALAMOS ROAD	6700	95000	93000	6500	94000	90000
08	215		RIV	R	12.51	MURRIETA, ANTELOPE ROAD	6500	94000	90000	7100	97000	93000
08	215		RIV	R	15.515	SCOTT ROAD	7100	97000	93000	6700	88000	85000
08	215		RIV	R	18.516	NEWPORT ROAD	6700	88000	85000	6300	83000	80000
08	215		RIV	R	20.842	SUN CITY, MC CALL BOULEVARD	6300	83000	80000	5800	77000	74000
08	215		RIV		22.76	PERRIS, ETHANAC ROAD	5800	77000	74000	5700	75000	72000
08	215		RIV		23.537	SOUTH JCT. RTE. 74	5700	75000	72000	7300	92000	88000
08	215		RIV		26.308	PERRIS, NORTH JCT. RTE. 74	7200	90000	88000	6700	84000	82000
08	215		RIV		27.23	PERRIS, D STREET	6700	84000	82000	8100	102000	99000
08	215		RIV	R	27.887	PERRIS, NUEVO ROAD	8100	102000	99000	8400	106000	103000
08	215		RIV	R	30.93	RAMONA EXPRESSWAY	8400	106000	103000	9600	120000	117000
08	215		RIV	R	32.33	OLEANDER AVENUE	9600	120000	117000	10200	127000	124000
08	215		RIV	R	34.17	VAN BUREN BOULEVARD	10200	127000	124000	9800	123000	120000

CALIFORNIA DEPARTMENT OF TRANSPORT

REPORT : OTM32420

REPORT TITLE : PRINT TRAFFIC BOOK

PARAMETERS

YEAR : 2015

									AM PEAK							PM PEAK						
DI	RTE	CO	PRE	PM	CS	LEG	YR	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH	Dir	1 WAY PHV	% K	% D	% KD	HR	DAY	MNTH
06	204	KER		6.258	204	B	15	S	2418	10.62	56.55	6	7	THU	MAR	N	2232	10.43	53.16	5.54	16	TUE	MAR
06	204	KER		6.752	141	B	15	S	2001	10.96	66.79	7.32	7	WED	SEP	S	1590	9.94	58.56	5.82	15	WED	SEP
04	205	ALA		.214	251	A	14	W	5069	4.89	90.73	4.44	4	THU	AUG	E	5469	6.42	74.62	4.79	18	THU	MAY
10	205	SJ		1	8	B	13	W	4575	4.56	91.48	4.17	4	TUE	AUG	E	5387	7.52	65.31	4.91	16	FRI	FEB
10	205	SJ	R	8.127	121	A	15	W	4986	4.54	89.34	4.05	4	MON	APR	E	5057	6.56	62.64	4.11	15	TUE	MAY
07	210	LA	R	3.57	527	O	15	E	4831	7.51	67.37	5.06	7	MON	OCT	W	4462	8.2	56.97	4.67	16	FRI	MAY
07	210	LA	R	7.194	781	O	14	W	6592	8.88	61.34	5.45	7	THU	FEB	E	6137	9.06	55.98	5.07	17	TUE	FEB
07	210	LA	R	17.7	544	O	15	E	9561	7.4	69.52	5.14	6	MON	APR	W	10066	8.81	61.47	5.42	17	THU	OCT
07	210	LA	R	18.87	252	A	14	E	6155	8.3	60.31	5	7	TUE	NOV	W	6215	9.11	55.49	5.05	17	WED	OCT
07	210	LA	R	42.66	761	O	15	W	8832	6.88	51.19	3.52	11	SAT	AUG	E	8959	6.47	55.21	3.57	15	TUE	MAY
07	210	LA	R	46.21	128	O	15	W	7545	4.86	83.45	4.05	5	THU	NOV	E	6815	6.59	55.55	3.66	17	THU	MAY
07	210	LA	R	51.85	495	B	15	W	6965	6.39	62.97	4.03	7	THU	SEP	E	7255	6.64	63.19	4.19	16	THU	NOV
08	210	SBD		0	200	A	15	W	6957	6.33	65.26	4.13	7	WED	JAN	E	6952	6.96	59.33	4.13	16	THU	DEC
08	210	SBD		11.50	202	B	14	W	6566	7.42	55.36	4.11	8	TUE	FEB	E	6775	7.43	57.04	4.24	18	FRI	FEB
08	210	SBD	R	31.7	757	A	14	E	4026	7.64	55.49	4.24	7	TUE	MAY	W	3663	7.52	51.3	3.86	17	WED	MAR
08	215	SBD		14.10	606	A	15	S	2895	7.92	65.12	5.16	7	FRI	MAY	N	2768	8.23	59.94	4.93	16	THU	FEB
06	216	TUL		2.46	171	A	14	W	210	9.54	60.87	5.81	12	SUN	OCT	E	220	11.25	54.05	6.08	15	FRI	OCT
06	216	TUL		11.73	831	B	14	W	220	9.16	64.14	5.88	7	MON	JAN	E	206	10.63	51.76	5.5	16	FRI	APR
06	216	TUL		14.01	143	B	14	W	298	7.68	72.51	5.57	6	FRI	APR	E	293	10.18	53.76	5.47	15	FRI	OCT
06	216	TUL		14.01	144	A	14	W	255	9.13	60.14	5.49	7	WED	APR	E	254	9.38	58.26	5.47	17	THU	APR
06	216	TUL		19.25	145	B	14	W	88	10.77	75.21	8.1	11	SAT	OCT	W	73	11.51	58.4	6.72	15	FRI	APR
05	217	SB		.464	126	A	14	W	1043	11.85	71.88	8.52	8	WED	JUL	E	1167	12.52	76.13	9.53	17	THU	APR
05	218	MON	R	0	269	A	13	W	1106	8.11	58.55	4.75	8	THU	FEB	W	1298	8.82	63.19	5.57	17	WED	FEB
04	220	SOL		0	351	A	13	W	18	23.36	56.25	13.14	10	MON	SEP	E	15	15.33	71.43	10.95	15	MON	JUN
04	221	NAP		2.682	77	B	14	N	1300	8.21	52.53	4.31	12	FRI	JAN	N	1432	8.22	57.79	4.75	16	FRI	JAN
01	222	MEN		.96	733	A	15	E	349	9.34	51.25	4.79	12	TUE	APR	E	410	11.03	51	5.62	16	WED	APR
06	223	KER		1.85	161	A	15	W	121	10.18	82.88	8.44	5	WED	JUN	E	136	12.27	77.27	9.48	16	TUE	DEC
06	223	KER	R	10.94	146	A	15	W	261	6.64	62.89	4.18	12	SUN	SEP	E	340	8.57	63.55	5.44	17	MON	DEC
06	223	KER	R	16.01	224	B	15	E	353	8.66	61.39	5.32	5	WED	JUN	E	349	10.12	51.94	5.26	16	FRI	NOV
06	223	KER	R	16.01	225	A	15	W	371	6.74	70.67	4.77	5	TUE	SEP	E	423	9.74	55.81	5.43	16	FRI	SEP
06	223	KER		20.91	147	B	15	W	423	8.25	51.27	4.23	12	FRI	MAR	E	500	9.06	55.19	5	17	FRI	SEP
06	223	KER		31.92	148	B	15	W	121	9.53	86.43	8.24	7	SAT	DEC	E	109	12.19	60.89	7.42	15	FRI	SEP
06	233	MAD		.005	149	A	13	S	160	9.16	53.16	4.87	7	MON	OCT	N	191	8.92	65.19	5.81	17	MON	OCT

C205

APPENDIX D

RELATED PROJECTS INFORMATION

APPENDIX D-I

RELATED PROJECTS VOLUMES BY INTERSECTION

Intersection 1. SR-210 EB Ramps
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
	Related Project	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	12	0	0	0	2	0	30	12	0
2	Gated Community	0	0	0	4	0	0	0	5	0	16	15	0
3	Regency Centers	0	0	0	2	0	0	0	3	0	1	2	0
4	Highland Retail Project	0	0	0	40	0	0	0	27	0	32	29	0
5	Centerstone Subdivision	0	0	0	4	0	0	0	3	0	23	8	0
6	Greenspot Village & Marketplace	0	0	0	22	0	0	0	31	0	37	32	0
7	Harmony Specific Plan	0	0	0	14	0	0	0	8	0	28	25	0
8	Mediterra at East Highlands	0	0	0	8	0	0	0	8	0	23	23	0
9	TTM No. 18935	0	0	0	2	0	0	0	1	0	5	2	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	0	108	0	0	0	88	0	195	148	0

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
	Related Project	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	58	0	0	0	12	0	14	6	0
2	Gated Community	0	0	0	12	0	0	0	17	0	11	10	0
3	Regency Centers	0	0	0	7	0	0	0	9	0	8	10	0
4	Highland Retail Project	0	0	0	22	0	0	0	27	0	14	27	0
5	Centerstone Subdivision	0	0	0	13	0	0	0	8	0	15	5	0
6	Greenspot Village & Marketplace	0	0	0	44	0	0	0	64	0	69	60	0
7	Harmony Specific Plan	0	0	0	52	0	0	0	31	0	21	18	0
8	Mediterra at East Highlands	0	0	0	26	0	0	0	26	0	15	15	0
9	TTM No. 18935	0	0	0	5	0	0	0	2	0	3	1	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	0	239	0	0	0	196	0	170	152	0

Intersection 2. SR-210 WB Ramps at Greenspot Road
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
	Related Project	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	6	0	0	0	0	14	0	0	42	61
2	Gated Community	0	0	6	0	0	0	0	9	0	0	31	11
3	Regency Centers	0	0	2	0	0	0	0	5	0	0	3	1
4	Highland Retail Project	0	0	32	0	0	0	0	67	0	0	62	32
5	Centerstone Subdivision	0	0	8	0	0	0	0	6	0	0	30	11
6	Greenspot Village & Marketplace	0	0	36	0	0	0	0	53	0	0	70	20
7	Harmony Specific Plan	0	0	10	0	0	0	0	23	0	0	53	42
8	Mediterra at East Highlands	0	0	8	0	0	0	0	16	0	0	47	23
9	TTM No. 18935	0	0	2	0	0	0	0	2	0	0	6	5
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	110	0	0	0	0	195	0	0	344	206

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
	Related Project	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	29	0	0	0	0	70	0	0	20	29
2	Gated Community	0	0	18	0	0	0	0	29	0	0	21	7
3	Regency Centers	0	0	7	0	0	0	0	16	0	0	17	8
4	Highland Retail Project	0	0	19	0	0	0	0	49	0	0	41	25
5	Centerstone Subdivision	0	0	25	0	0	0	0	21	0	0	20	8
6	Greenspot Village & Marketplace	0	0	72	0	0	0	0	108	0	0	128	44
7	Harmony Specific Plan	0	0	35	0	0	0	0	83	0	0	39	31
8	Mediterra at East Highlands	0	0	26	0	0	0	0	53	0	0	31	15
9	TTM No. 18935	0	0	5	0	0	0	0	7	0	0	4	3
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	236	0	0	0	0	436	0	0	321	170

Intersection 3. Lowes Center at Greenspot Road
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	20	0	0	103	0
2	Gated Community	0	0	0	0	0	0	0	14	0	0	42	0
3	Regency Centers	0	0	0	0	0	0	0	8	0	0	5	0
4	Highland Retail Project	0	0	0	0	0	0	0	99	0	0	94	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	14	0	0	41	0
6	Greenspot Village & Marketplace	0	0	0	3	0	13	19	71	0	0	77	3
7	Harmony Specific Plan	0	0	1	0	0	0	0	32	0	4	95	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	24	0	0	70	0
9	TTM No. 18935	0	0	0	0	0	0	0	4	0	0	11	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	1	3	0	13	19	286	0	4	538	3

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	99	0	0	48	0
2	Gated Community	0	0	0	0	0	0	0	48	0	0	28	0
3	Regency Centers	0	0	0	0	0	0	0	23	0	0	25	0
4	Highland Retail Project	0	0	0	0	0	0	0	68	0	0	66	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	46	0	0	28	0
6	Greenspot Village & Marketplace	0	0	0	8	0	37	38	143	0	0	135	5
7	Harmony Specific Plan	0	0	4	0	0	0	0	118	0	3	71	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	79	0	0	46	0
9	TTM No. 18935	0	0	0	0	0	0	0	12	0	0	7	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	4	8	0	37	38	636	0	3	454	5

Intersection 4. Shopping Center at Greenspot Road
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	20	0	0	103	0
2	Gated Community	0	0	0	0	0	0	0	14	0	0	42	0
3	Regency Centers	5	0	2	0	0	0	0	0	8	4	0	0
4	Highland Retail Project	0	0	0	0	0	0	0	99	0	0	94	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	14	0	0	41	0
6	Greenspot Village & Marketplace	0	0	0	4	0	14	15	56	0	0	66	5
7	Harmony Specific Plan	0	0	2	0	0	0	0	34	0	7	98	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	24	0	0	70	0
9	TTM No. 18935	0	0	0	0	0	0	0	4	0	0	11	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		5	0	4	4	0	14	15	265	8	11	525	5

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	99	0	0	48	0
2	Gated Community	0	0	0	0	0	0	0	48	0	0	28	0
3	Regency Centers	25	0	11	0	0	0	0	0	23	11	0	0
4	Highland Retail Project	0	0	0	0	0	0	0	68	0	0	66	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	46	0	0	28	0
6	Greenspot Village & Marketplace	0	0	0	10	0	39	30	113	0	0	101	10
7	Harmony Specific Plan	0	0	9	0	0	0	0	122	0	5	73	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	79	0	0	46	0
9	TTM No. 18935	0	0	0	0	0	0	0	12	0	0	7	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		25	0	20	10	0	39	30	587	23	16	397	10

Intersection 5. Boulder Avenue at Greenspot Road
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	20	0	0	103	0
2	Gated Community	0	2	0	0	7	42	14	0	0	0	0	0
3	Regency Centers	1	0	0	0	0	1	1	1	1	0	1	0
4	Highland Retail Project	106	-25	0	0	75	0	295	21	0	47	-17	0
5	Centerstone Subdivision	0	0	4	4	0	0	0	14	0	11	41	11
6	Greenspot Village & Marketplace	9	8	0	6	9	0	4	7	8	0	10	3
7	Harmony Specific Plan	0	0	2	12	0	0	0	36	0	7	105	35
8	Mediterra at East Highlands	0	0	13	8	0	0	0	24	0	39	70	23
9	TTM No. 18935	0	0	1	1	0	0	0	4	0	2	11	2
10	TTM No. 18979	0	3	0	0	1	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		116	-12	20	31	92	43	314	127	9	106	324	74

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	99	0	0	48	0
2	Gated Community	0	8	0	0	5	28	48	0	0	0	0	0
3	Regency Centers	4	0	0	0	0	4	5	5	4	0	4	0
4	Highland Retail Project	72	-18	0	0	31	0	216	17	0	31	-12	0
5	Centerstone Subdivision	0	0	13	13	0	0	0	46	0	8	28	8
6	Greenspot Village & Marketplace	17	17	0	7	12	0	8	18	19	0	21	7
7	Harmony Specific Plan	0	0	9	44	0	0	0	131	0	5	79	26
8	Mediterra at East Highlands	0	0	44	26	0	0	0	79	0	26	46	15
9	TTM No. 18935	0	0	2	2	0	0	0	12	0	1	7	1
10	TTM No. 18979	0	2	0	0	4	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		93	9	68	92	52	32	277	407	23	71	221	57

Intersection 6. Orange Street at Greenspot Road
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	20	0	0	103	0
2	Gated Community	0	0	0	7	0	0	0	0	0	0	0	2
3	Regency Centers	0	0	0	0	0	0	0	1	0	0	1	0
4	Highland Retail Project	0	0	0	0	0	2	1	20	0	0	28	0
5	Centerstone Subdivision	53	0	4	0	0	0	0	4	18	0	11	0
6	Greenspot Village & Marketplace	0	0	0	0	0	0	0	14	0	0	13	0
7	Harmony Specific Plan	0	0	0	0	0	0	0	50	0	0	147	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	45	0	0	132	0
9	TTM No. 18935	0	0	0	0	0	0	0	5	0	0	14	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		53	0	4	7	0	2	1	159	18	0	449	2

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	99	0	0	48	0
2	Gated Community	0	0	0	5	0	0	0	0	0	0	0	8
3	Regency Centers	0	0	0	0	0	0	0	5	0	0	4	0
4	Highland Retail Project	0	0	0	0	0	1	1	16	0	0	18	0
5	Centerstone Subdivision	35	0	3	0	0	0	0	13	59	0	8	0
6	Greenspot Village & Marketplace	0	0	0	0	0	0	0	26	0	0	28	0
7	Harmony Specific Plan	0	0	0	0	0	0	0	184	0	0	110	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	149	0	0	87	0
9	TTM No. 18935	0	0	0	0	0	0	0	16	0	0	10	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		35	0	3	5	0	1	1	508	59	0	313	8

Intersection 7. Church Street at Greenspot Road
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	2	12	6	0	0	1	0
2	Gated Community	0	0	0	0	0	0	1	5	0	0	2	0
3	Regency Centers	0	0	0	0	0	0	0	0	0	0	1	0
4	Highland Retail Project	0	0	0	0	0	7	5	15	0	0	21	0
5	Centerstone Subdivision	0	0	0	0	0	1	4	8	0	0	3	0
6	Greenspot Village & Marketplace	0	0	0	0	0	3	3	10	0	0	9	0
7	Harmony Specific Plan	0	0	0	2	0	0	0	50	0	0	147	7
8	Mediterra at East Highlands	0	0	0	3	0	0	0	45	0	0	132	8
9	TTM No. 18935	0	0	0	0	0	2	1	4	0	0	12	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		0	0	0	5	0	15	26	143	0	0	328	15

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	12	6	3	0	0	6	0
2	Gated Community	0	0	0	0	0	2	1	4	0	0	6	0
3	Regency Centers	1	0	0	0	0	1	2	2	1	0	2	0
4	Highland Retail Project	0	0	0	0	0	4	4	12	0	0	14	0
5	Centerstone Subdivision	0	0	0	0	0	4	3	5	0	0	8	0
6	Greenspot Village & Marketplace	0	0	0	0	0	6	5	17	0	0	18	0
7	Harmony Specific Plan	0	0	0	9	0	0	0	184	0	0	110	5
8	Mediterra at East Highlands	0	0	0	9	0	0	0	149	0	0	87	5
9	TTM No. 18935	0	0	0	0	0	2	3	14	0	0	8	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		1	0	0	18	0	31	24	390	1	0	259	10

Intersection 8. Club View Drive/Merris Street at Greenspot Road
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
	Related Project	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	6	0	0	1	0
2	Gated Community	0	0	0	0	0	0	0	5	0	0	2	0
3	Regency Centers	0	0	0	0	0	0	0	0	0	0	1	0
4	Highland Retail Project	0	0	0	0	0	7	5	10	0	0	14	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	8	0	0	3	0
6	Greenspot Village & Marketplace	0	0	0	0	0	0	0	10	0	0	9	0
7	Harmony Specific Plan	0	0	0	0	0	0	0	53	0	0	154	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	48	0	0	140	0
9	TTM No. 18935	0	0	0	0	0	0	0	4	0	0	12	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	0	0	0	7	5	144	0	0	336	0

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
	Related Project	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	3	0	0	6	0
2	Gated Community	0	0	0	0	0	0	0	4	0	0	6	0
3	Regency Centers	0	0	0	0	0	0	0	2	0	0	2	0
4	Highland Retail Project	0	0	0	0	0	4	4	8	0	0	10	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	5	0	0	8	0
6	Greenspot Village & Marketplace	0	0	0	0	0	0	0	17	0	0	18	0
7	Harmony Specific Plan	0	0	0	0	0	0	0	192	0	0	115	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	158	0	0	92	0
9	TTM No. 18935	0	0	0	0	0	0	0	14	0	0	8	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	0	0	0	4	4	403	0	0	265	0

Intersection 9. Gold Buckle Road at Greenspot Road
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	6	0	0	1	0
2	Gated Community	0	0	0	0	0	0	0	5	0	0	2	0
3	Regency Centers	0	0	0	0	0	0	0	0	0	0	1	0
4	Highland Retail Project	0	0	0	0	0	0	0	10	0	0	14	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	8	0	0	3	0
6	Greenspot Village & Marketplace	0	0	0	0	0	0	0	10	0	0	9	0
7	Harmony Specific Plan	0	0	0	0	0	0	0	53	0	0	154	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	48	0	0	140	0
9	TTM No. 18935	0	0	0	0	0	0	0	4	0	0	12	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		0	0	0	0	0	0	0	144	0	0	336	0

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
Related Project		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	3	0	0	6	0
2	Gated Community	0	0	0	0	0	0	0	4	0	0	6	0
3	Regency Centers	0	0	0	0	0	0	0	2	0	0	2	0
4	Highland Retail Project	0	0	0	0	0	0	0	8	0	0	10	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	5	0	0	8	0
6	Greenspot Village & Marketplace	0	0	0	0	0	0	0	17	0	0	18	0
7	Harmony Specific Plan	0	0	0	0	0	0	0	192	0	0	115	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	158	0	0	92	0
9	TTM No. 18935	0	0	0	0	0	0	0	14	0	0	8	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
Total Related Projects Traffic Volume		0	0	0	0	0	0	0	403	0	0	265	0

Intersection 10. Project Driveway 2 at Greenspot Road *[Future Intersection]*
Year 2019 Related Projects Traffic Volumes
Heatherglen Residential Project, Highland

		AM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
	Related Project	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	6	0	0	1	0
2	Gated Community	0	0	0	0	0	0	0	5	0	0	2	0
3	Regency Centers	0	0	0	0	0	0	0	0	0	0	1	0
4	Highland Retail Project	0	0	0	0	0	0	0	10	0	0	14	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	8	0	0	3	0
6	Greenspot Village & Marketplace	0	0	0	0	0	0	0	10	0	0	9	0
7	Harmony Specific Plan	0	0	0	0	0	0	0	53	0	0	154	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	48	0	0	140	0
9	TTM No. 18935	0	0	0	0	0	0	0	4	0	0	12	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	0	0	0	0	0	144	0	0	336	0

		PM PEAK HOUR											
		Northbound			Southbound			Eastbound			Westbound		
	Related Project	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
1	Blossom Trails	0	0	0	0	0	0	0	3	0	0	6	0
2	Gated Community	0	0	0	0	0	0	0	4	0	0	6	0
3	Regency Centers	0	0	0	0	0	0	0	2	0	0	2	0
4	Highland Retail Project	0	0	0	0	0	0	0	8	0	0	10	0
5	Centerstone Subdivision	0	0	0	0	0	0	0	5	0	0	8	0
6	Greenspot Village & Marketplace	0	0	0	0	0	0	0	17	0	0	18	0
7	Harmony Specific Plan	0	0	0	0	0	0	0	192	0	0	115	0
8	Mediterra at East Highlands	0	0	0	0	0	0	0	158	0	0	92	0
9	TTM No. 18935	0	0	0	0	0	0	0	14	0	0	8	0
10	TTM No. 18979	0	0	0	0	0	0	0	0	0	0	0	0
	Total Related Projects Traffic Volume	0	0	0	0	0	0	0	403	0	0	265	0

APPENDIX D-II

REFERENCE STUDIES

RELATED PROJECT 1

URBAN
CROSSROADS

41 Corporate Park, Suite 300
Irvine, CA 92606

Prepared by:

Carleton Waters, P.E.
Raul Armenta, E.I.T.
Domingo Maclang

Prepared for:

Mr. Camille Bahri
SPRING PACIFIC PROPERTIES, LLC
31866 Camino Capistrano
San Juan Capistrano, CA 92675

BLOSSOM TRAILS
SITE ACCESS EVALUATION
CITY OF HIGHLAND, CALIFORNIA

January 27, 2006

JN: 03524-02
CW:RA:DM:mg

TABLE 2

TRIP GENERATION SUMMARY

BLOSSOM TRAILS

LAND USE	QUANTITY	UNITS[1]	PEAK HOUR						DAILY
			AM			PM			
			IN	OUT	TOTAL	IN	OUT	TOTAL	
Single Family Detached	14	DU	3	8	11	9	5	14	134
Residential Condo/Townhouse	306	DU	21	113	134	107	52	159	1,793
Total			**24**	**121**	**145**	**116**	**57**	**173**	**1,927**

ADJACENT PARCEL

LAND USE	QUANTITY	UNITS[1]	PEAK HOUR						DAILY
			AM			PM			
			IN	OUT	TOTAL	IN	OUT	TOTAL	
Residential Condo/Townhouse	252 [2]	DU	18	93	111	88	43	131	1,477
Total			**18**	**93**	**111**	**88**	**43**	**131**	**1,477**

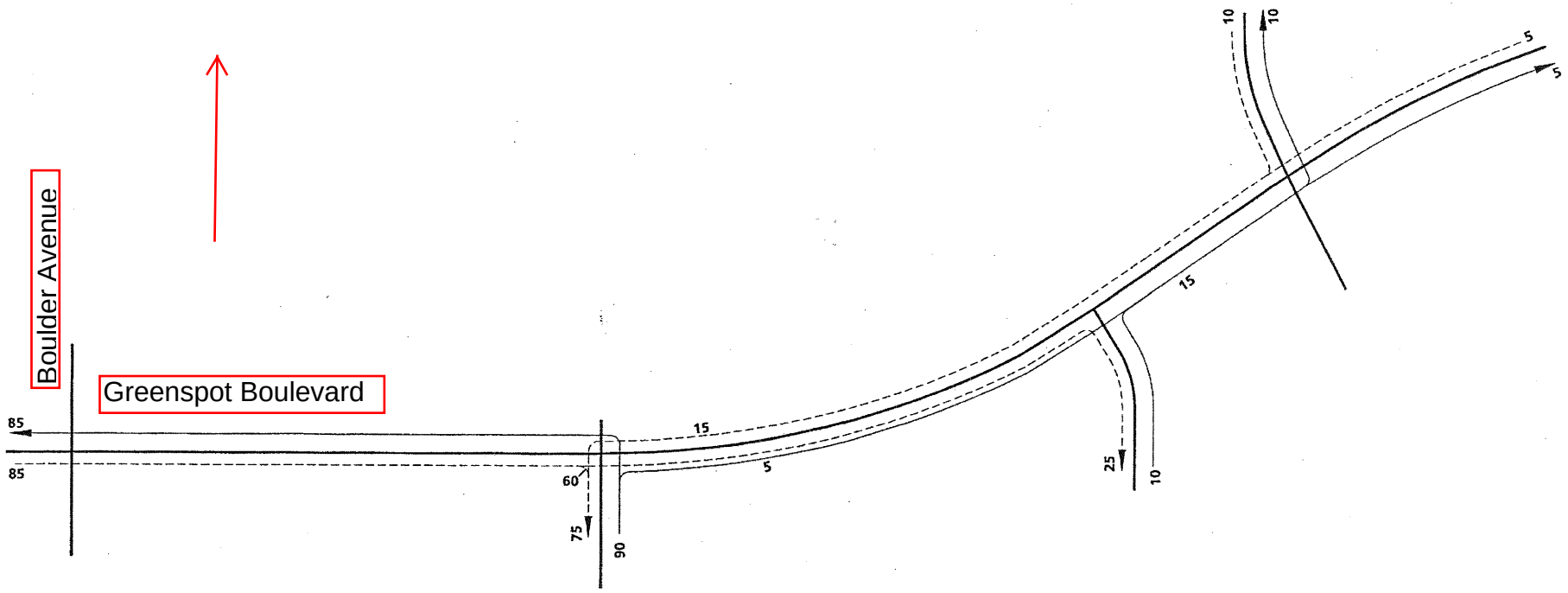
[1] DU = Dwelling Units

[2] Property is zoned for 12 units/acre and is approximately 21 acres

U:\UcJobs_03500\03524\Excel\[03524-02.xls]T 2

EXHIBIT C

BLOSSOM TRAILS SOUTH TRIP DISTRIBUTION WITHOUT ADJACENT PROJECT (FULL ACCESS)



LEGEND:

= EGRESS

= INGRESS

N

BLOSSOM TRAILS ACCESS EVALUATION, Highland, California - 03524: 05.dwg

URBAN CROSSROADS

RELATED PROJECT 2

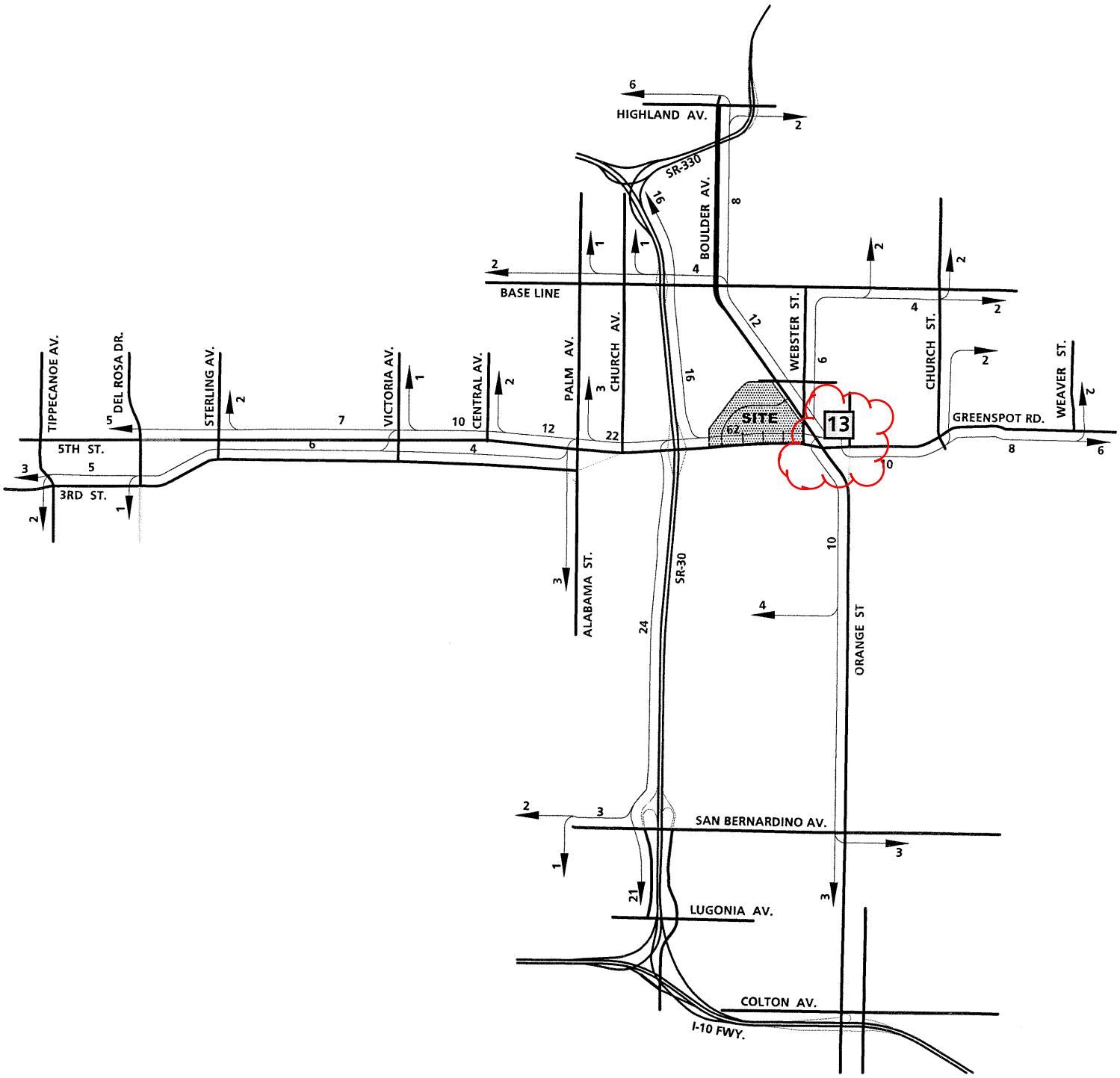
121 DU
2/2/09

7th Ed ITE - Weekday rates

Page No.	Category	Unit	Ave Trip Rate per Unit	Total Trips	In		Out	
					%	Trips	%	Trips
	210 - SFH	121						
269	ADT		9.57	1158.0	50	579	50	579
270	AM Peak Hour of Adjacent Traffic		0.75	90.8	25	23	75	68
271	PM Peak Hour of Adjacent Traffic		1.01	122.2	63	77	37	45

EXHIBIT D-3

121 DU SFD GATED COMMUNITY TRIP DISTRIBUTION



LEGEND:

10 = PERCENT TO/FROM PROJECT

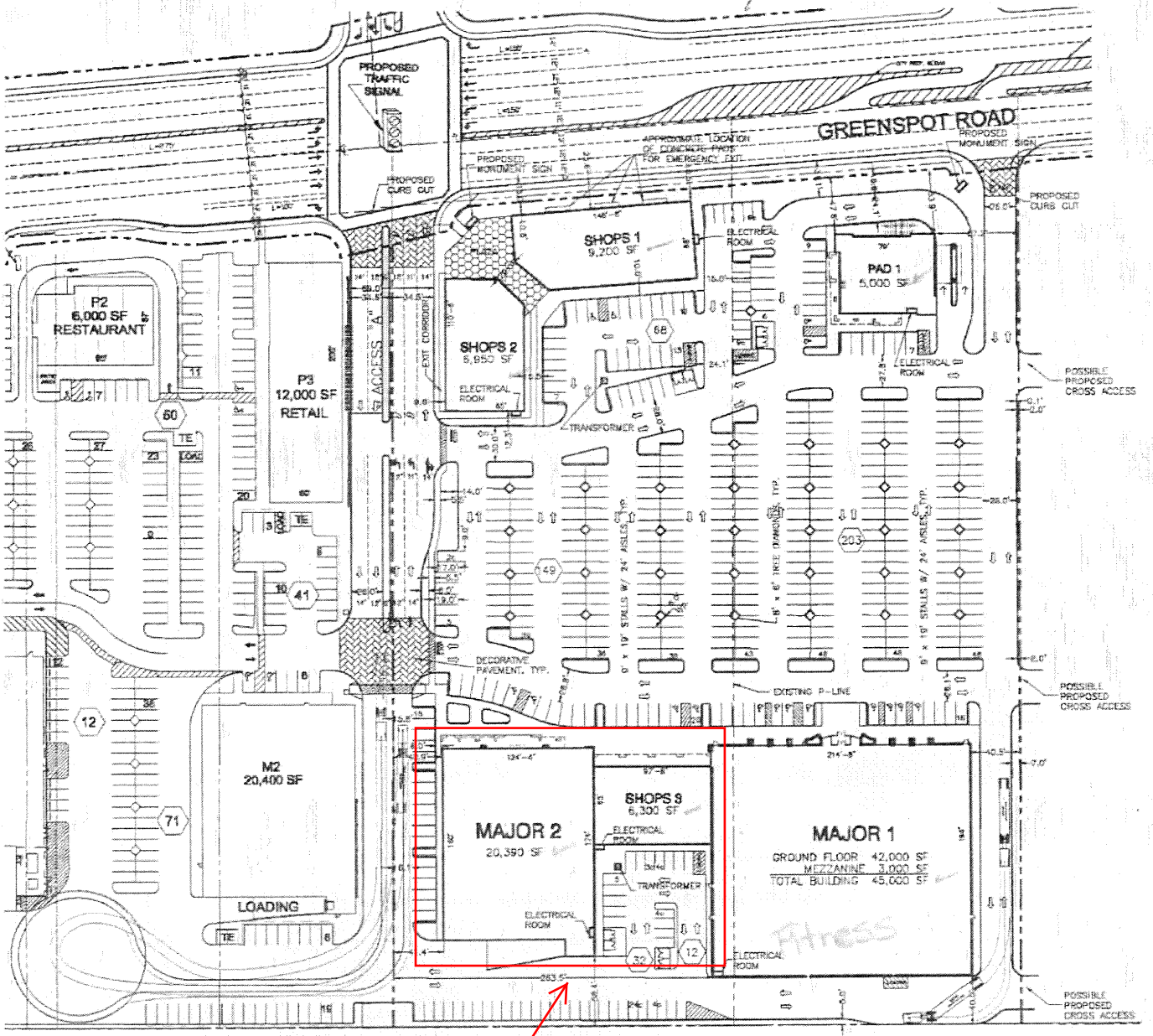
13 = 121 DU SINGLE FAMILY DETACHED HOUSING GATED COMMUNITY

N

SOURCE: RECENT SUBMITTED DEVELOPMENT

RELATED PROJECT 3

#21 2nd Submittal 07-1032



26,690 SF left undeveloped.

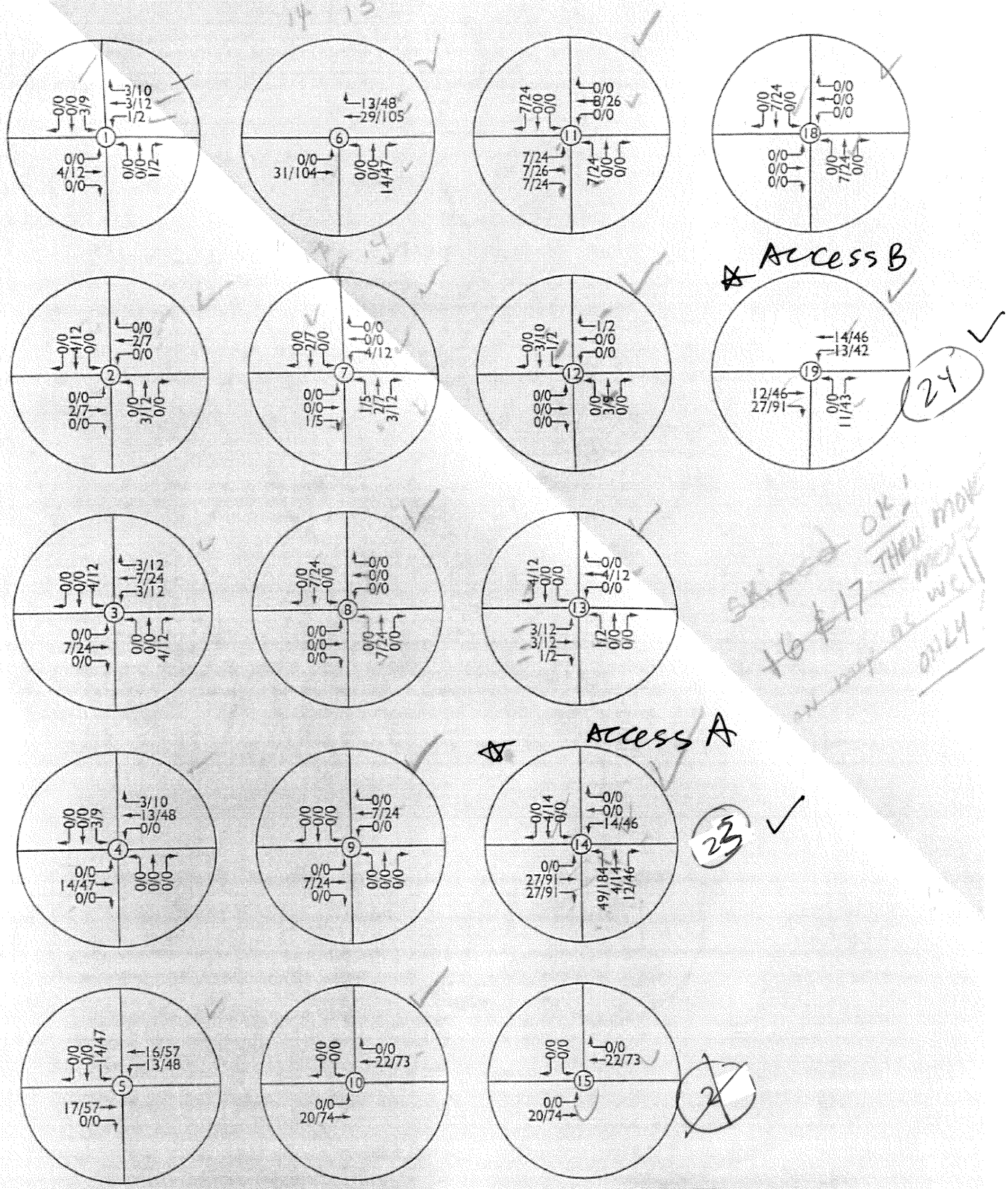
42,840 Retail
45000 Fitness

1958-07-01 (ExF)

REGENCY CENTERS TRAFFIC IMPACT STUDY, City of Highland, California

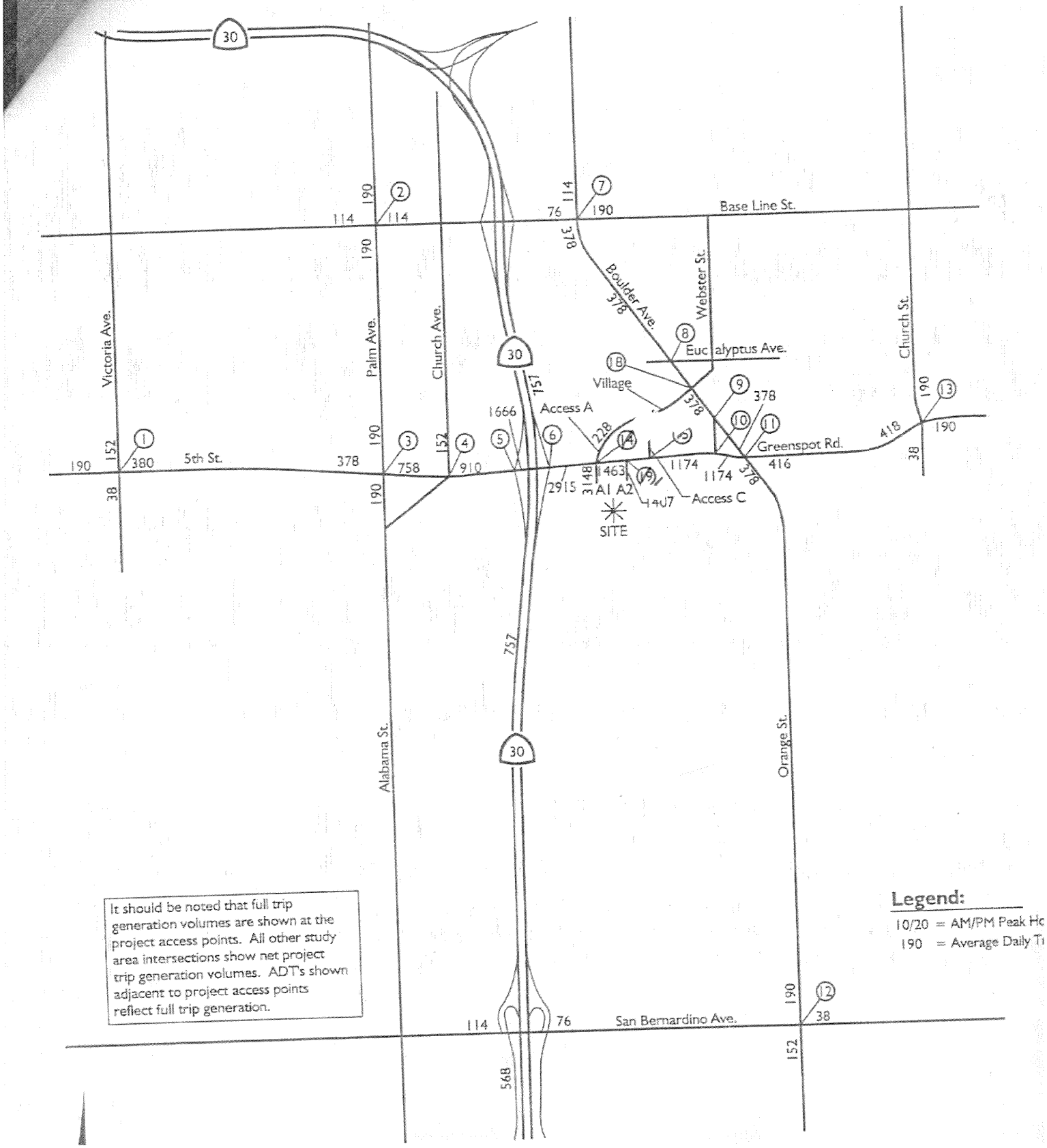
Exhibit H

Project Peak Hour Intersection Volumes



ur Volumes
afic

RK engineering group, inc.



1958-07-01 (ExH)
REGENCY CENTERS TRAFFIC IMPACT STUDY, City of Highland, California

TABLE 3

Trip Generation[1]

Land Use	ITE Code	Quantity	Units[2]	Peak Hour						Daily
				AM			PM			
				In	Out	Total	In	Out	Total	
Bank w/ Drive-Thru	912	5.000	TSF	35	27	62	114	114	229	1,232
Less Pass-by Trips (25%)				-9	-7	-16	-29	-29	-57	-308
Net Trip Generation (Bank)				26	20	46	86	86	172	924
Retail	820	42.840	TSF	27	17	44	77	84	161	1,840
Less Pass-by Trips (25%)				-7	-4	-11	-19	-21	-40	-460
Net Trip Generation (Retail)				20	13	33	58	63	121	1,380
Health / Fitness Club	492	45.000	TSF	23	32	54	93	89	182	1,482
Gross Total Trip Generation				85	76	160	284	287	572	4,554
Net Total Trip Generation				70	65	133	236	238	475	3,786

[1] TSF = Thousand Square Feet

[2] Full Trip Generation Without Pass-by Trips; Utilized for Analysis at Project Access Points

I:\Tables\RK5677TB
IN\1958-07-01

RELATED PROJECT 4

Retail Center -
SWC Boulder - Greenspot Road
CUP 007-008

Traffic Study for a Retail Project in the City of Highland

February 17, 2009

Prepared for:

Boulder Holdings, LLC
Thatcher Engineering & Associates
345 5th Street, Suite B
Redlands, California 92374
(909) 748-7777

Prepared by:

KOA CORPORATION
PLANNING & ENGINEERING
3190 C Shelby Street
Ontario, CA 91764
(909) 890-9693

Job No: JA84062

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PLANNING & ENGINEERING

3190 C Shelby Street
Ontario, CA 91764
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www.koacorporation.com

February 17, 2009

Boulder Holdings, LLC
c/o Thatcher Engineering & Associates
345 5th Street, Suite B
Redlands, California 92374
Attn: Vicky Valenzuela-Gilliland

SUBJECT: Traffic Study for a Retail Project in the City of Highland

Dear Ms. Gilliland:

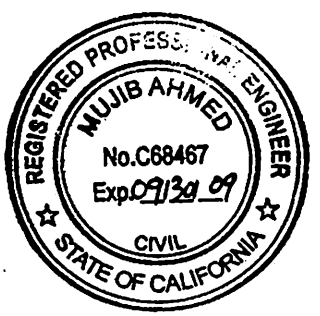
KOA Corporation is pleased to present the attached traffic study for a Retail Project in the City of Highland. The project consists of 6,019 square feet of fast food restaurants with drive thru windows, 8,356 square feet of fast food restaurants without drive thru window and 16,332 square foot retail building located on the southwest corner of Boulder Avenue at Greenspot Road. The traffic study has been prepared to meet the traffic study requirements of the City of Highland and revised per their request.

The report is being submitted to you for review and processing. Please contact our office if you have any questions about the report, or if you need additional information to complete your submittal. If there are any comments that require response or revisions, please notify our office as soon as possible for prompt revision.

It has been a pleasure to prepare this study for you and the City of Highland.

Sincerely,

Mujib Ahmed, P.E.
Vice President



6. Project Trips

Project-related traffic consists of trips on any portion of the street system that will begin or end on the project site as a result of the development of the proposed project. Project-related traffic is a function of the extent and type of development proposed for the site. This information is used to establish traffic generation for the site.

The proposed project will consist of 6,019 square feet of fast food restaurants with drive thru windows, 8,356 square feet of fast food restaurants without drive thru windows, and 16,332 square feet of retail buildings.

Existing Land Use Traffic

The project site is currently vacant. No traffic is currently generated from the site; therefore, the current trip generation for the project site is zero.

Project Trip Generation

Trip generation is a measure or forecast of the number of trips that will be made to or from the project. It is generally equal to the traffic volume expected at the project entrance.

Trip generation characteristics for projects are normally estimated based on rates published in *Trip Generation, Seventh Edition*, published by the Institute of Transportation Engineers (ITE). This document is widely used in Southern California and indicates the probable traffic generation rates for various land uses based upon studies of existing developments in comparable settings. The *Trip Generation Manual* indicates a daily and a PM peak hour for Specialty Retail; however, it does not indicate an AM peak hour rate. For the purpose of this traffic study report we used a rate that is 25% of the PM peak hour rate since the stores will be closed during the AM peak generally. The report includes trip generation information for the project uses, as shown in Table 6.

Table 6
Trip Generation Rates

Land Use	Units		AM Peak Hour			PM Peak Hour		
		Daily	Total	In	Out	Total	In	Out
Fast Food w/ Drive Thru ITE (934)	KSF	496.12	53.11	27.09	26.02	34.64	18.01	16.63
Fast Food w/o Drive Thru ITE (933)	KSF	260.0*	43.87	26.32	17.55	26.15	13.34	12.81
Specialty Retail** ITE (814)	KSF	44.32	0.68	0.30	0.38	2.71	1.19	1.52

Note: KSF = 1000 square feet. * 10 times the PM rate ** AM peak hour is 25% of the PM rate

Table 7 summarizes the traffic generation expected from project, based on the generation rates shown in Table 6.

Due to the retail nature of the project, it will attract "passby" trips. According to the *ITE Trip Generation Handbook* the retail uses will normally attract passby trips of 20% and the fast food uses will attract a passby of 40%.

Table 7
Project Traffic Generation

Land Use	Daily	AM Peak Hour			PM Peak Hour		
		Total	In	Out	Total	In	Out
6,019 sq.ft. Fast Food w/ Drive Thru	2,986	320	163	157	208	108	100
8,356 sq.ft. Fast Food w/o Drive Thru	2,173	367	220	147	219	112	107
Subtotal Fast food	5,159	687	383	304	427	220	207
-40% passby trips	*-2,064*	*-276*	*-138*	*-138*	*-172*	*-86*	*-86*
Total Fast Food	***3,095***	***411***	***245***	***166***	***255***	***134***	***121***
16,332 sq.ft. Retail	724	11	5	6	44	19	25
-20% passby trips	*-145*	*-2*	*-1*	*-1*	*-10*	*-5*	*-5*
Total Retail	***579***	***9***	***4***	***5***	***34***	***14***	***20***
Total Project Trips	**3,674**	**420**	**249**	**171**	**289**	**148**	**141**

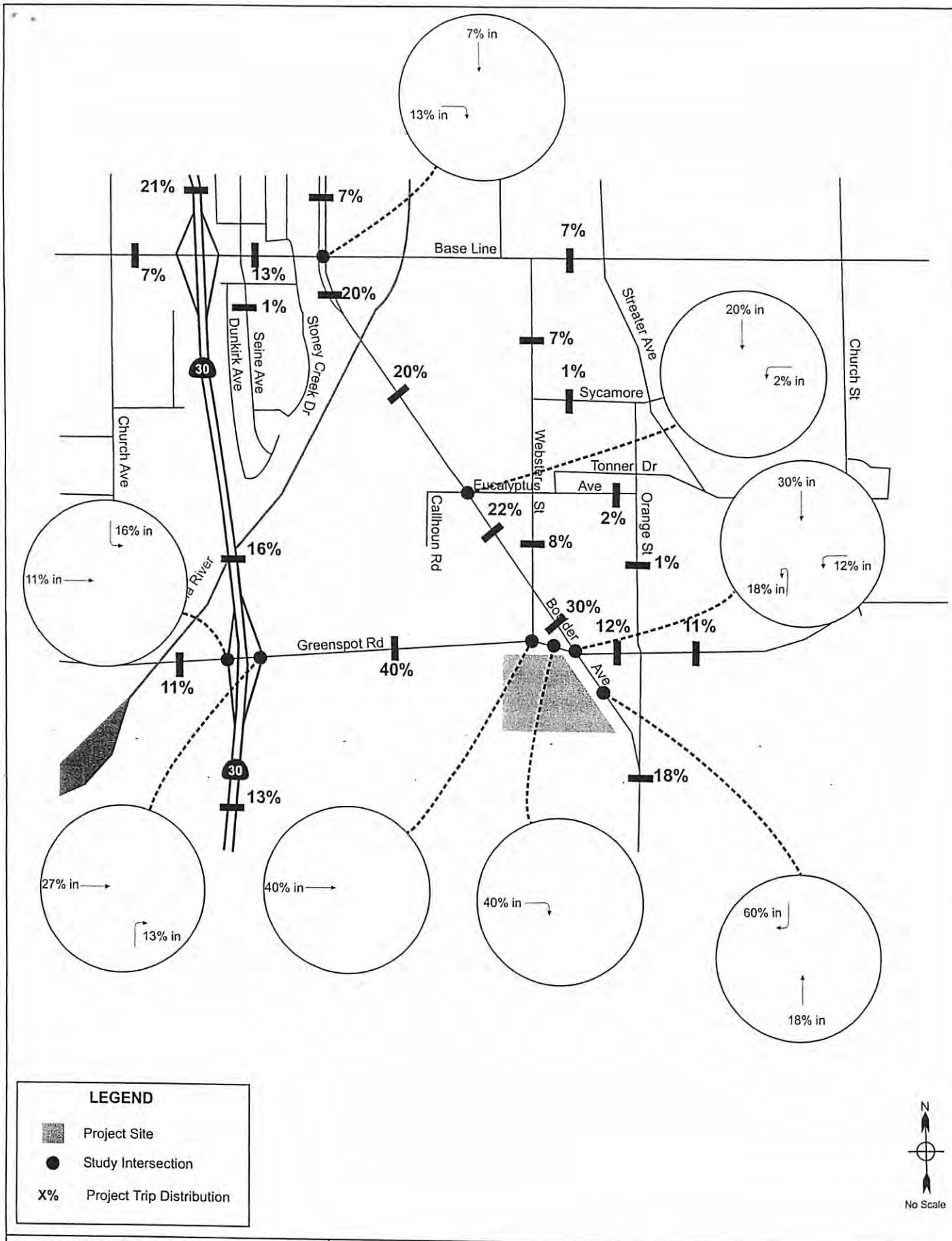
The project will generate a total 3,674 daily trips including, 420 trips during the AM peak hour and 289 trips during the PM peak hour.

Project Trip Distribution

Trip distribution is the process of identifying the probable destinations, directions or traffic routes that will be utilized by project traffic. The potential interaction between the proposed land use and surrounding regional access routes are considered to identify the route where the project traffic will distribute.

The Traffic Model was used to develop this trip distribution for this project. For SANBAG CMP level traffic studies, model "runs" are used to develop the project distribution, as prepared by City of San Bernardino and furnished to KOA Corporation for further analysis. The City furnished a traffic model select zone analysis with project traffic only. The select zone run shows the total volume assigned to all roadways from project traffic analysis zones. The total volume on each roadway is divided by the total site traffic generation to indicate the percentage of project traffic that will use each component of the regional roadway system in each relevant direction.

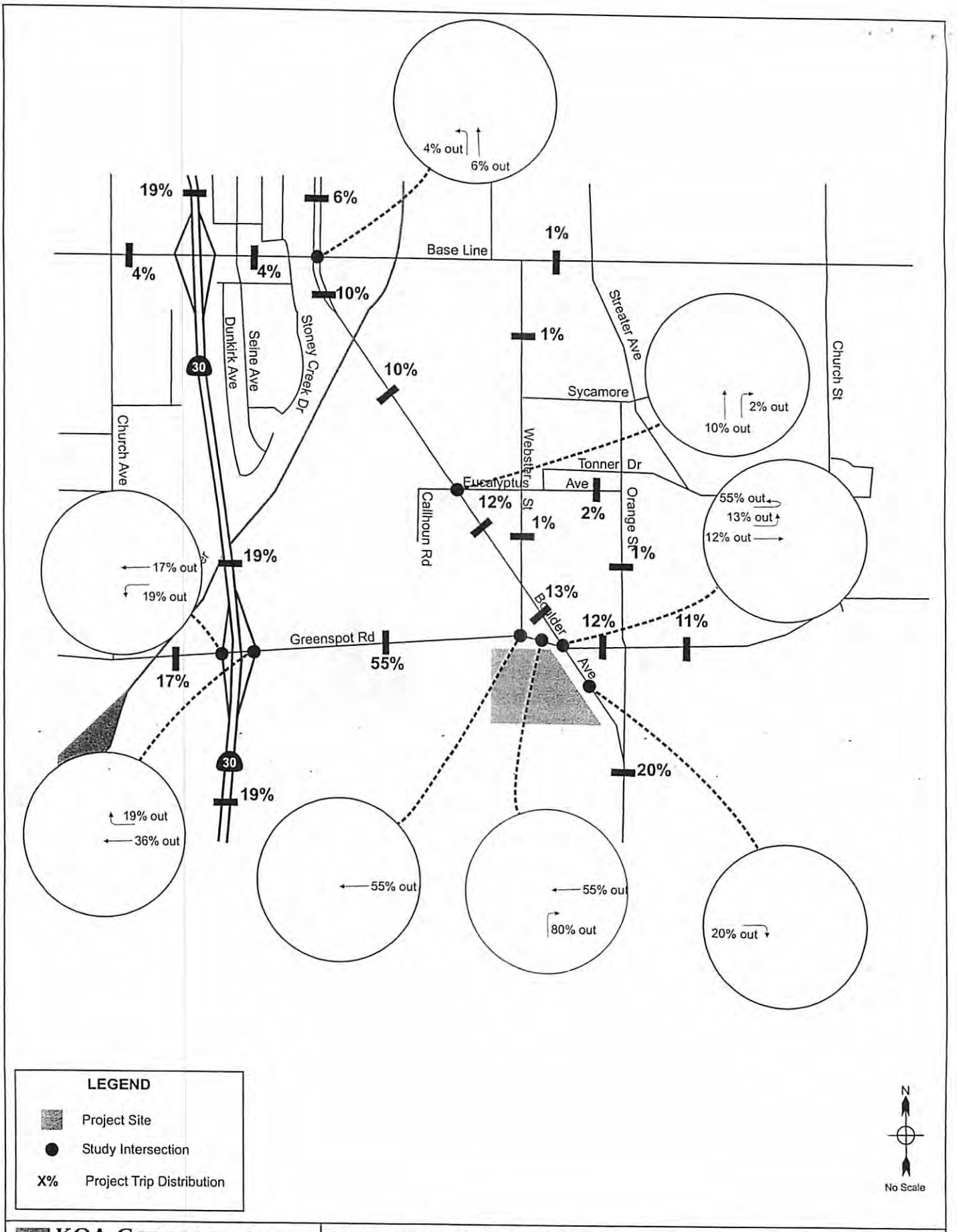
The anticipated trip distribution for the proposed development is presented on Figures 11A, 11B, 11C, and 11D. This figure indicates the proportion of project traffic that will use the street segments and turning movements indicated. Also, the project trip distribution assumes U-turns at the intersection of Greenspot Road at Boulder Avenue, as the City has indicated that they will be allowed at all movements at this intersection and current signage will be replaced with standard U-turn allowed signs.



KOA CORPORATION
PLANNING & ENGINEERING

Highland Retail - Traffic Impact Study — Figure 11A

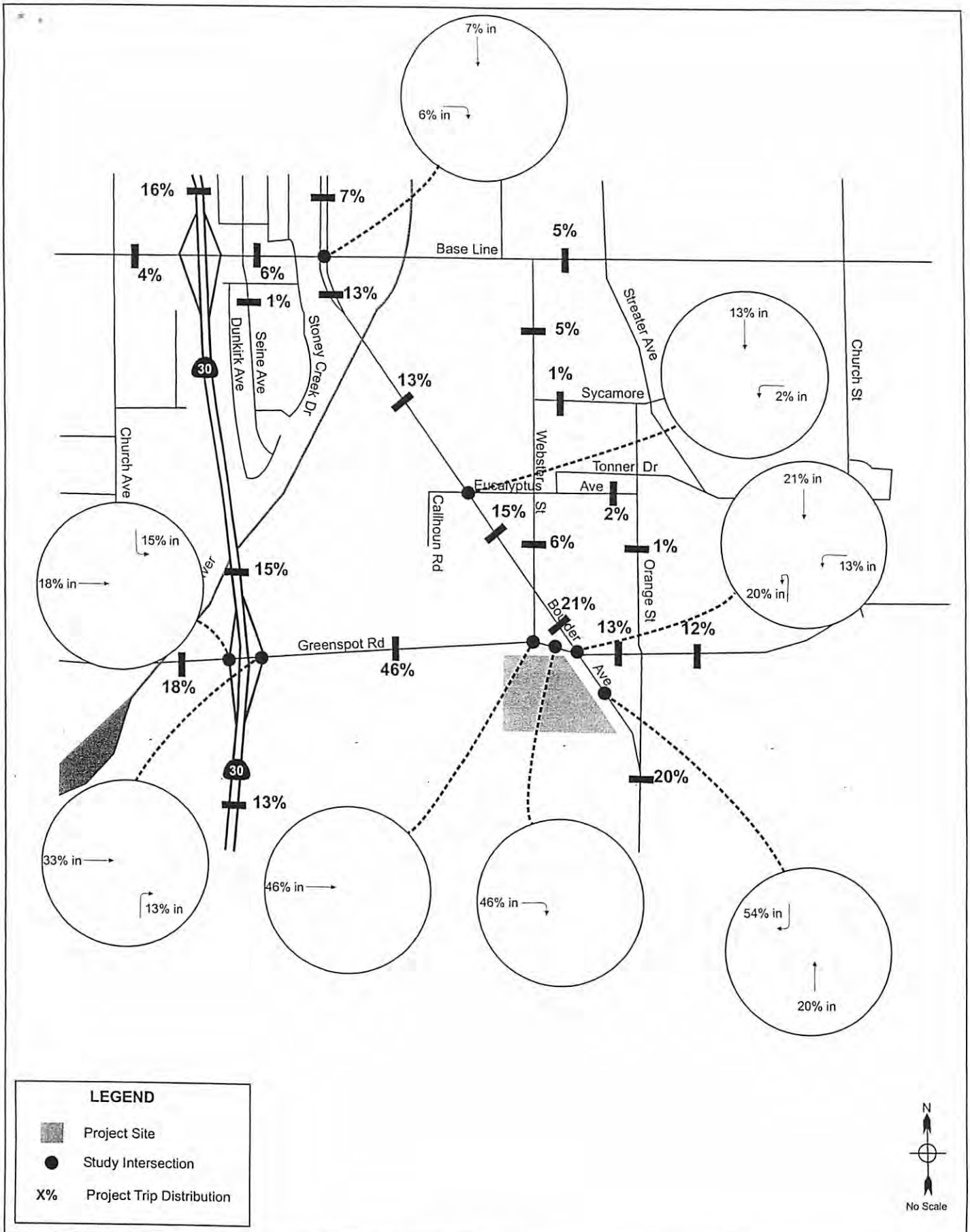
Project Trip Distribution - AM Peak Hour (Inbound)



KOA CORPORATION
PLANNING & ENGINEERING

Highland Retail - Traffic Impact Study — Figure 11B

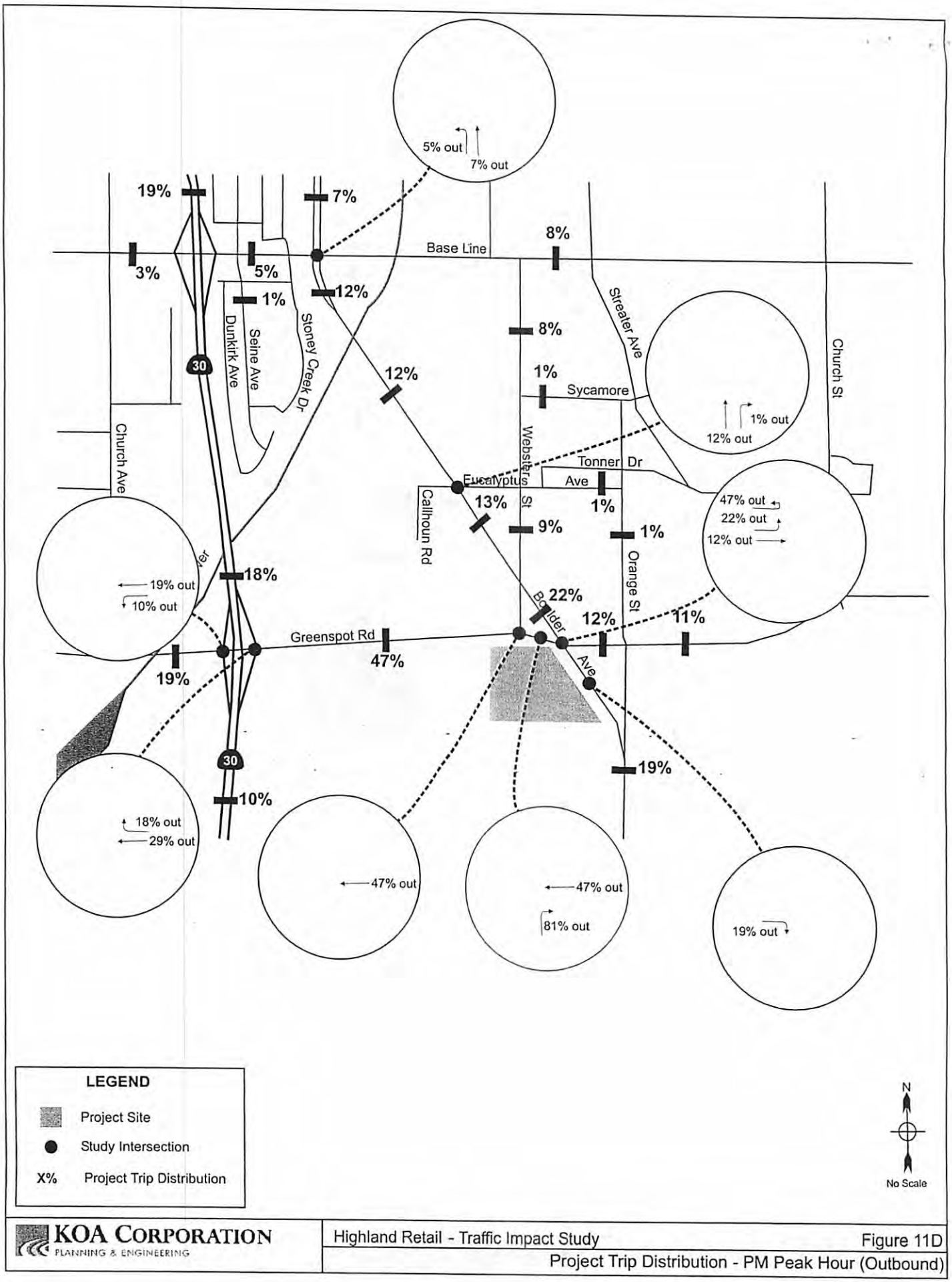
Project Trip Distribution - AM Peak Hour (Outbound)



KOA CORPORATION
PLANNING & ENGINEERING

Highland Retail - Traffic Impact Study — Figure 11C

Project Trip Distribution - PM Peak Hour (Inbound)

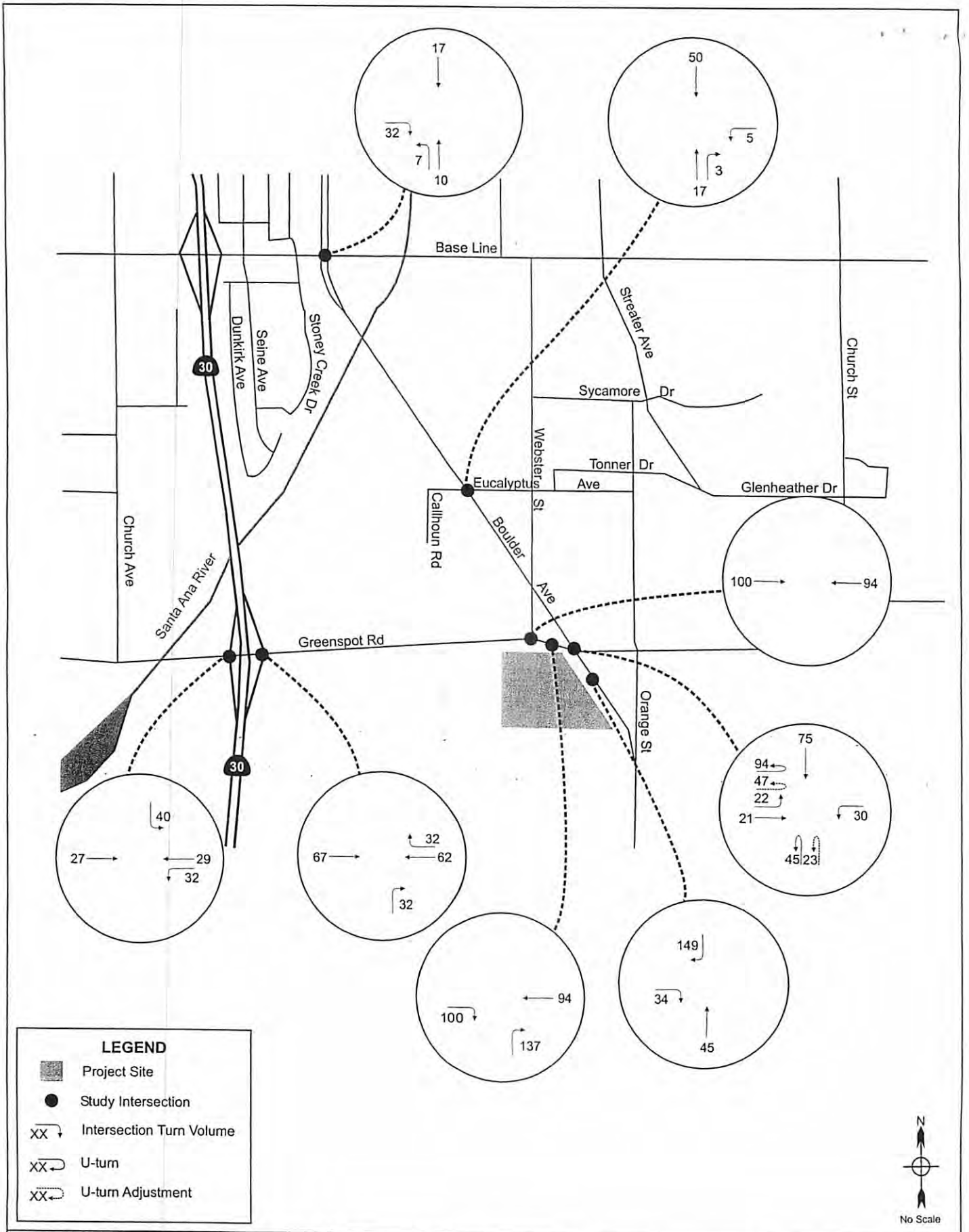


KOA CORPORATION
PLANNING & ENGINEERING

Highland Retail - Traffic Impact Study — Figure 11D

Project Trip Distribution - PM Peak Hour (Outbound)

Figures 12 and 13 indicate the near-term volume of project related traffic increases. Figures 14 and 15 show the future diverted trips at the driveways and nearby intersections for pass-by trips. Figures 16 and 17 indicate the total volume of future project related traffic increases. Future traffic levels in the project vicinity are expected to be changed by the amounts shown on these figures.

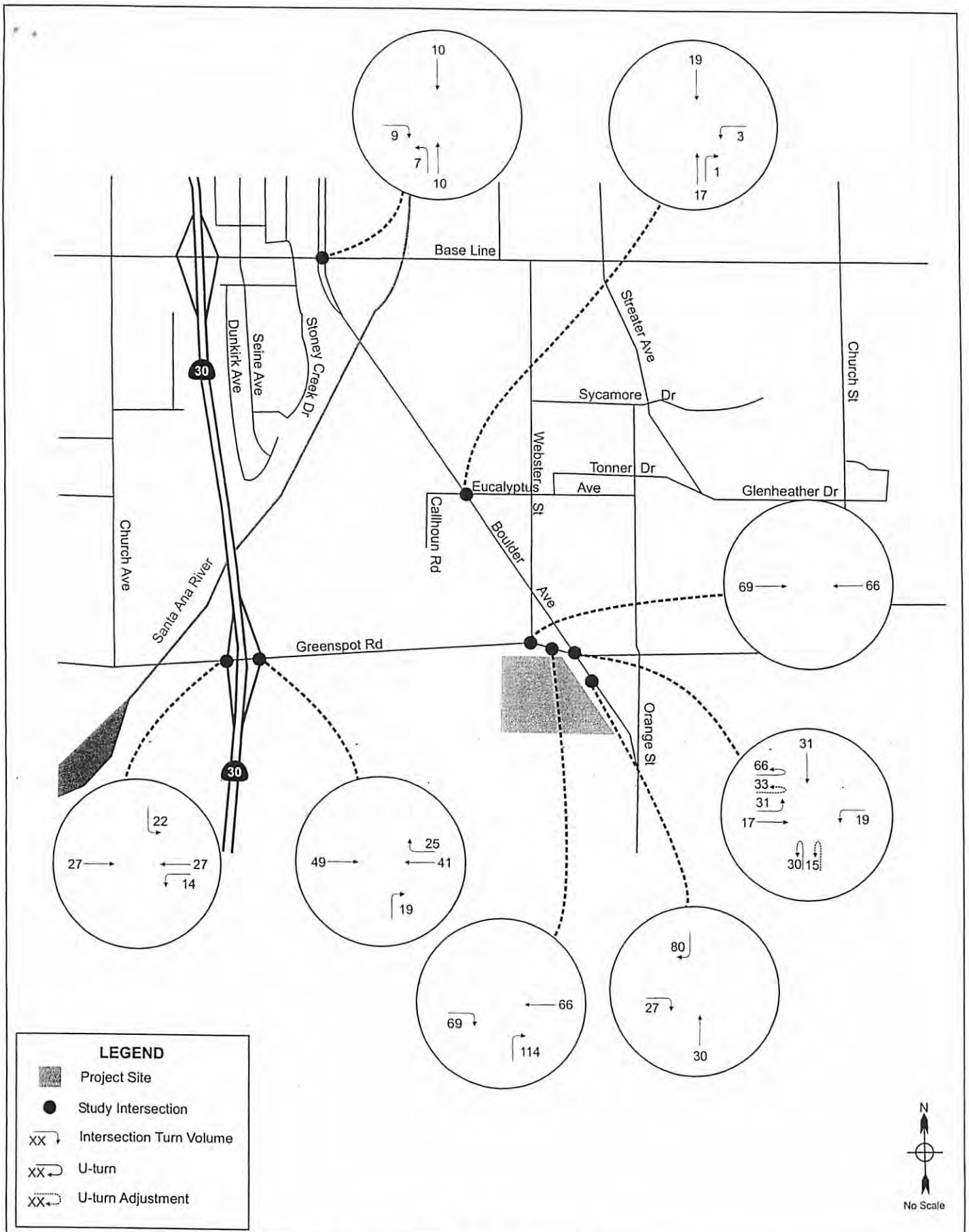


KOA CORPORATION
PLANNING & ENGINEERING

Highland Retail - Traffic Impact Study

Figure 12

Added Traffic Volumes - AM Peak Hour

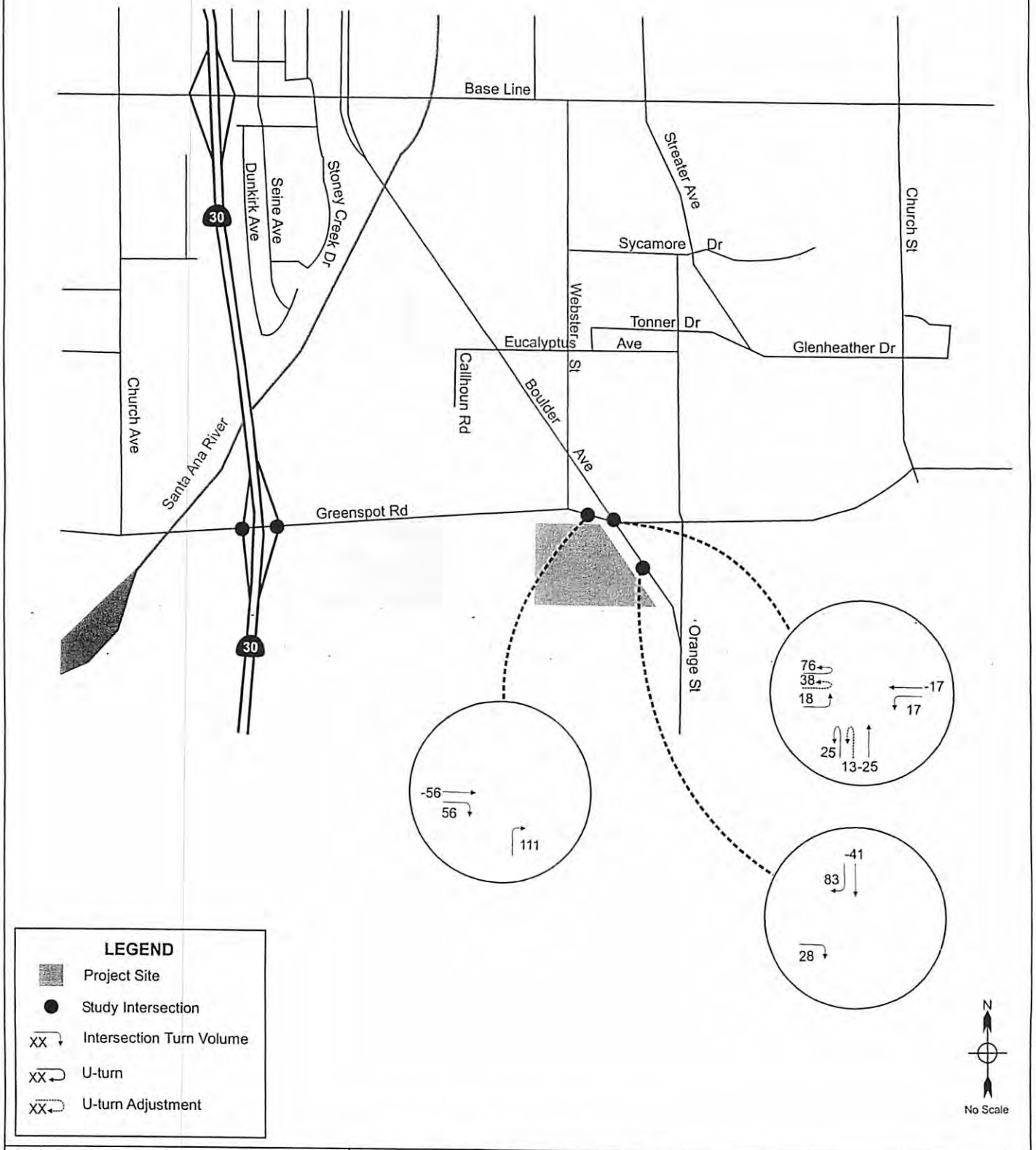


KOA CORPORATION
PLANNING & ENGINEERING

Highland Retail - Traffic Impact Study

Figure 13

Added Traffic Volumes - PM Peak Hour

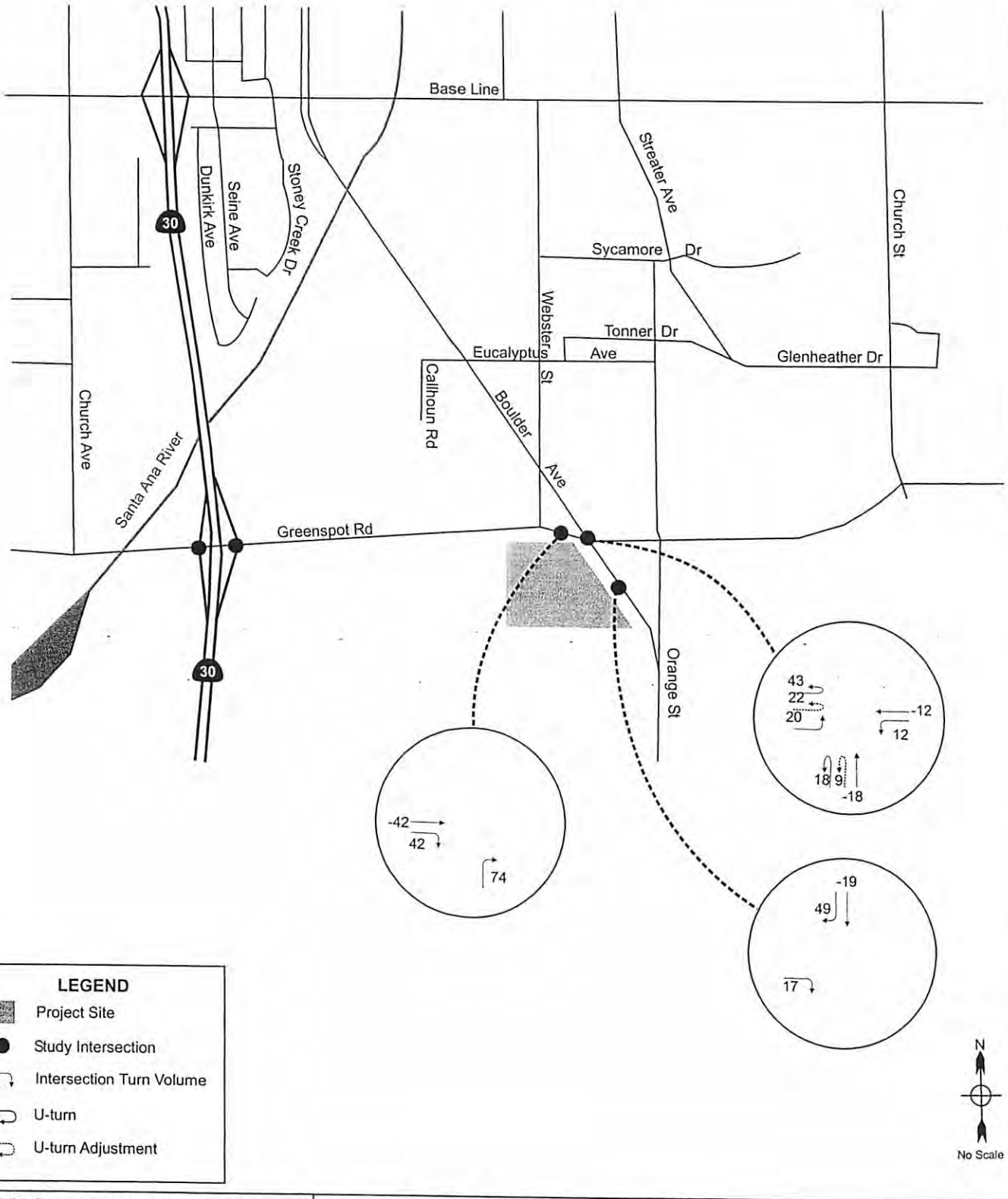


KOA CORPORATION
PLANNING & ENGINEERING

Highland Retail - Traffic Impact Study

Figure 14

Passby Traffic Volumes - AM Peak Hour

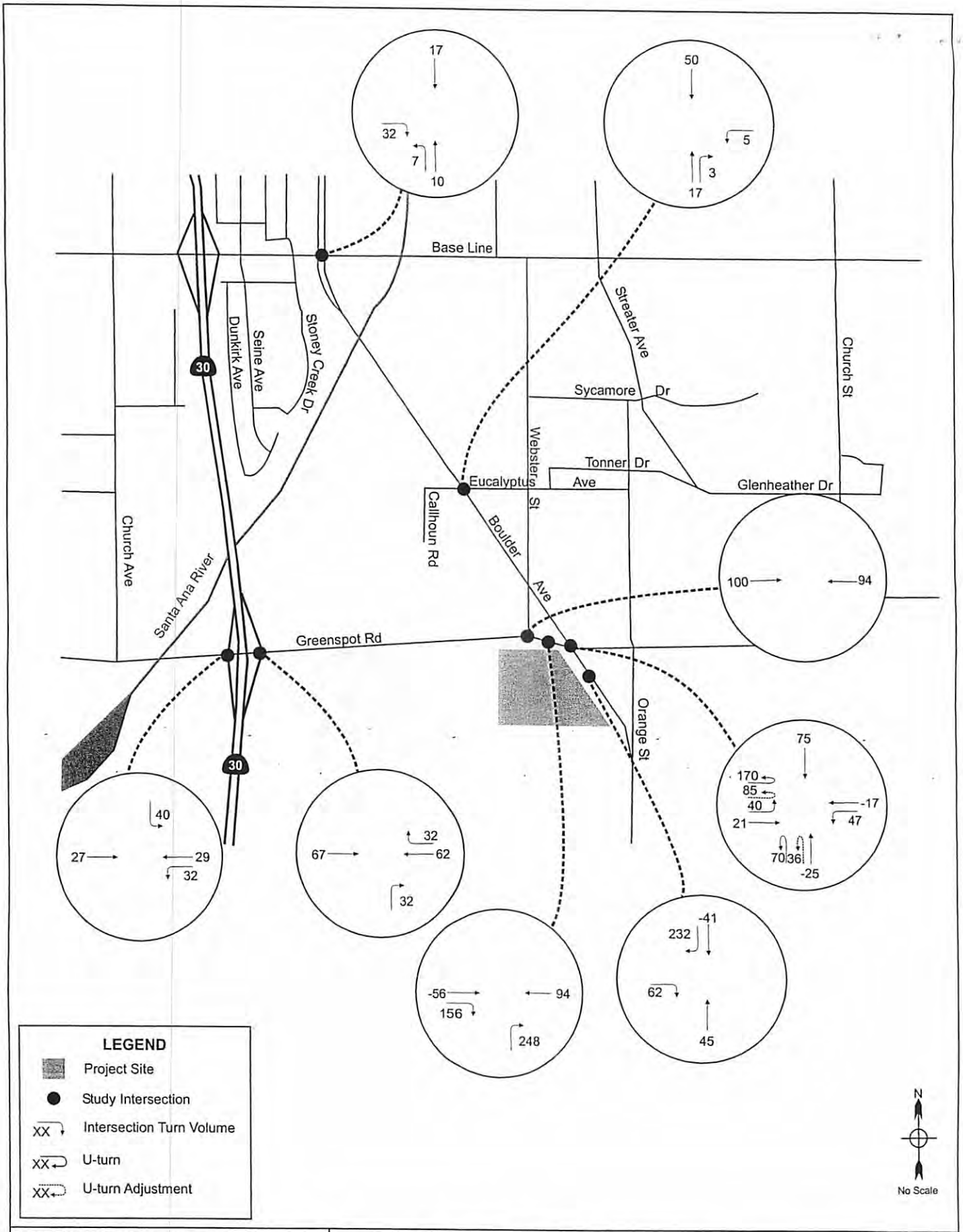


KOA CORPORATION
PLANNING & ENGINEERING

Highland Retail - Traffic Impact Study

Figure 15

Passby Traffic Volumes - PM Peak Hour



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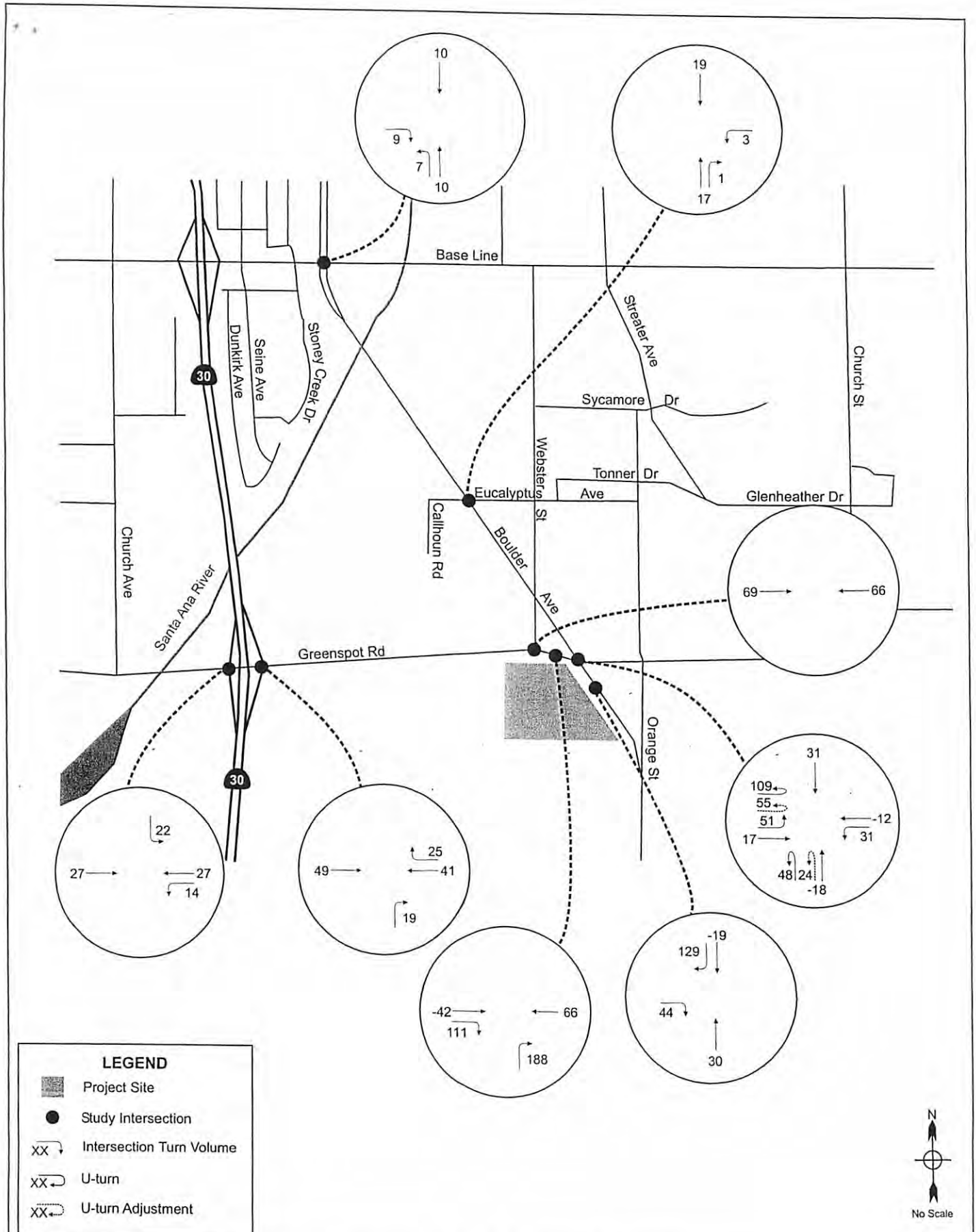
Highland Retail - Traffic Impact Study — Figure 16

Total Project Related Traffic Volumes - AM Peak Hour



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Highland Retail - Traffic Impact Study — Figure 17

Total Project - Related Traffic Volumes - PM Peak Hour

8. Near Term WITH Project Conditions (Year 2012)

This section documents the near term (Year 2012) traffic conditions with the addition of total project-related traffic to the surrounding street system.

Near Term Peak Hour Intersection Level of Service

The near term "WITH Project" traffic volumes were derived by adding the total project trips shown in Figures 16 and 17 to the future traffic volumes for the year 2012. Table 9 summarizes the results of the level of service analysis for the future "WITH Project" conditions.

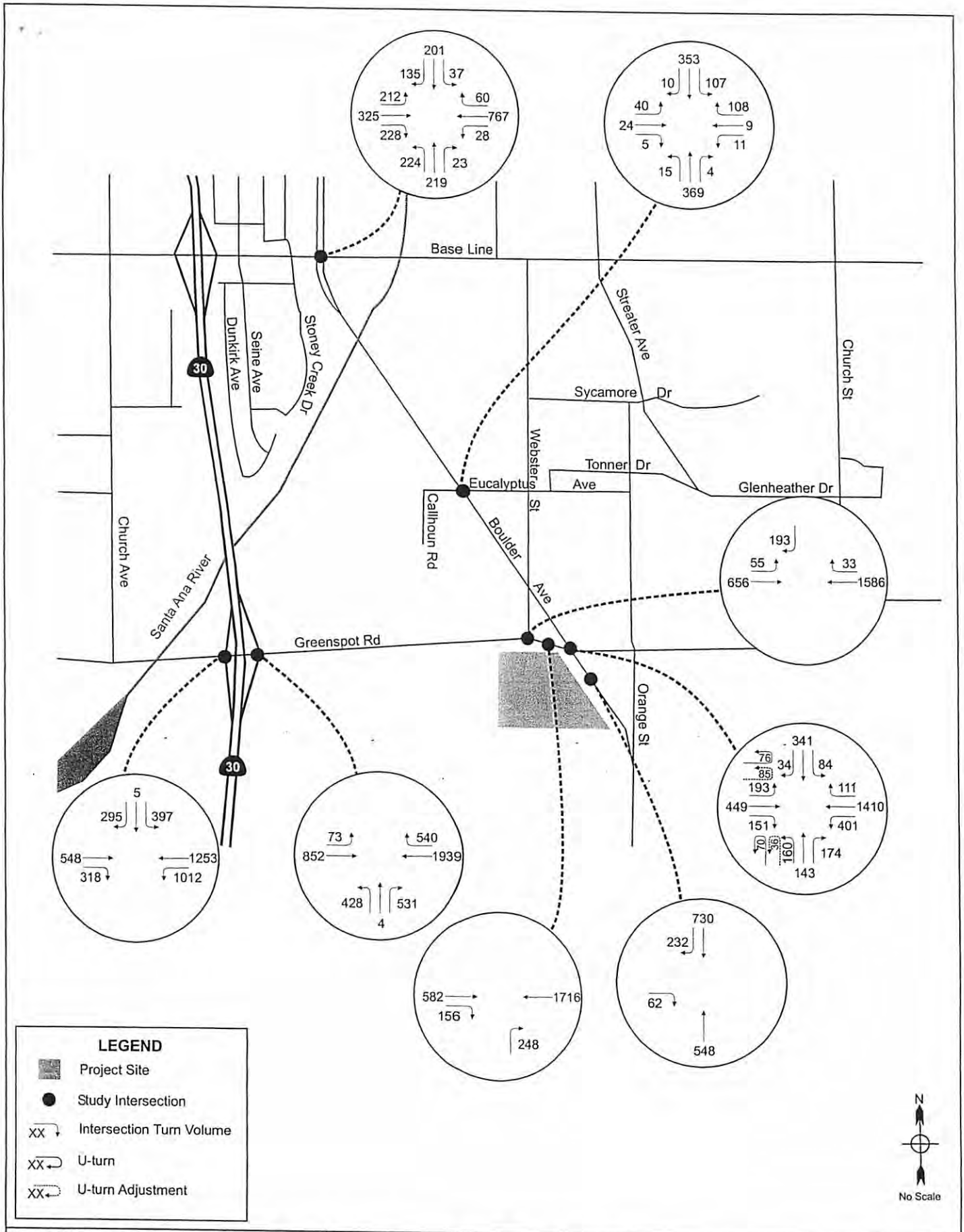
Table 9
AM/PM Peak Hour Intersection Performance
Near Term WITH Project Conditions (Year 2012)

Intersection	AM Peak Hour				PM Peak Hour			
	Delay (sec)		Level of Service		Delay (sec)		Level of Service	
	Average	Poorest Movement	Average	Poorest Movement	Average	Poorest Movement	Average	Poorest Movement
Unsignalized Intersections								
Project Driveway at Greenspot Rd.	1.2	12.9	A	B	1.3	22.9	A	C
Project Driveway at Boulder Ave.	0.5	11.5	A	B	0.5	9.3	A	A
Greenspot Rd. at Webster Ave.	5.1	63.6	A	F	2.7	20.0	A	C
Eucalyptus Ave. at Boulder Ave.	10.4	84.1	B	F	>120.0	>120.0	F	F
Signalized Intersections								
	Delay (sec)		Level of Service		Delay (sec)		Level of Service	
	Average		LOS		Average		LOS	
Greenspot Rd. at Boulder Ave.	99.5		F		72.6		E	
Greenspot Rd. at SR-30 NB Ramps	43.4		D		>120.0		F	
Greenspot Rd. at SR-30 SB Ramps	31.4		C		>120.0		F	
Base Line St. at Boulder Ave.	33.2		C		40.1		D	

Note: Delay based on seconds per vehicle average. LOS = Level of Service.

As shown in Table 9, the intersections are forecast to operate at Level of Service D or better during the AM or PM peak hour except the following:

- Greenspot Road at Webster Street for the poorest movement (AM peak hour)
- Eucalyptus Avenue at Boulder Avenue (AM and PM peak hours)
- Greenspot Road at Boulder Avenue (AM and PM peak hours)
- Greenspot Road at SR-30 Northbound Ramp (PM peak hour)
- Greenspot Road at SR-30 Southbound Ramp (PM peak hour)



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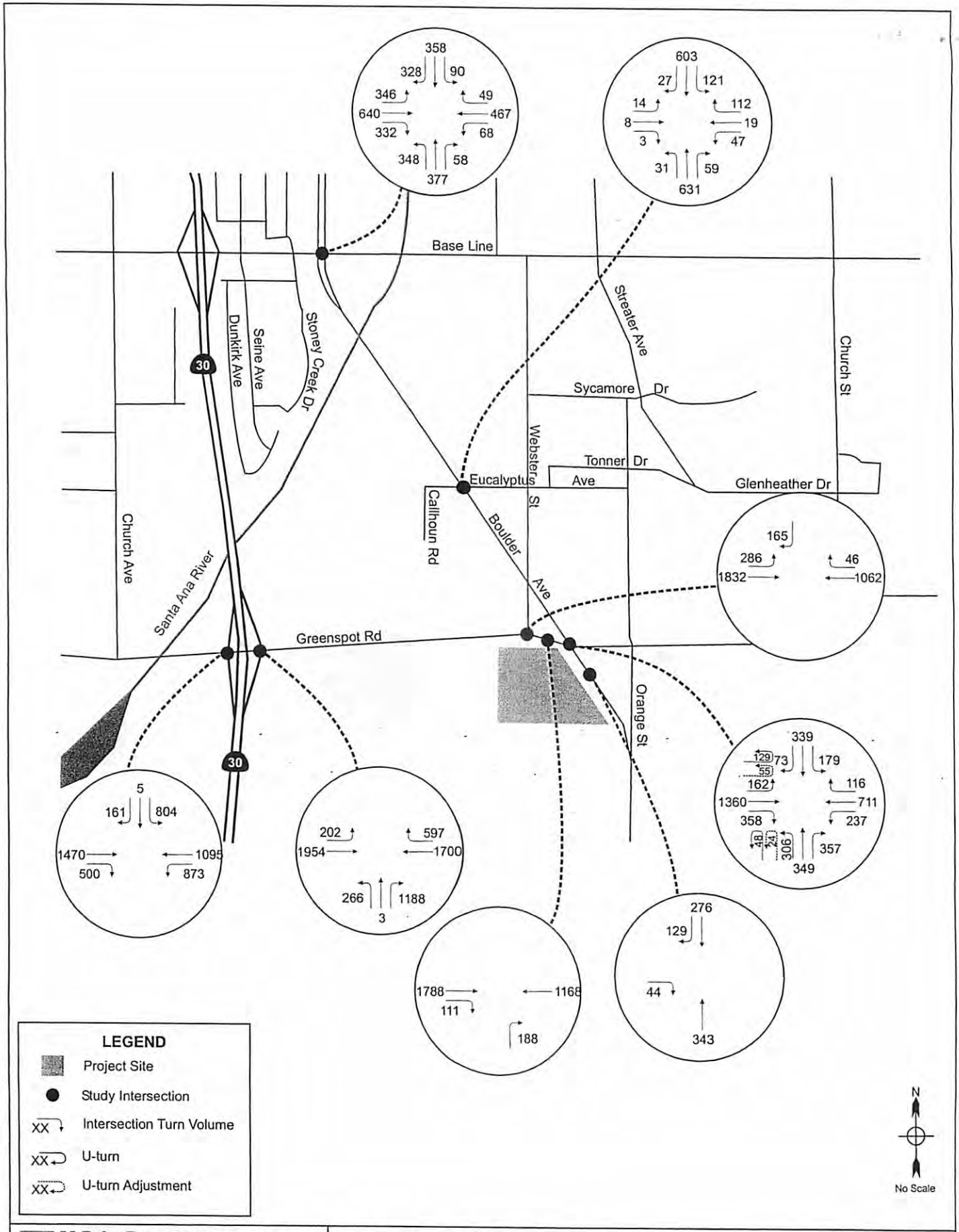
Highland Retail - Traffic Impact Study — Figure 18

Near Term (Year 2012) Traffic Volumes with Project Traffic - AM Peak Hour



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Highland Retail - Traffic Impact Study — Figure 19

Near Term (Year 2012)Traffic Volumes with Project Traffic - PM Peak Hour

RELATED PROJECT 5

TRAFFIC IMPACT STUDY

Centerstone Subdivision

City of Highland, California

Prepared for:

City of Highland
27215 Base Line
Highland, CA 92346
(909) 864-8732

Prepared by:

Hernandez, Kroone & Associates
234 East Drake Drive
San Bernardino, CA 92408
(909) 884-3222

September 2009

INTRODUCTION

This analysis was prepared to determine the potential traffic impacts of the Centerstone Subdivision, a housing development proposed at the southeast corner of the Greenspot Road / Orange Street intersection. The project will provide 133 units of single family detached housing. The 21 acre site is located approximately 800 feet east of the intersection of Boulder Avenue / Greenspot Road in the City of Highland, California. (See Vicinity Map)

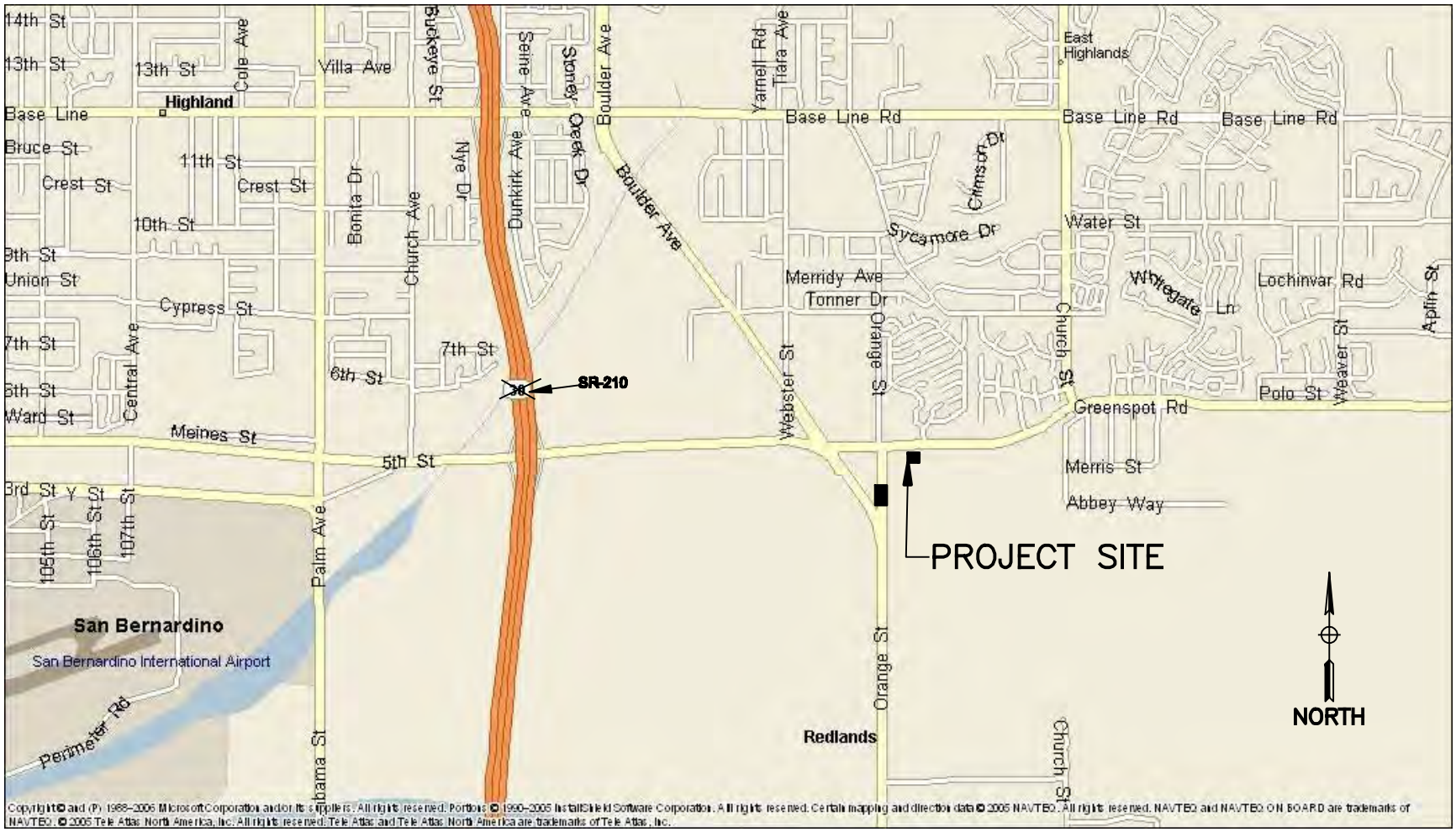
The site is currently undeveloped land. There is a mobile home park west of the project at the southwest corner of the Greenspot Road / Orange Street intersection. The property directly north of the site is developed as single family homes, with two operating schools and a post office under construction nearby. The property south of the project includes the easement for the Metropolitan Water District of Southern California Inland Feeder Pipeline, the Santa Ana River Wash and two land leases to gravel mining companies.

The land immediately to the east of the project is vacant. The site is proposed to be developed as Blossom Trails Subdivision consisting of 14 single family homes and 306 condos / town homes. The 14 single family homes will be north of Greenspot Road and the 306 condos / town homes will be south of Greenspot Road. Urban Crossroads completed a traffic study for the Blossom Trails project on January 27, 2006.

In the January 2006 traffic study the Blossom Trails Subdivision and the Centerstone Subdivision were anticipated to share an access to Greenspot Road about 1,320 feet east of Orange Street. Since that access was on the west side of the Blossom Trails project, it was called the "West Access Driveway". This access will be called the "West Access Driveway" in this traffic study as well even though it is on the east side of the development. (See Site Plan)

Centerstone Subdivision's other access will be at Orange Street / Greenspot Road. The main thrust of the study will be to analyze the West Access Driveway in the absence of the Blossom Trails development. This traffic study is a revision of the one completed December 2008. The number of dwelling units was changed from 120 to 133. This is an increase of 13 trips during the PM Peak Period. The exhibits, tables, analysis and conclusions have been revised to reflect this change.

This traffic study was completed with generally accepted procedures and reflects the opinions of Hernandez, Kroone & Associates.



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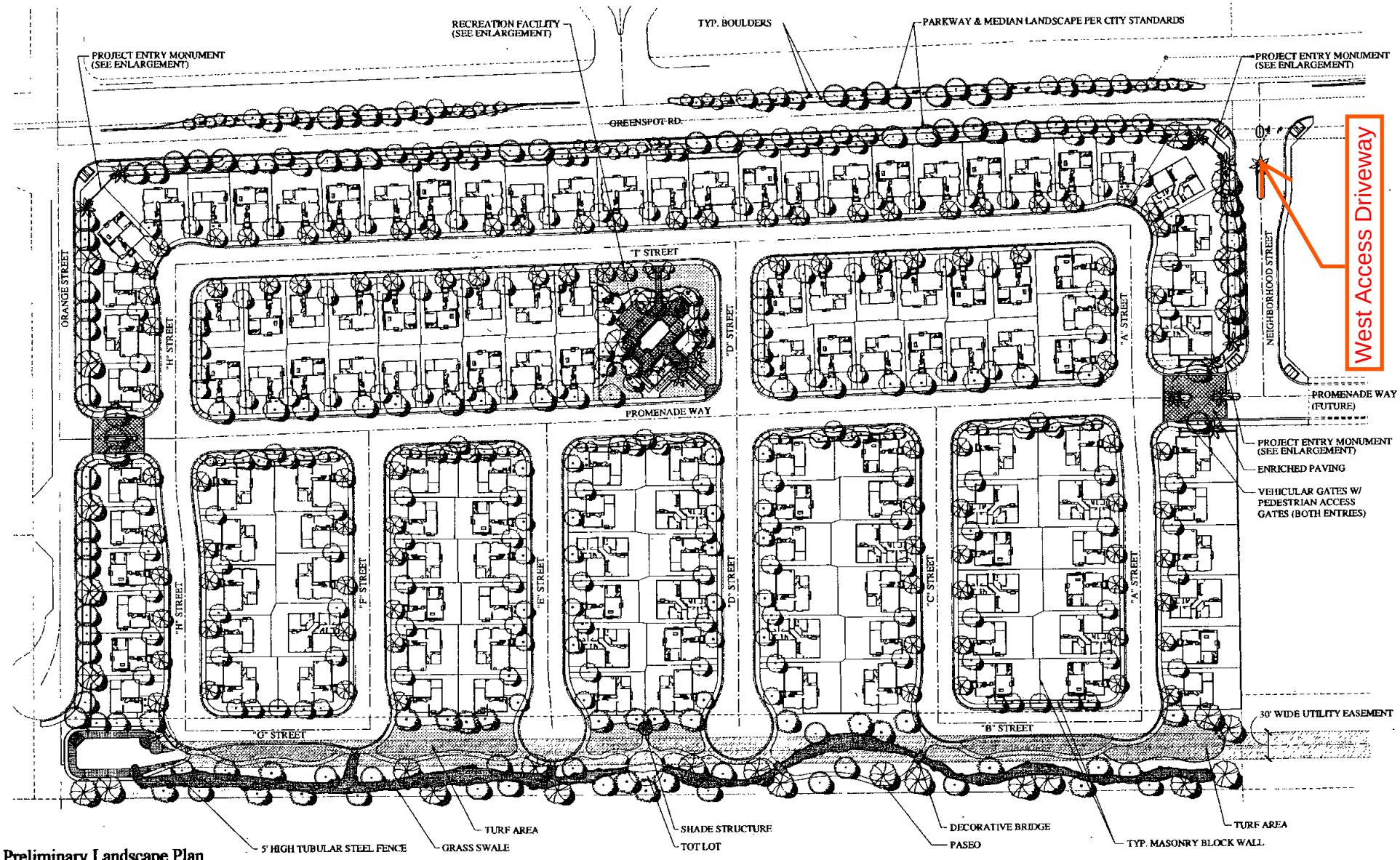
Hernandez, Kroone & Associates, Inc
— CONSULTING ENGINEERS —
PLANNING - DESIGN - SURVEYING
HKA
234 EAST DRAKE DRIVE
SAN BERNARDINO, CA 92408
(909) 884-3222 FAX (909) 383-1577
E-MAIL

OWNER	CENTERSTONE SUBDIVISION	08–1030
DESCRIPTION	VICINITY MAP	DATE 12/08/08



Preliminary Landscape Plan

Centerstone @ Woodbridge Trails

Highland, California

Centerstone Communities, Inc.

SCALE: 1" = 40'-0"

NUVIS

SHT 1 OF 3

The Single Family-Detached Housing category was used to approximate the number of AM and PM Peak Period trips in and out of the proposed 133 units housing development. These trips are summarized in Table 2 below. The detailed calculations can be found in Appendix C.

Table 2: Project Trip Summary Table

Development Type	AM Peak Period			PM Peak Period			ADT[1]
	Total	In	Out	Total	In	Out	
Single Family-Detached Housing	100	25	75	134	84	50	1,273

[1]*ADT (Average Daily Trips) is the average number of vehicles expected to enter or leave the site during one day.*

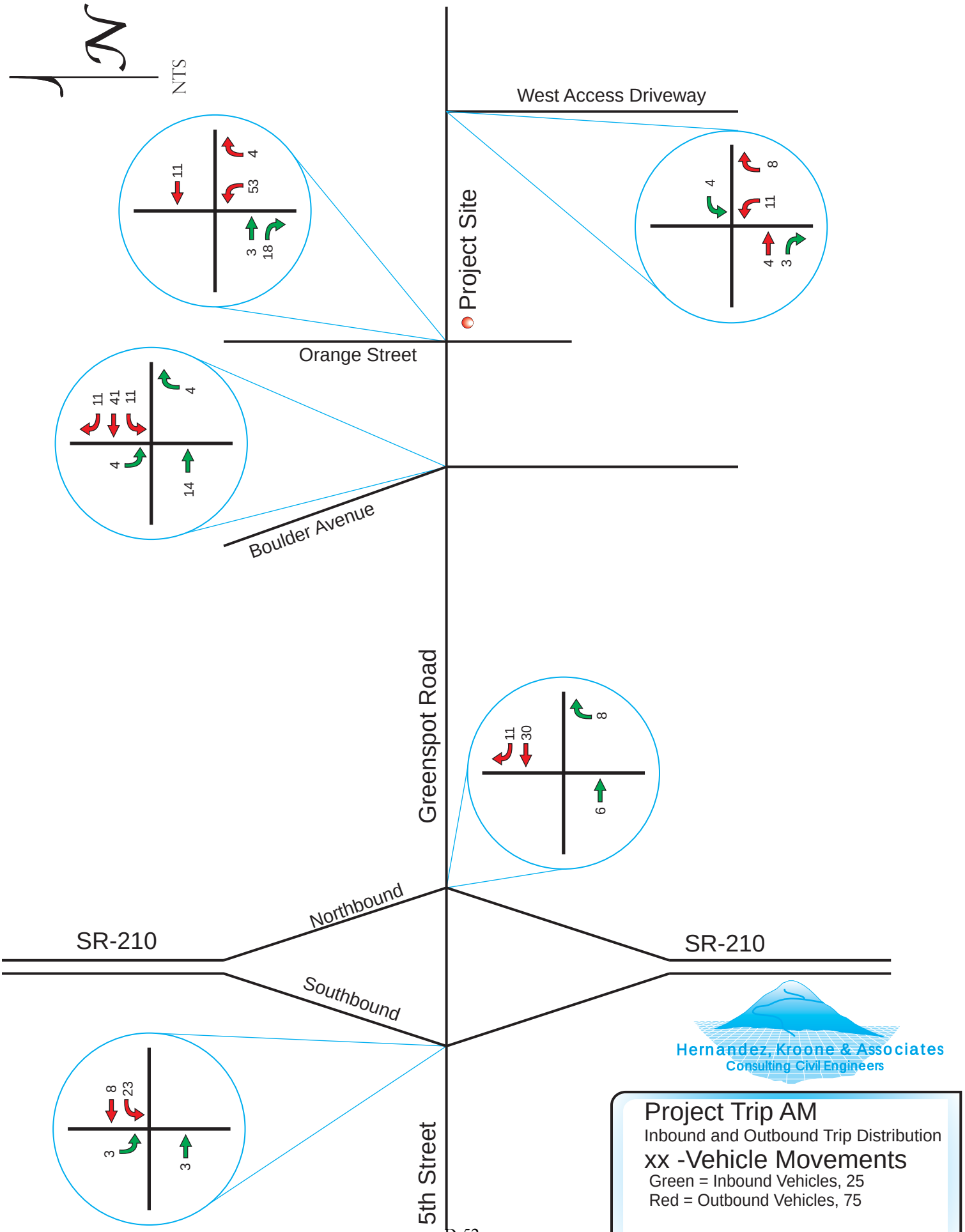
PROJECT TRIP DISTRIBUTION

To the west of the Centerstone Subdivision is access to the Cities of Highland, San Bernardino, Redlands, schools, post office, or shopping via Boulder Avenue and SR-210 to Interstate 10 (I-10) or Interstate 215 (I-215). The Golden Triangle area west of Centerstone will be developing in the next few years and will provide a major attraction for shopping, entertainment, work and dining. To the east of the site are smaller shopping centers, subdivisions and indirect rural access to the unincorporated area of Mentone and the mountains. The Urban Crossroads study anticipated that 85% of the project traffic would leave to the west or arrive from the west. This distribution will be used for this analysis of the Centerstone development. The project's trip distribution is shown in Appendix C.

BACKGROUND TRAFFIC GROWTH

Growth Rate

In order to accurately model the traffic conditions for future scenarios, it is necessary to increase the background (existing) traffic in addition to adding in the cumulative project trips. A 2% growth rate per year will be assumed to the Opening Year for this analysis. Opening Year is assumed to be 2011. This will result in an overall increase of 6% to the existing counts at the study intersections.



Hernandez, Kroone & Associates
Consulting Civil Engineers

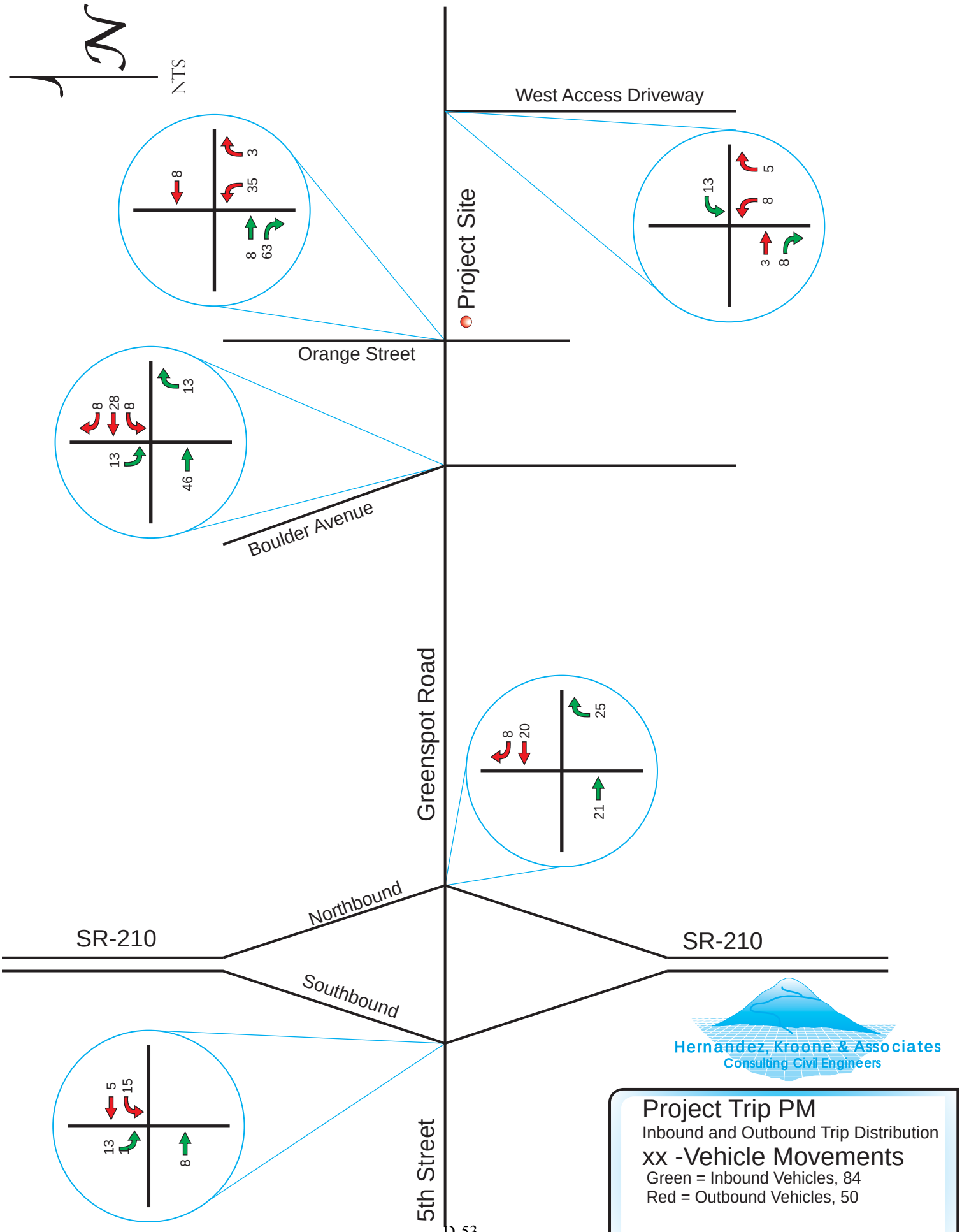
Project Trip AM

Inbound and Outbound Trip Distribution

xx -Vehicle Movements

Green = Inbound Vehicles, 25

Red = Outbound Vehicles, 75


N
NTS
West Access Driveway
Project Site
Orange Street
Boulder Avenue
Greenspot Road
Northbound
Southbound
SR-210
SR-210
5th Street
8
3
35
8
63
13
5
8
3
8
8
28
8
13
13
46
8
20
25
21
5
15
13
1
8
Hernandez, Kroone & Associates
Consulting Civil Engineers
Project Trip PM
Inbound and Outbound Trip Distribution
xx -Vehicle Movements
Green = Inbound Vehicles, 84
Red = Outbound Vehicles, 50

RELATED PROJECT 6

TABLE 1

PROJECT TRIP GENERATION RATES[1]

Land Use[1]	ITE LU Code	Quantity	Units[2]	AM Peak Hour			PM Peak Hour			Daily
				In	Out	Total	In	Out	Total	
PLANNING AREA 1 (COMMERCIAL)										
Phase 1:										
Shopping Center	820	588	TSF	0.45	0.29	0.74	1.74	1.81	3.55	36.53
Phase 2:										
Fast Food w/ Drive Thru	934	4	TSF	25.17	24.18	49.35	17.60	16.24	33.84	496.12
Gasoline/Service Station w/Conven. Mkt.[3]	945	3.6	TSF	40.44	38.86	79.30	48.54	48.54	97.08	1064.40
PLANNING AREA 2 (RESIDENTIAL):										
Apartment	220	546	Occupied DU	0.10	0.41	0.51	0.40	0.22	0.62	6.65
PLANNING AREA 3 (VILLAGE CENTER - MIXED USE):										
Shopping Center	820	91	TSF	0.98	0.62	1.60	3.22	3.35	6.57	70.19
Fast Food w/ Drive Thru	934	7.2	TSF	25.17	24.18	49.35	17.60	16.24	33.84	496.12
Drive-in Bank	912	10	TSF	6.92	5.43	12.35	12.91	12.91	25.82	148.15
Apartment	220	150	DU	0.10	0.41	0.51	0.40	0.22	0.62	6.65
Senior Adult Housing - Attached	252	104	Occupied DU	0.05	0.08	0.13	0.10	0.06	0.16	3.48
Hotel	310	240	Occupied RM	0.39	0.28	0.67	0.34	0.36	0.70	8.92

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Eighth Edition (2008).

[2] TSF = Thousand Square Feet; DU = Dwelling Unit; RM = Room

[3] The daily trip rate is based on PM Peak Hour to Daily Trip Ratio for ITE Code 946 (Service Station with Conv. Market and Car Wash)

TABLE 2 (PAGE 1 OF 2)

PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units[1]	AM Peak Hour In	AM Peak Hour Out	AM Peak Hour Total	PM Peak Hour In	PM Peak Hour Out	PM Peak Hour Total	Daily
TAZ 1 (COMMERCIAL)									
Phase 1									
Shopping Center	588	TSF	265	171	436	1,023	1,064	2,087	21,480
Phase 1 Subtotal			265	171	436	1,023	1,064	2,087	21,480
"Pass-By" Trips (25% Commercial Only)[2]			*-55*	*-55*	*-109*	*-261*	*-261*	*-522*	*-5,370*
Phase 1 Subtotal (less "Pass-By")			210	116	326	762	803	1,565	16,110
Phase 2									
Fast Food w/ Drive Thru	4	TSF	101	97	198	70	65	135	1,984
Gasoline/Service Station w/Conven. Mkt.	3.6	TSF	146	140	286	175	175	350	3,832
Phase 2 Subtotal			247	237	484	245	240	485	5,816
"Pass-By" Trips (25% Commercial Only)[2]			*-61*	*-61*	*-121*	*-61*	*-61*	*-121*	*-1,454*
Phase 2 Subtotal (less "Pass-By")			186	176	362	184	179	363	4,362
TOTAL PLANNING AREA 1 (without "pass-by" reduction)			512	408	920	1,268	1,304	2,572	27,296
TOTAL PLANNING AREA 1 (less "pass-by")			396	292	688	946	982	1,928	20,472
TAZ 2 (RESIDENTIAL)									
Apartment	546	DU	55	224	279	218	120	338	3,631
TOTAL PLANNING AREA 2			55	224	279	218	120	338	3,631
TAZ 3 (MIXED USE)									
Shopping Center	91	TSF	89	56	145	293	305	598	6,387
Fast Food w/ Drive Thru	7.2	TSF	181	174	355	127	117	244	3,572
Drive-in Bank	10	TSF	69	54	123	129	129	258	1,482
Subtotal for Commercial Uses			339	284	623	549	551	1,100	11,441
Apartment	150	DU	15	62	77	60	33	93	998
Senior Adult Housing - Attached	104	Occupied DU	5	8	13	10	6	16	362
Hotel	240	Occupied RM	94	67	161	82	86	168	2,141
Subtotal for Residential Uses			114	137	251	152	125	277	3,501
TOTAL PLANNING AREA 3			453	421	874	701	676	1,377	14,942

STUDY AREA PROJECT TRIP GENERATION							
Gross Total Commercial	*851*	*692*	*1,543*	*1,817*	*1,855*	*3,672*	*38,737*
Internal Capture with residential Uses[3]	*-43*	*-48*	*-91*	*-130*	*-115*	*-245*	*-2,532*
TOTAL COMMERCIAL *(with Internal Capture)*	808	644	1,452	1,687	1,740	3,427	36,205
Gross Total Residential	*169*	*361*	*530*	*370*	*245*	*615*	*7,132*
Internal Capture with Commercial Uses[3]	*-48*	*-43*	*-91*	*-115*	*-130*	*-245*	*-2,532*
TOTAL RESIDENTIAL *(with Internal Capture)*	121	318	439	255	115	370	4,600
TOTAL PROJECT TRIPS *(with Intenal Capture)*	929	962	1,891	1,942	1,855	3,797	40,805

TABLE 2 (PAGE 2 OF 2)

PROJECT TRIP GENERATION SUMMARY

EXTERNAL TRIPS PROJECT TRIP GENERATION							
	AM Peak Hour			PM Peak Hour			
	In	Out	Total	In	Out	Total	Daily
Total Commercial (with Internal Capture)[4]	*808*	*644*	*1,452*	*1,687*	*1,740*	*3,427*	*36,205*
"Pass-By" Trips Total (25% Commercial Only)[2]	*-182*	*-182*	*-363*	*-429*	*-429*	*-857*	*-9,051*
TOTAL PROJECT COMMERCIAL *(less internal capture, less "pass-by")*	626	462	1,088	1,258	1,311	2,569	27,154
TOTAL RESIDENTIAL *(less internal capture)*	121	318	439	255	115	370	4,600
NET PROJECT EXTERNAL TRIPS	747	780	1,527	1,513	1,426	2,939	31,754
USED IN SUBSEQUENT ANALYSIS	793	838	1,631	1,524	1,427	2,951	32,765
DIFFERENCE	46	58	104	11	1	12	1,011
% DIFFERENCE	6.2%	7.4%	6.8%	0.7%	0.1%	0.4%	3.2%

[1] TSF = Thousand Square Feet; DU = Dwelling Unit; RM = Room

[2] Pass-by trips are made as intermediate stops on the way from an origin to a primary trip destination without route diversion. It should be noted that the pass-by reductions are applied after the internal capture reductions are taken. Pass-By reduction will not be applied to the project driveways and the intersections adjacent to the project site.

[3] Internal capture reductions include interactions between commercial, office, and residential uses. The internal capture rates are based upon data collected by the Institute of Transportation Engineers (ITE) and included in the Trip Generation Handbook, Chapter 7, Multi-Use Development.

[4] As mentioned previously, Pass-By trips are not applied at the project driveways and intersections adjacent to the site. Therefore, the following trip generation is utilized at the following intersections only: 1.) All Project Access points 2.) SR-210 NB Ramps/Greenspot Rd. 3.)Webster St./Greenspot Rd. 4.) Webster St./Boulder Ave.

PROJECT ONLY PEAK HOUR INTERSECTION VOLUMES

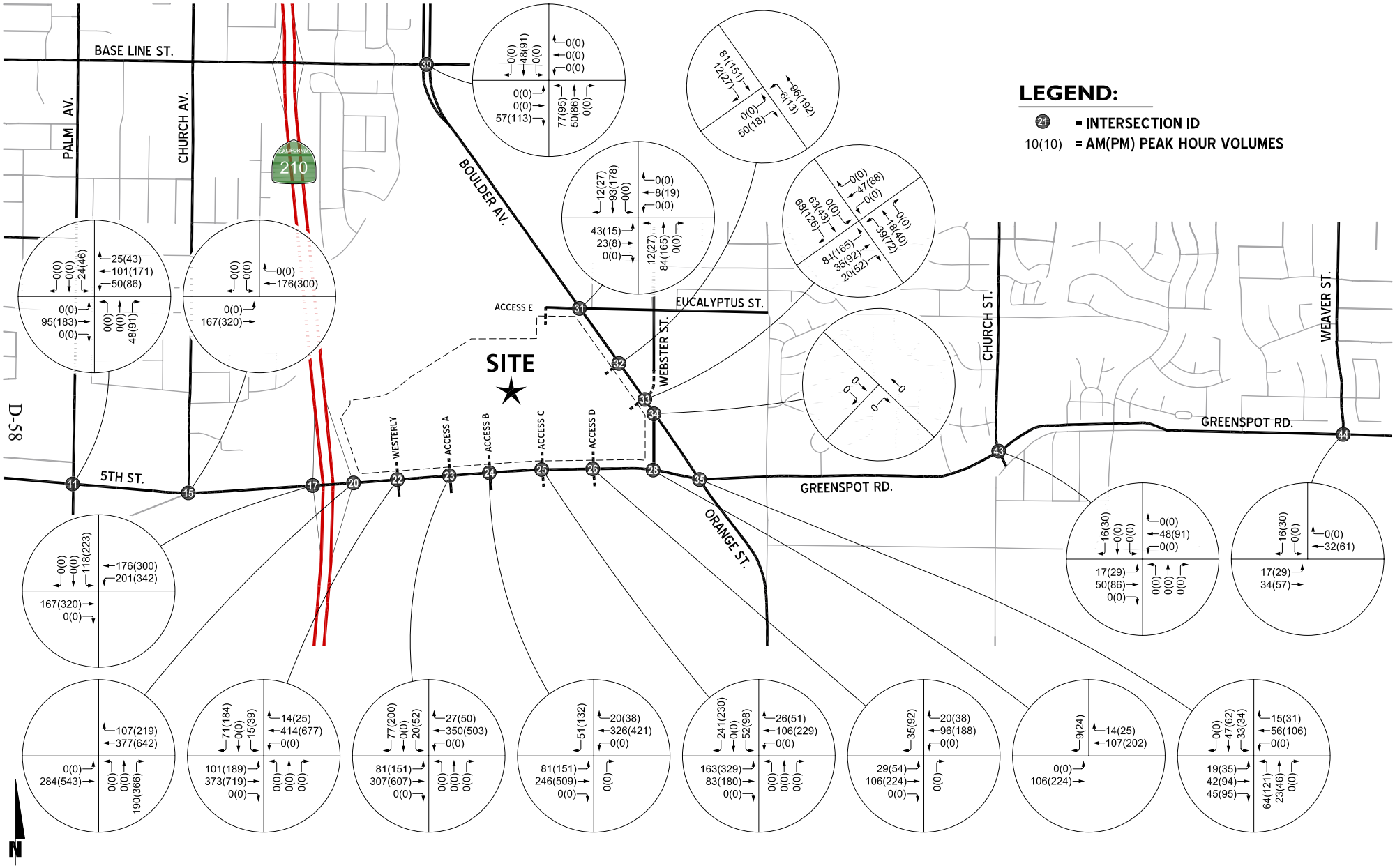


EXHIBIT E

PROJECT PASS-BY ONLY PEAK HOUR INTERSECTION VOLUMES

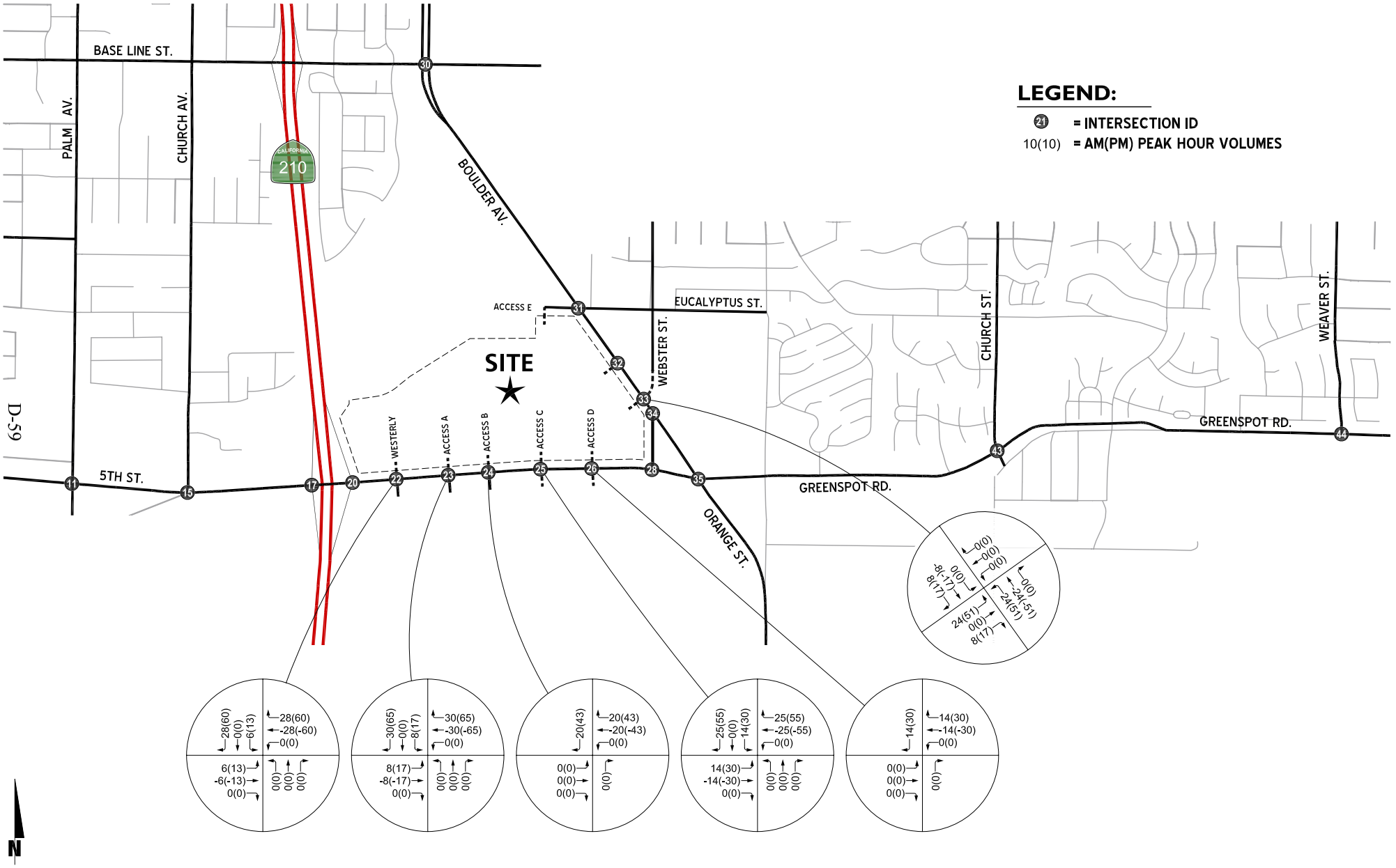
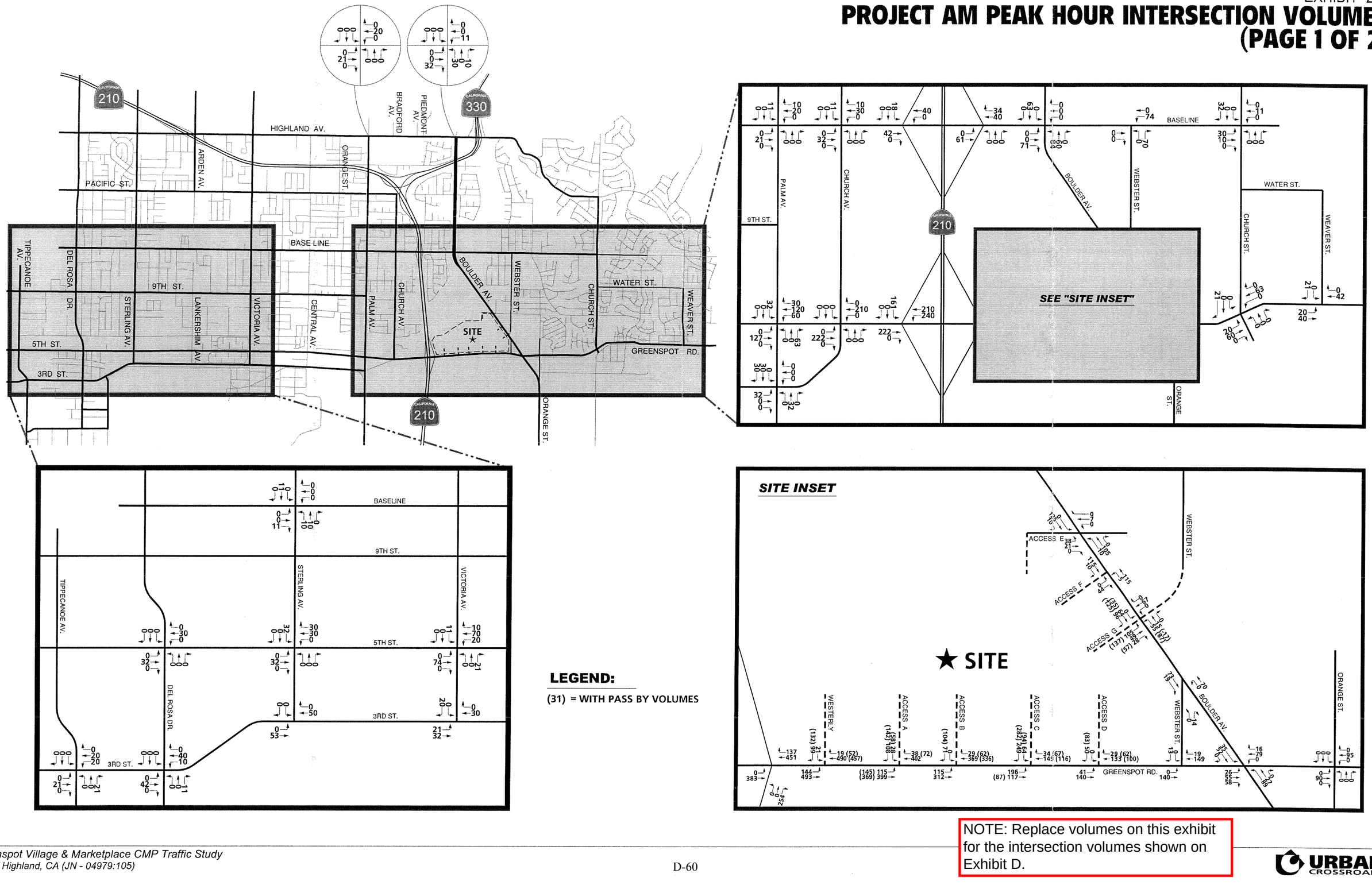


EXHIBIT 2-D

PROJECT AM PEAK HOUR INTERSECTION VOLUMES (PAGE 1 OF 2)



LEGEND:

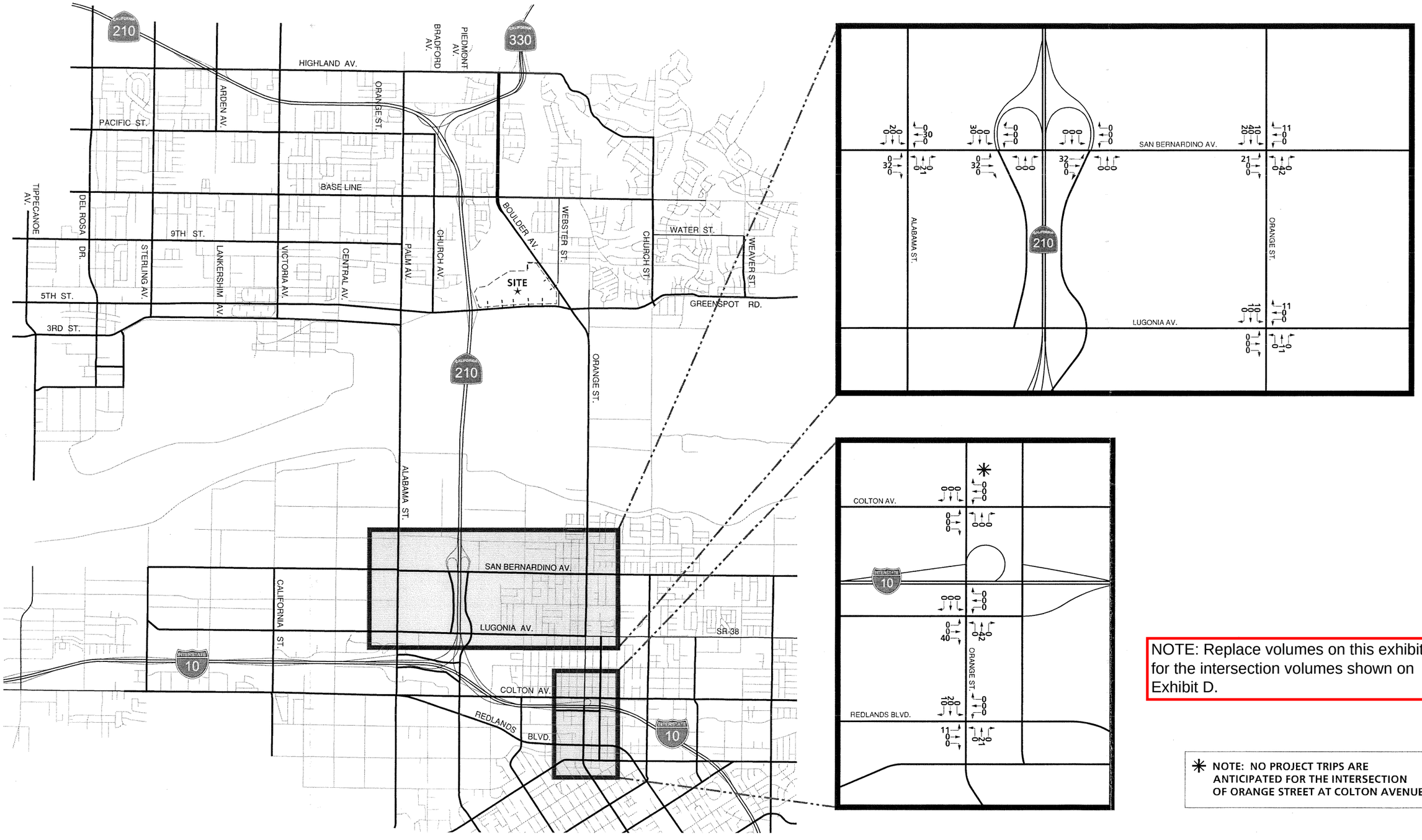
(31) = WITH PASS BY VOLUMES

N

NOTE: Replace volumes on this exhibit for the intersection volumes shown on Exhibit D.

EXHIBIT 2-D

PROJECT AM PEAK HOUR INTERSECTION VOLUMES (PAGE 2 OF 2)

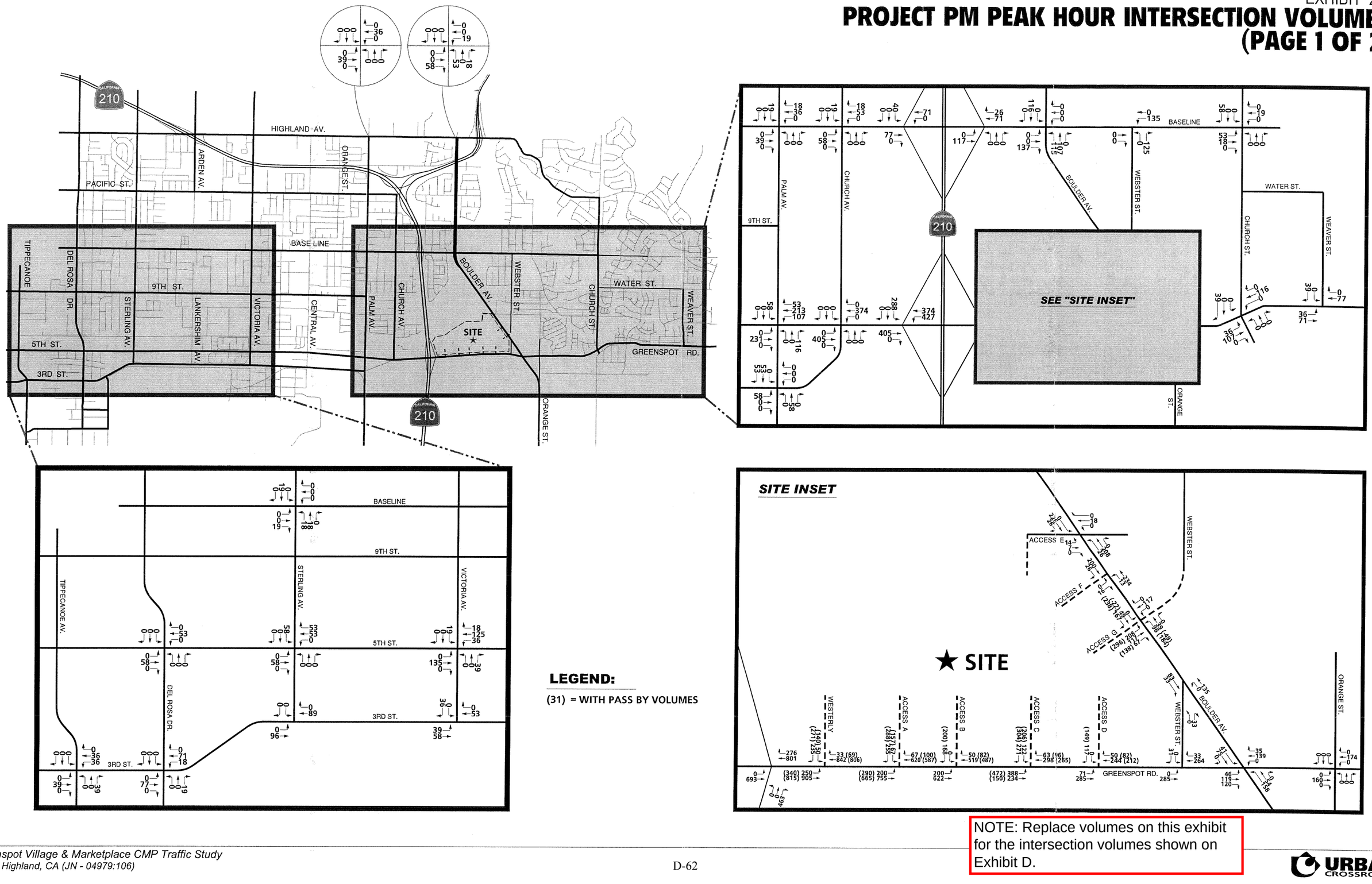


NOTE: Replace volumes on this exhibit for the intersection volumes shown on Exhibit D.

✳ NOTE: NO PROJECT TRIPS ARE ANTICIPATED FOR THE INTERSECTION OF ORANGE STREET AT COLTON AVENUE

EXHIBIT 2-E

PROJECT PM PEAK HOUR INTERSECTION VOLUMES (PAGE 1 OF 2)



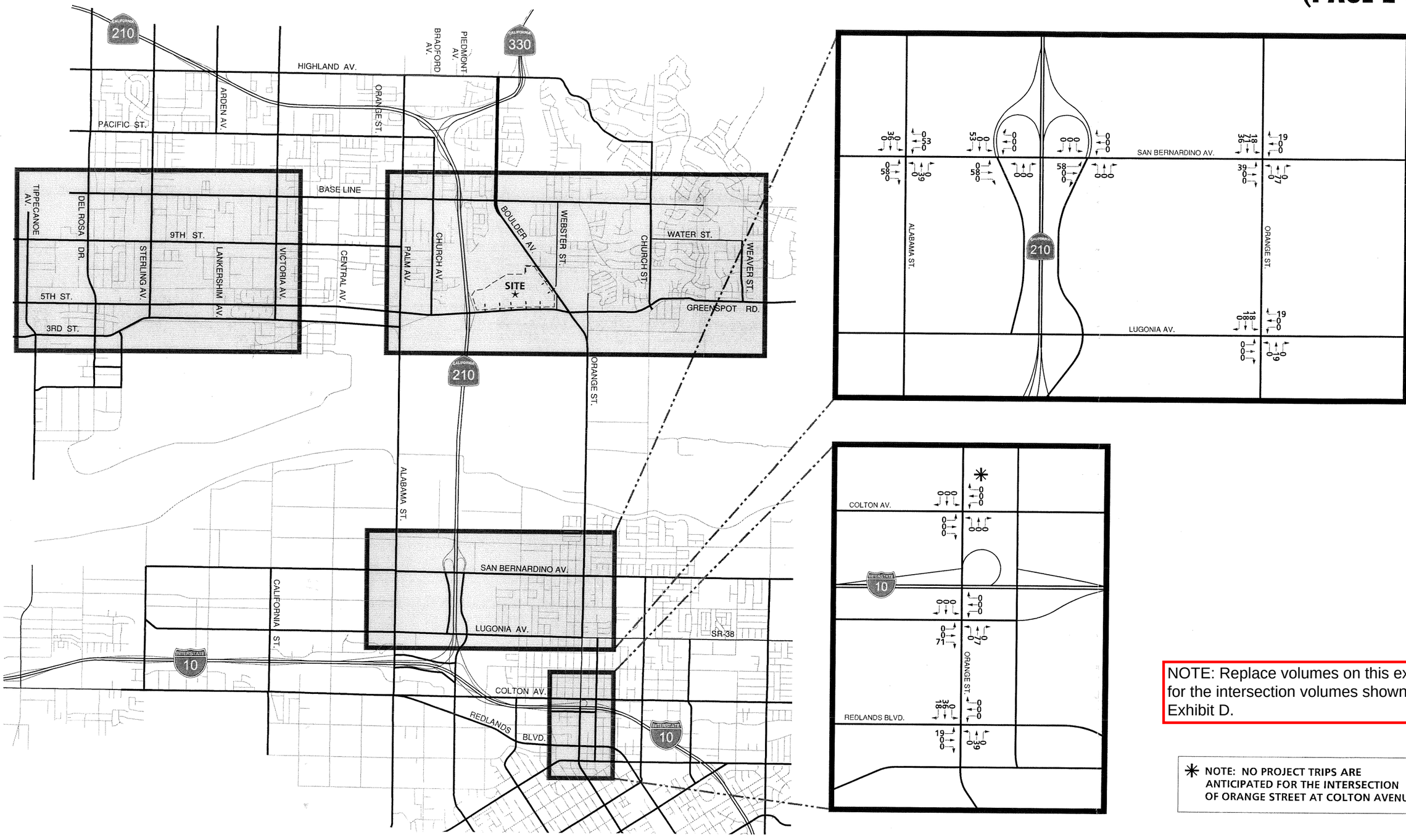
LEGEND:

(31) = WITH PASS BY VOLUMES

NOTE: Replace volumes on this exhibit for the intersection volumes shown on Exhibit D.

EXHIBIT 2-E

PROJECT PM PEAK HOUR INTERSECTION VOLUMES (PAGE 2 OF 2)



RELATED PROJECT 7

Table D - Harmony Trip Generation (with Commercial Overlay)

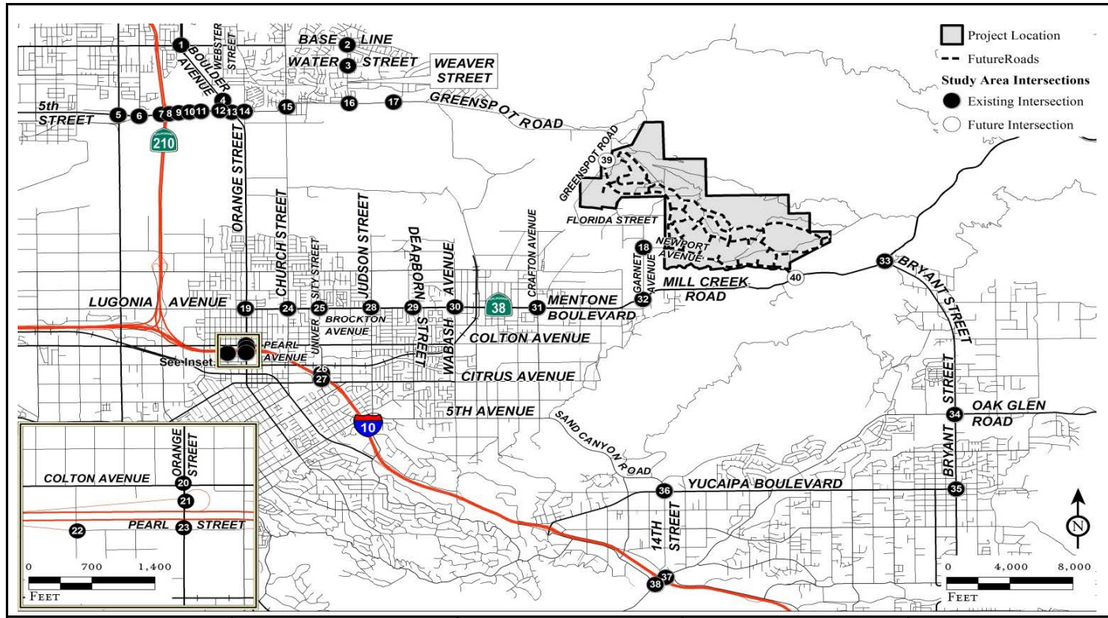
Land Use		Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
PA 1	Single Family Residential	46 DU	9	26	35	29	17	46	438
PA 2	Single Family Residential	104 DU	20	58	78	66	38	104	990
PA 3	Single Family Residential	141 DU	27	79	106	89	52	141	1342
PA 4	Single Family Residential	51 DU	10	28	38	32	19	51	486
PA 5	Single Family Residential	36 DU	7	20	27	23	13	36	343
PA 6	Single Family Residential	36 DU	7	20	27	23	13	36	343
PA 7	Single Family Residential	133 DU	25	75	100	84	49	133	1266
PA 8	Single Family Residential	47 DU	9	26	35	30	17	47	447
PA 9	Single Family Residential	13 DU	2	8	10	8	5	13	124
PA 10	Single Family Residential	84 DU	16	47	63	53	31	84	800
PA 11	Single Family Residential	19 DU	4	10	14	12	7	19	181
PA 12	Single Family Residential	27 DU	5	15	20	17	10	27	257
PA 13	Single Family Residential	63 DU	12	35	47	40	23	63	600
PA 14	Single Family Residential	94 DU	18	53	71	59	35	94	895
PA 18	Recreation Center	16.0 TSF	22	11	33	22	22	44	541
PA 45	Single Family Residential	15 DU	3	8	11	9	6	15	143
PA 48	City Park	2.9 Acres	0	0	0	0	0	0	5
PA 49	City Park	4.3 Acres	0	0	0	0	0	0	8
PA 15	Single Family Residential	208 DU	40	116	156	131	77	208	1980
PA 16	Single Family Residential	39 DU	7	22	29	25	14	39	371
PA 19A	Elementary School	832 Students	209	165	374	59	67	126	1072
PA 19B	City Park	5.3 Acres	0	0	0	0	0	0	10

Table D - Harmony Trip Generation (with Commercial Overlay)

Land Use			Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
PA	**20D**	Single Family Residential	53 DU	10	30	40	33	20	53	505
PA	**21**	Single Family Residential	115 DU	22	64	86	72	43	115	1095
PA	**22**	Single Family Residential	47 DU	9	26	35	30	17	47	447
PA	**26**	Condominium/Townhomes	173 DU	12	64	76	61	29	90	1005
PA	**27**	Single Family Residential	62 DU	12	35	47	39	23	62	590
PA	**29A**	Single Family Residential	45 DU	9	25	34	28	17	45	428
PA	**29B**	Single Family Residential	52 DU	10	29	39	33	19	52	495
PA	**44**	Sports Complex	4.0 Fields	3	1	4	47	24	71	285
PA	**46**	Single Family Residential	15 DU	3	8	11	9	6	15	143
PA	**50**	City Park	0.7 Acres	0	0	0	0	0	0	1
PA	**51**	City Park	0.8 Acres	0	0	0	0	0	0	2
PA	**52**	City Park	0.7 Acres	0	0	0	0	0	0	1
PA	**17**	Single Family Residential	157 DU	30	88	118	99	58	157	1,495
PA	**20A/C**	Commercial (NC Overlay)	141.6 TSF	85	51	136	252	273	525	6,045
PA	**20B**	Commercial	62.1 TSF	37	23	60	110	120	230	2,651
PA	**23**	Single Family Residential	77 DU	15	43	58	49	28	77	733
PA	**24**	Single Family Residential	56 DU	11	31	42	35	21	56	533
PA	**25**	Single Family Residential	110 DU	21	62	83	69	41	110	1047
PA	**28**	Single Family Residential	31 DU	6	17	23	20	11	31	295
PA	**30**	Single Family Residential	31 DU	6	17	23	20	11	31	295
PA	**31A**	Single Family Residential	52 DU	10	29	39	33	19	52	495
PA	**31B**	Single Family Residential	63 DU	12	35	47	40	23	63	600
PA	**32A**	Single Family Residential	63 DU	12	35	47	40	23	63	600
PA	**32B**	Single Family Residential	54 DU	10	31	41	34	20	54	514
PA	**43A**	Single Family Residential	130 DU	25	73	98	82	48	130	1238
PA	**43B**	Single Family Residential	99 DU	19	55	74	62	37	99	942

Table D - Harmony Trip Generation (with Commercial Overlay)

Land Use		Units	A.M. Peak Hour In	A.M. Peak Hour Out	A.M. Peak Hour Total	P.M. Peak Hour In	P.M. Peak Hour Out	P.M. Peak Hour Total	Daily
PA 53	City Park	0.9 Acres	0	0	0	0	0	0	2
PA 54	City Park	0.8 Acres	0	0	0	0	0	0	2
PA 55	City Park	0.6 Acres	0	0	0	0	0	0	1
PA 56	City Park	1.0 Acres	0	0	0	0	0	0	2
PA 57	City Park	0.8 Acres	0	0	0	0	0	0	2
PA 33	Single Family Residential	105 DU	20	59	79	66	39	105	1000
PA 34	Single Family Residential	52 DU	10	29	39	33	19	52	495
PA 35	Single Family Residential	25 DU	5	14	19	16	9	25	238
	Commercial (NC Overlay)	10.9 TSF	7	3	10	19	21	40	465
PA 36	Single Family Residential	45 DU	9	25	34	28	17	45	428
PA 37	Single Family Residential	28 DU	5	16	21	18	10	28	267
PA 38	Single Family Residential	23 DU	4	13	17	14	9	23	219
PA 58	City Park	1.0 Acres	0	0	0	0	0	0	2
PA 59	City Park	0.8 Acres	0	0	0	0	0	0	2
PA 39	Single Family Residential	119 DU	23	66	89	75	44	119	1133
PA 40	Single Family Residential	195 DU	37	109	146	123	72	195	1856
	Commercial (NC Overlay)	10.9 TSF	7	3	10	19	21	40	465
PA 41	Single Family Residential	81 DU	15	46	61	51	30	81	771
PA 42	Single Family Residential	152 DU	29	85	114	96	56	152	1447
PA 47	City Park	6.5 Acres	0	0	0	0	0	0	12
Phase V Completion Trip Generation Summary									
	Gross Trip Generation		**1,012**	**2,162**	**3,174**	**2,666**	**1,793**	**4,459**	**43,931**
	Internal Trips:								
	Residential		**(175)**	**(237)**	**(412)**	**(197)**	**(181)**	**(378)**	**(4107)**
	City Park		**0**	**0**	**0**	**0**	**0**	**0**	**(52)**
	Recreation Center		**(22)**	**(11)**	**(33)**	**(22)**	**(22)**	**(44)**	**(541)**
	Elementary School		**(178)**	**(142)**	**(320)**	**(51)**	**(57)**	**(108)**	**(914)**
	Commercial		**(37)**	**(22)**	**(59)**	**(108)**	**(118)**	**(226)**	**(2600)**
	Pass By Trips		**0**	**0**	**0**	**(104)**	**(104)**	**(207)**	**(1968)**
	Net Trip Generation		**600**	**1,750**	**2,350**	**2,185**	**1,312**	**3,496**	**33,749**



1 Boulder Avenue/Base Line	2 Highland Avenue-Weaver Street/Base Line	3 Weaver Street/Water Street	4 Boulder Avenue/Webster Street	5 Palm Avenue/5th Street	
6 Church Avenue/5th Street	7 SR-210 Eastbound Ramps/5th Street-Greenspot Road	8 SR-210 Westbound Ramps/Greenspot Road	9 Lowe's Center/Greenspot Road	10 Access A/Greenspot Road	
11 Access C/Greenspot Road	12 Webster Street/Greenspot Road	13 Boulder Avenue/Greenspot Road	14 Orange Street/Greenspot Road	15 Church Street/Greenspot Road	
16 Weaver Street/Greenspot Road	17 Alta Vista/Greenspot Road	18 Greenspot Road-Garnet Street/Newport Avenue	19 Orange Street/SR-38	20 Orange Street/Colton Avenue	21 Orange Street/I-10 Westbound Ramps
22 Eureka Street/I-10 Eastbound Off-Ramp - Pearl Avenue	23 Orange Street/Pearl Avenue	24 Church Street/SR-38	25 University Street/SR-38		
26 University Street/I-10 Westbound On-Ramp - Central Avenue	27 University Street/I-10 Eastbound Off-Ramp	28 Judson Street/SR-38	29 Dearborn Street/SR-38	30 Wabash Avenue/SR-38	31 Crafton Avenue/SR-38
32 Garnet Street/SR-38	33 Bryant Street/SR-38	34 Bryant Street/Oak Glen Road	35 Bryant Street/Yucaipa Boulevard		
36 Sand Canyon Road – 14th Street/Yucaipa Boulevard	37 Live Oak Canyon Road/I-10 Westbound Ramps	38 Live Oak Canyon Road/I-10 Eastbound Ramps	39 New Greenspot Road/Old Greenspot Road	40 Newport Avenue/SR-38	

LSA

FIGURE 15

XXX/YYY AM/PM Peak Hour Trips

Harmony Specific Plan
Traffic Impact Analysis
Phase V Project Trip Assignment
(with Newport Avenue/SR-38 Connection)

RELATED PROJECT 8

EXHIBIT 1-2: LOCATION MAP

LEGEND:

⓪ = EXISTING INTERSECTION ANALYSIS LOCATION

⓪ = FUTURE INTERSECTION ANALYSIS LOCATION

N

4 PROJECTED FUTURE TRAFFIC

This section presents the traffic volumes estimated to be generated by the Project, as well as the Project's trip assignment onto the study area roadway network. .

Exhibit 1-1 illustrates the preliminary site plan. The Project is proposed to consist of 277 single family detached residential dwelling units, and is located north of Greenspot Road. For the purposes of this analysis, the Project opening year (i.e., the year when the Project is expected to be built out and occupied) is assumed to be 2018.

Vehicular access to and from the Project site is assumed to be provided via Driveway 1 and Driveway 2 on Greenspot Road. Both Driveway 1 and Driveway 2 are proposed to allow for full access.

4.1 PROJECT TRIP GENERATION

Trip generation represents the amount of traffic which is both attracted to and produced by a development. Determining traffic generation for a specific project is therefore based upon forecasting the amount of traffic that is expected to be both attracted to and produced by the specific land uses being proposed for a given development.

The ITE Trip Generation manual is a nationally recognized source for estimating site specific trip generation. ITE recently released an updated edition of the Trip Generation manual (9th Edition) in 2012. (4) Trip generation rates used to estimate Project traffic are shown in Table 4-1 and a summary of the Project's trip generation is shown in Table 4-2. The trip generation rates are based upon data collected by the Institute of Transportation Engineers (ITE) for Single-Family Detached Residential (ITE Land Use Code 210). The Project is anticipated to generate 2,637 trip-ends per day, with 208 vehicles per hour (VPH) during the AM peak hour and 277 VPH in the PM peak hour.

TABLE 4-1: PROJECT TRIP GENERATION RATES

Land Use[1]	Units[2]	ITE LU Code	AM Peak Hour			PM Peak Hour			Daily
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Single Family Detached Res.	DU	210	0.19	0.56	0.75	0.63	0.37	1.00	9.52

[1] Trip Generation Source: Institute of Transportation Engineers (ITE), Trip Generation Manual, Ninth Edition (2012).
[2] DU = Dwelling Units

TABLE 4-2: PROJECT TRIP GENERATION SUMMARY

Land Use	Quantity	Units[1]	AM Peak Hour			PM Peak Hour			Daily
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Single Family Detached Res.	277	DU	53	155	208	175	102	277	2,637

[1] DU = Dwelling Units

4.2 PROJECT TRIP DISTRIBUTION

The Project trip distribution and assignment process represents the directional orientation of traffic to and from the Project site. The potential interaction between the planned land uses and surrounding regional access routes are considered, to identify the routes where Project traffic would distribute. The Project trip distribution was developed based on anticipated travel patterns to and from the Project site.

The trip distribution pattern of passenger cars is heavily influenced by the geographical location of the site, the location of surrounding uses, and the proximity to the regional freeway system. Surrounding uses considered in developing the Project trip distribution include shopping opportunities, employment opportunities, and the location of local schools.

Exhibit 4-1 illustrates the Project trip distribution for outbound trips during the AM peak hour. Exhibit 4-2 illustrates the Project trip distribution for inbound trips during the AM peak hour and both outbound and inbound trips during the PM peak hour. The trip distribution is primarily based on the existing roadway system. The Project trip distribution patterns are also greatly affected by existing / near-term development patterns in the vicinity of the Project site, and have been reviewed by City staff as part of the scoping process.

4.3 MODAL SPLIT

The traffic reducing potential of public transit, walking or bicycling have not been considered in this TIA. Essentially, the traffic projections are "conservative" in that these alternative travel modes might be able to reduce the forecasted traffic volumes.

4.4 PROJECT TRIP ASSIGNMENT

The assignment of traffic from the Project area to the adjoining roadway system is based upon the Project trip generation, trip distribution, and the arterial highway and local street system improvements that would be in place by the time of initial occupancy of the Project. Based on the identified Project traffic generation and trip distribution patterns, Project average daily traffic (ADT), AM and PM peak hour intersection turning movement volumes are shown on Exhibit 4-3.

EXHIBIT 4-1: PROJECT TRIP DISTRIBUTION (AM PEAK-OUTBOUND)

LEGEND:

10 = PERCENT FROM PROJECT

N

EXHIBIT 4-2: PROJECT TRIP DISTRIBUTION (AM PEAK INBOUND, PM PEAK)

LEGEND:

10 = PERCENT TO/FROM PROJECT

N

URBAN CROSSROADS

EXHIBIT 4-3: PROJECT ONLY TRAFFIC VOLUMES

1 SR-210 EB Ramps & 5th St. 0(0) 0(0) 8(26) → 23(15) / ← 23(26) 8(26) → / 0(0) ←	**2** SR-210 WB Ramps & Greenspot Rd. ← 23(15) / ← 47(41) 0(0) → / 16(53) → / 0(0) 0(0) 13(44) ↑	**3** Boulder Av. & Greenspot Rd. 0(0) 0(0) 8(26) → 23(15) / ← 70(56) / ← 39(15) 0(0) → / 29(96) → / 0(0) ← / 0(0) 0(0) 8(26) ↑	**4** Orange St. & Pioneer Av. 16(0) 23(15) ↓ 0(0) → 0(0) / ← 0(0) / ← 0(0) 0(0) → / 0(0) → / 0(0) ← / 0(0) 8(26) 0(0) ↑
5 Church St. & Greenspot Rd. 0(0) 0(0) 3(9) → 8(5) / ← 132(87) / ← 0(0) 0(0) → / 45(149) → / 0(0) ← / 0(0) 0(0) 0(0) ↑	**6** Weaver St. & Greenspot Rd. 0(0) 3(9) → 8(5) / ← 140(92) 0(0) → / 48(158) →	**7** Driveway 1 & Greenspot Rd. 74(48) 4(2) → 1(4) / ← 74(49) 25(83) → / 25(84) →	**8** Driveway 2 & Greenspot Rd. 74(49) 4(3) → 2(5) / ← 1(4) 25(84) → / 4(2) →

LEGEND:

10.0 = VEHICLES PER DAY (1000'S)

10(10) = AM(PM) PEAK HOUR VOLUMES

N

RELATED PROJECT 9

KUNZMAN ASSOCIATES, INC.

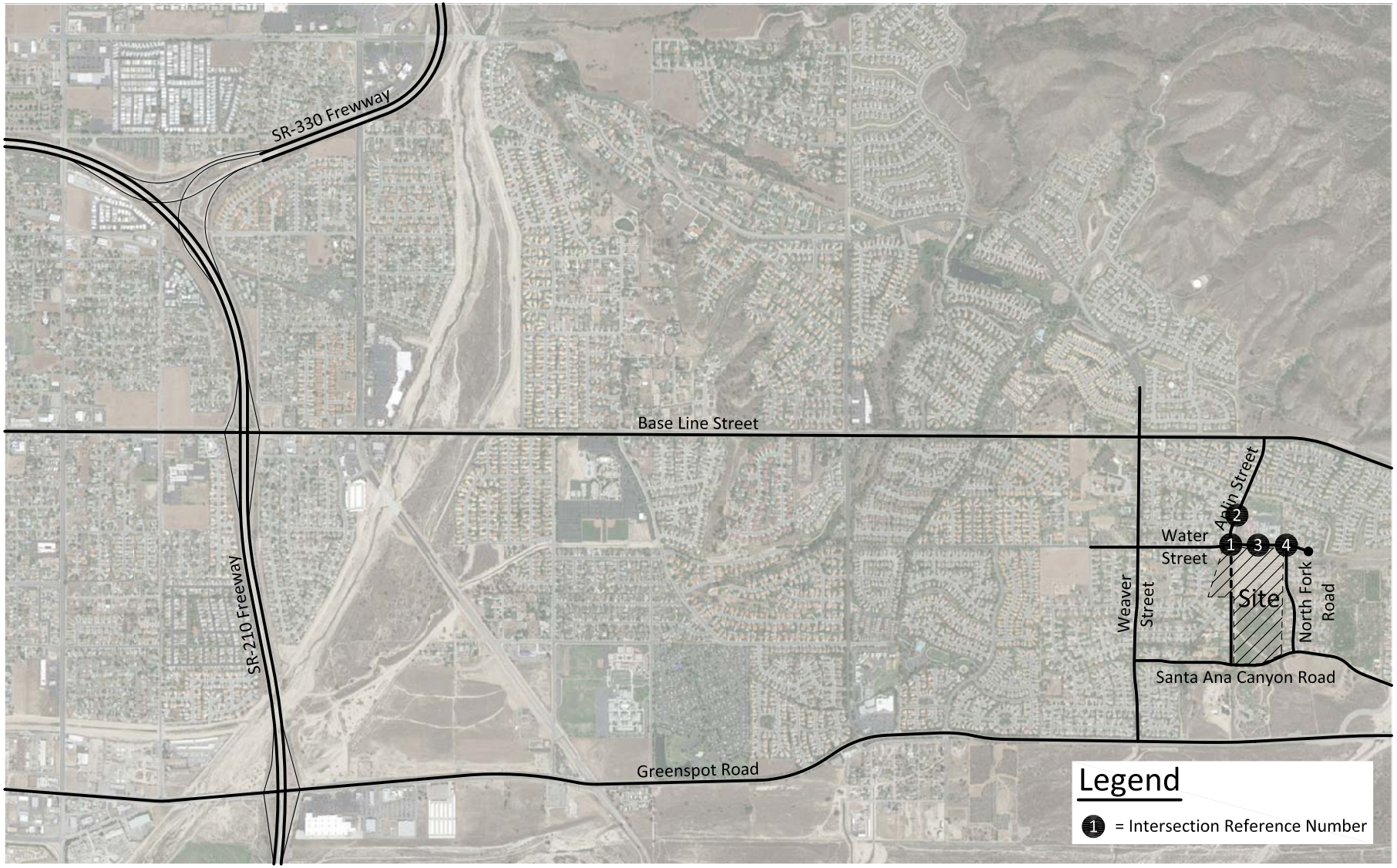
TENTATIVE TRACT MAP NO. 18935

TRAFFIC IMPACT ANALYSIS (REVISED)

April 2, 2015

Traffic Engineering | Transportation Planning | Parking | Noise/Vibration | Expert Witness
Air Quality | Global Climate Change | Health Risk Assessment

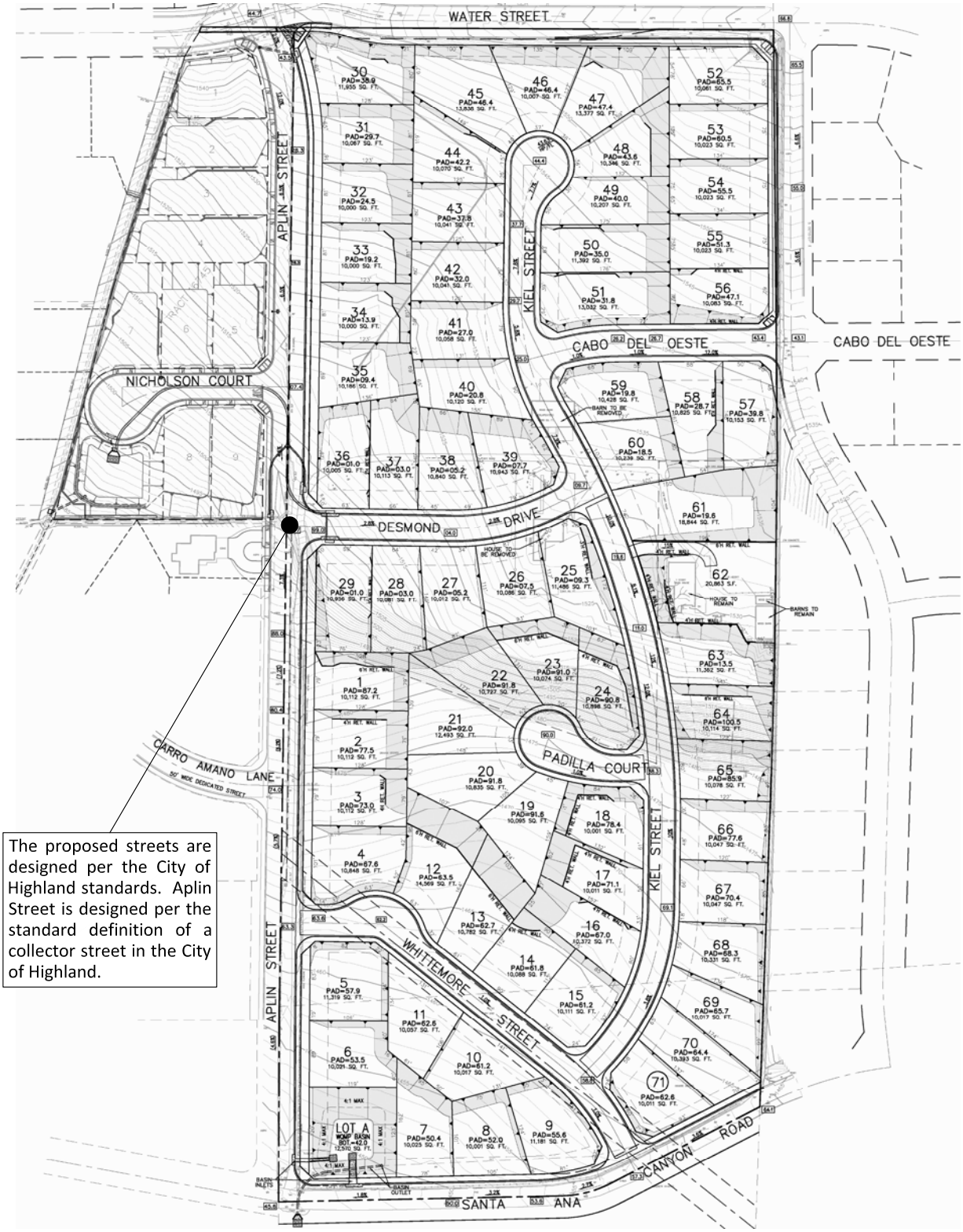
Figure 1
Project Location Map



5799/1

KUNZMAN ASSOCIATES, INC.
OVER 35 YEARS OF EXCELLENT SERVICE

Figure 2
Site Plan



5799/2

Table 2

Project Trip Generation[1]

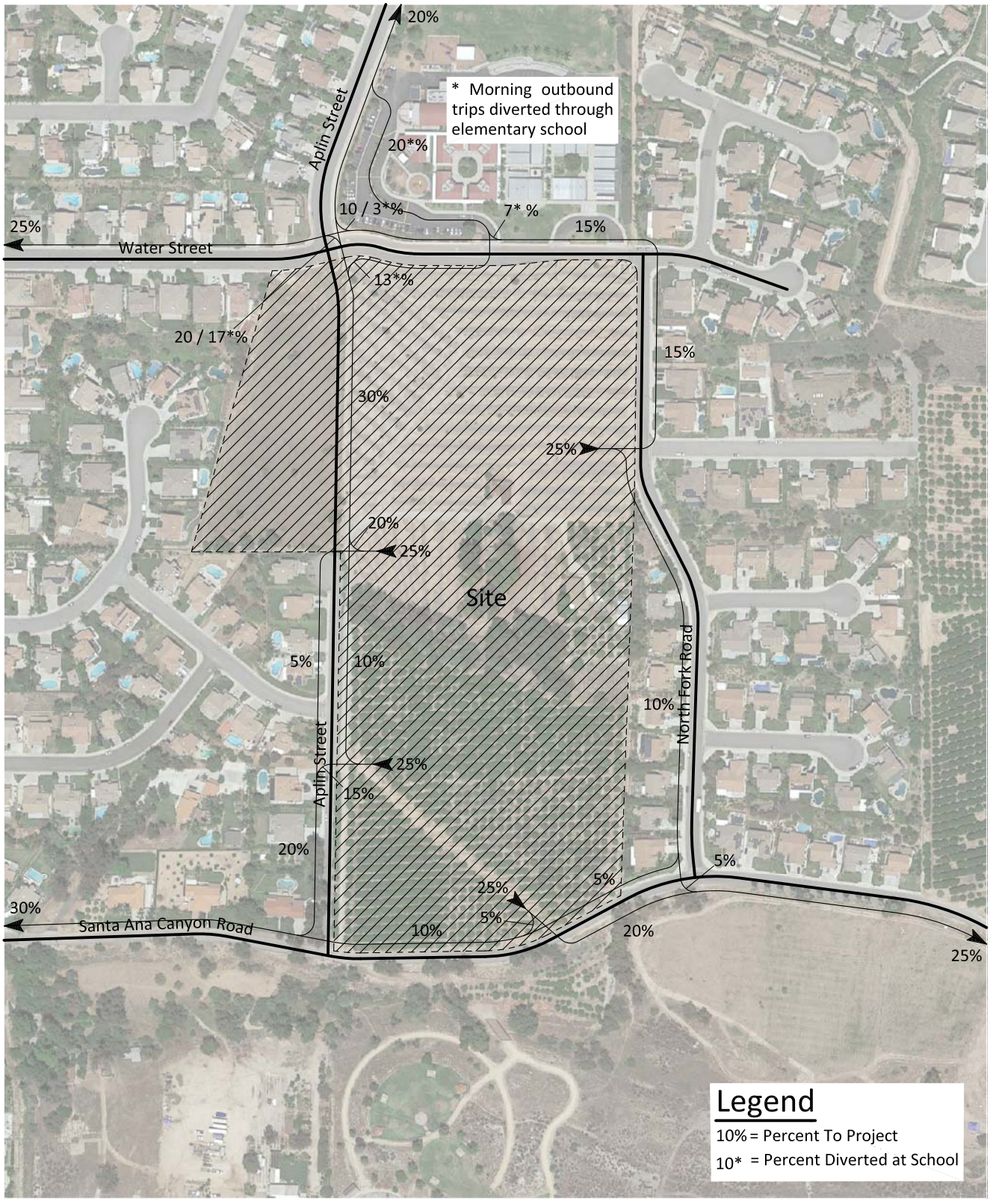
Land Use	Quantity	Units[3]	Peak Hour						Daily
			Morning			Afternoon[2]			
			Inbound	Outbound	Total	Inbound	Outbound	Total	
Trip Generation Rates									
Single-Family Detached Residential		DU	0.19	0.56	0.75	0.63	0.37	1.00	9.52
Trips Generated									
Single-Family Detached Residential	80	DU	15	45	60	50	30	80	762

[1] Source: Institute of Transportation Engineers, Trip Generation, 9th Edition, 2012, Land Use Category 210.

[2] Because of the proximity to the adjacent school the morning and afternoon peak periods counted were to capture the morning arrival and afternoon dismissal period of the school. In order to provide a "conservative" analysis, the evening peak hour trip generation was used for the afternoon peak hour.

[3] DU = Dwelling Units

Figure 9
Project Outbound Trip Distribution

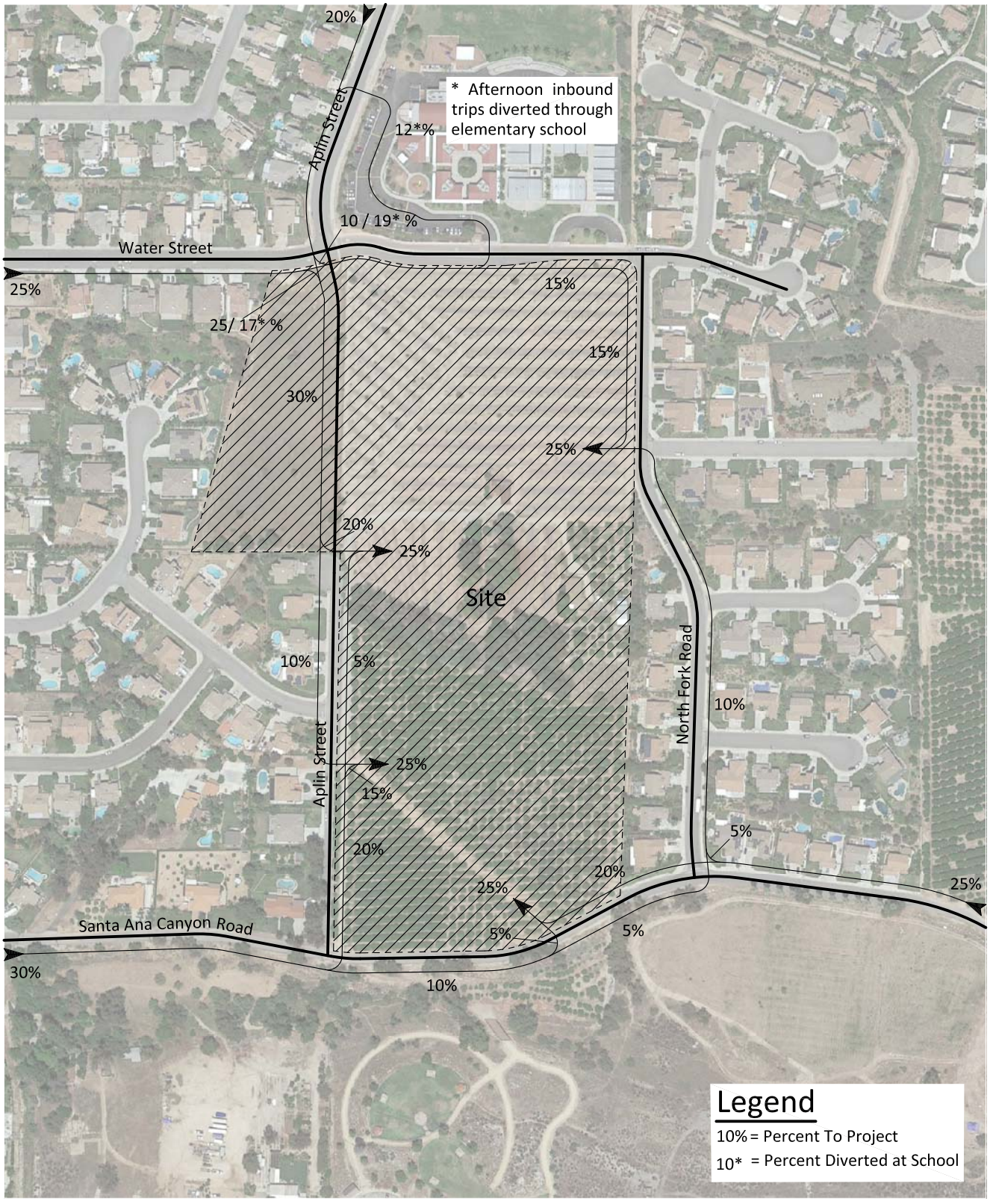


5799/9

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 10
Project Inbound Trip Distribution

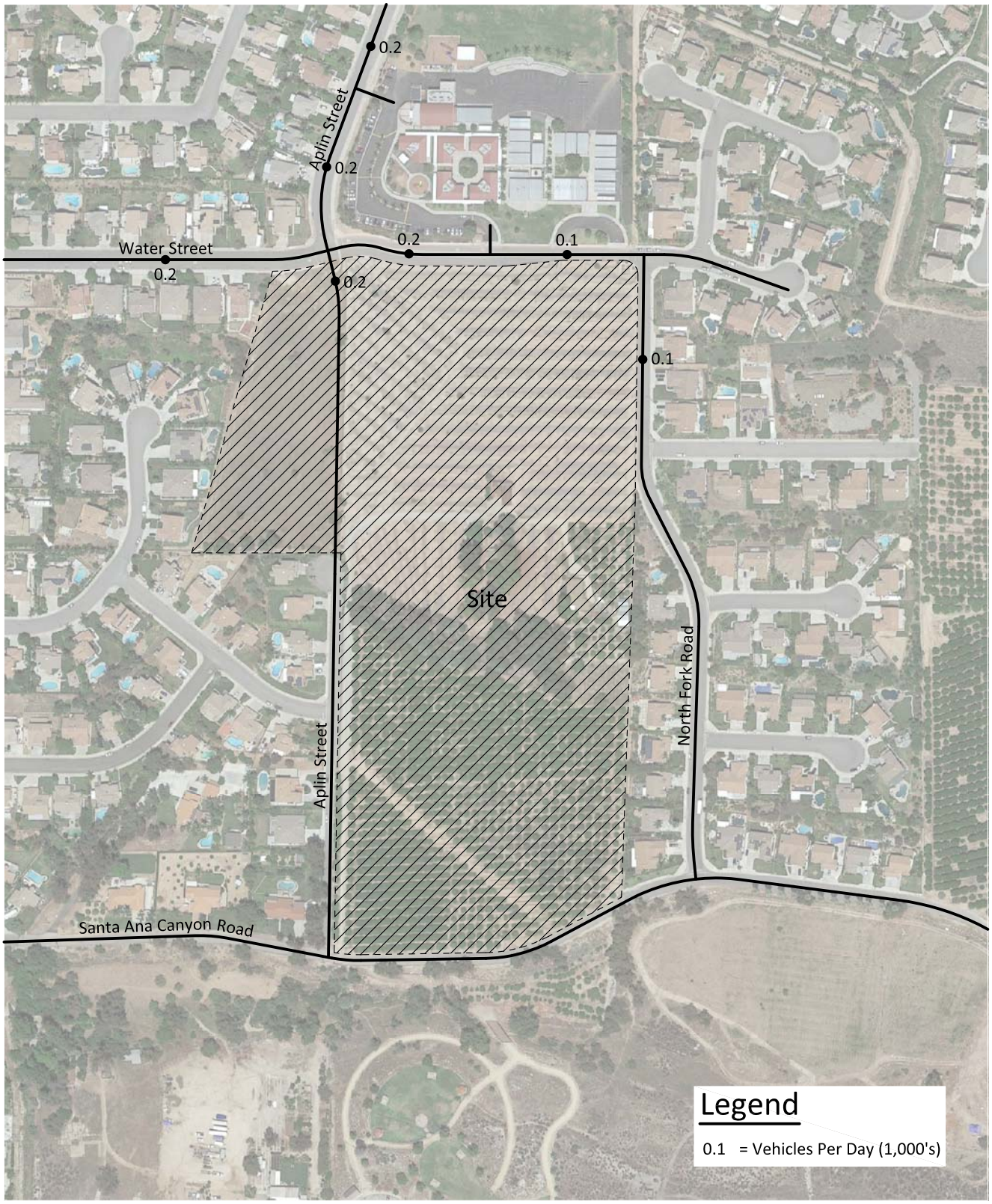


5799/10

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 11
Project Average Daily Traffic Volumes

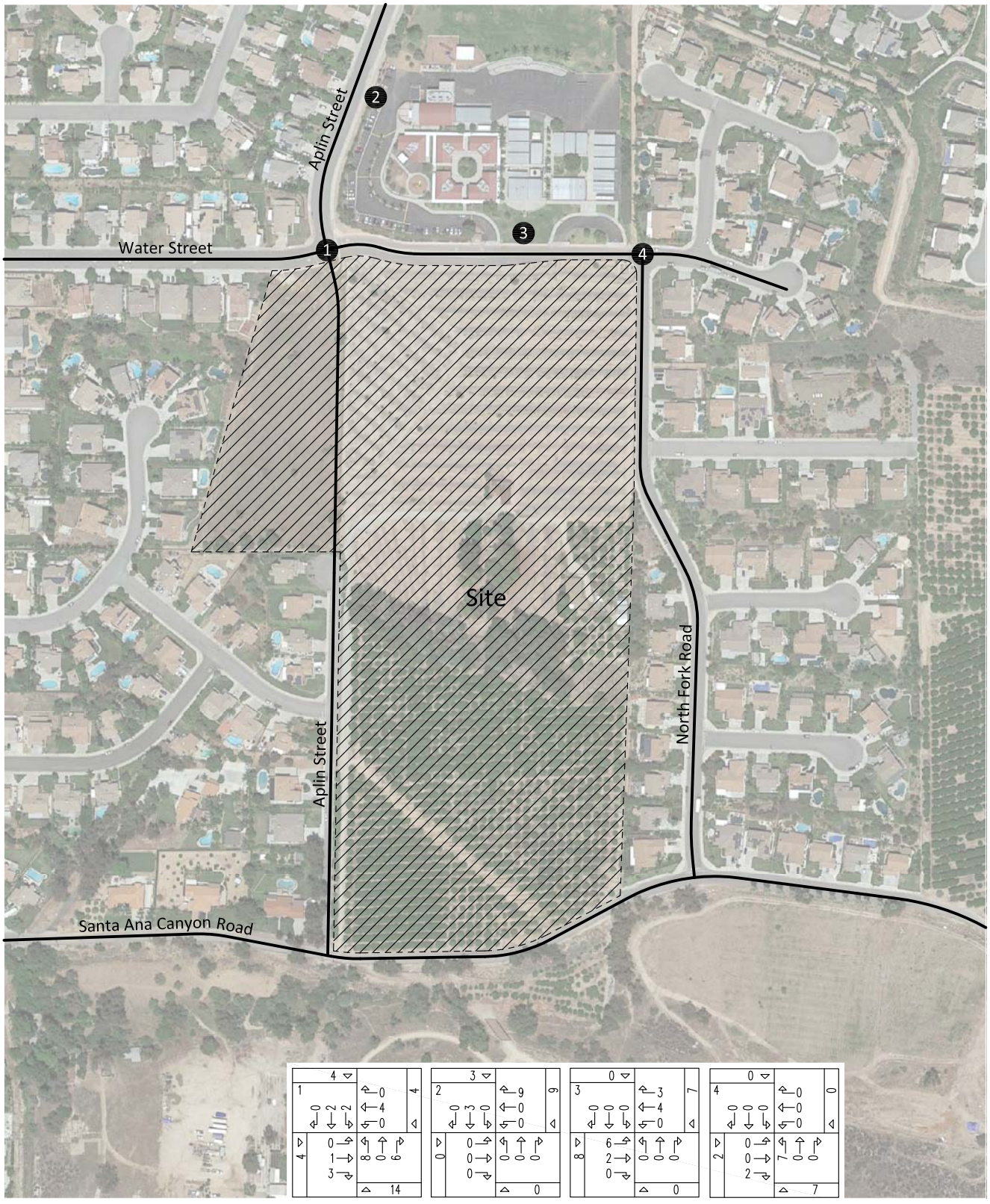


5799/11

KUNZMAN ASSOCIATES, INC.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 12
Project Morning Peak Hour Intersection Turning Movement Volumes

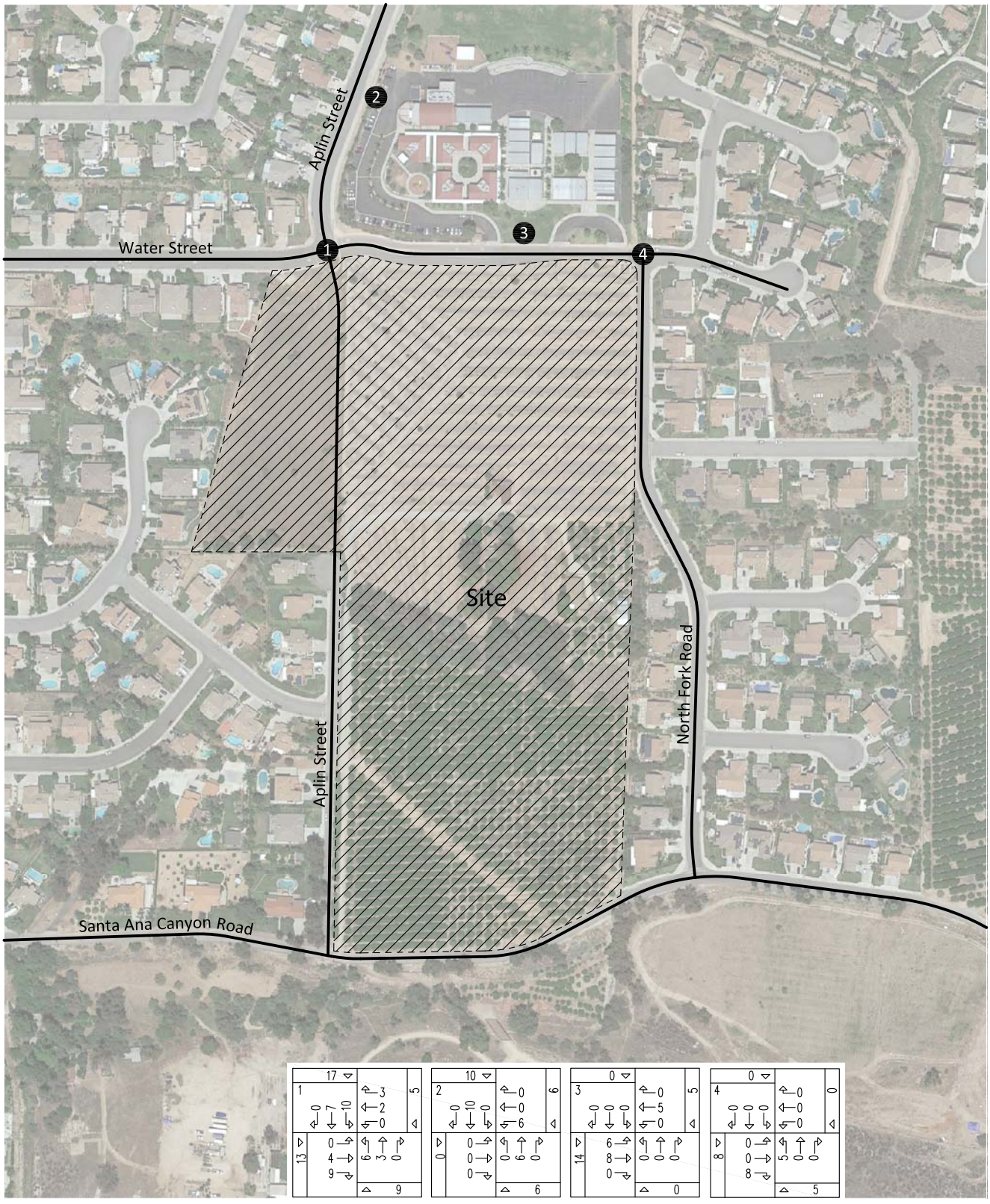


5799/12

KUNZMAN ASSOCIATES, INC. Intersection reference numbers are in upper left corner of turning movement boxes.

OVER 35 YEARS OF EXCELLENT SERVICE

Figure 13
Project Afternoon Peak Hour Intersection Turning Movement Volumes



5799/13

Intersection reference numbers are in upper left corner of turning movement boxes.

RELATED PROJECT 10

No.	Name	Description	Land Use	Sub Land Use	ITE Code	Units	Data Type	Size	Rates							Trips						
									Daily	AM Peak Hour			PM Peak Hour			Daily	AM Peak Hour			PM Peak Hour		
										Enter	Exit	Total	Enter	Exit	Total		Enter	Exit	Total	Enter	Exit	Total
1	TTM No. 18979	55 SFD	Residential	Single-Family Detached Housir	210	Dwelling Units	Rate	55	9.52	25%	75%	0.75	63%	37%	1.00	524	10	31	41	35	20	55

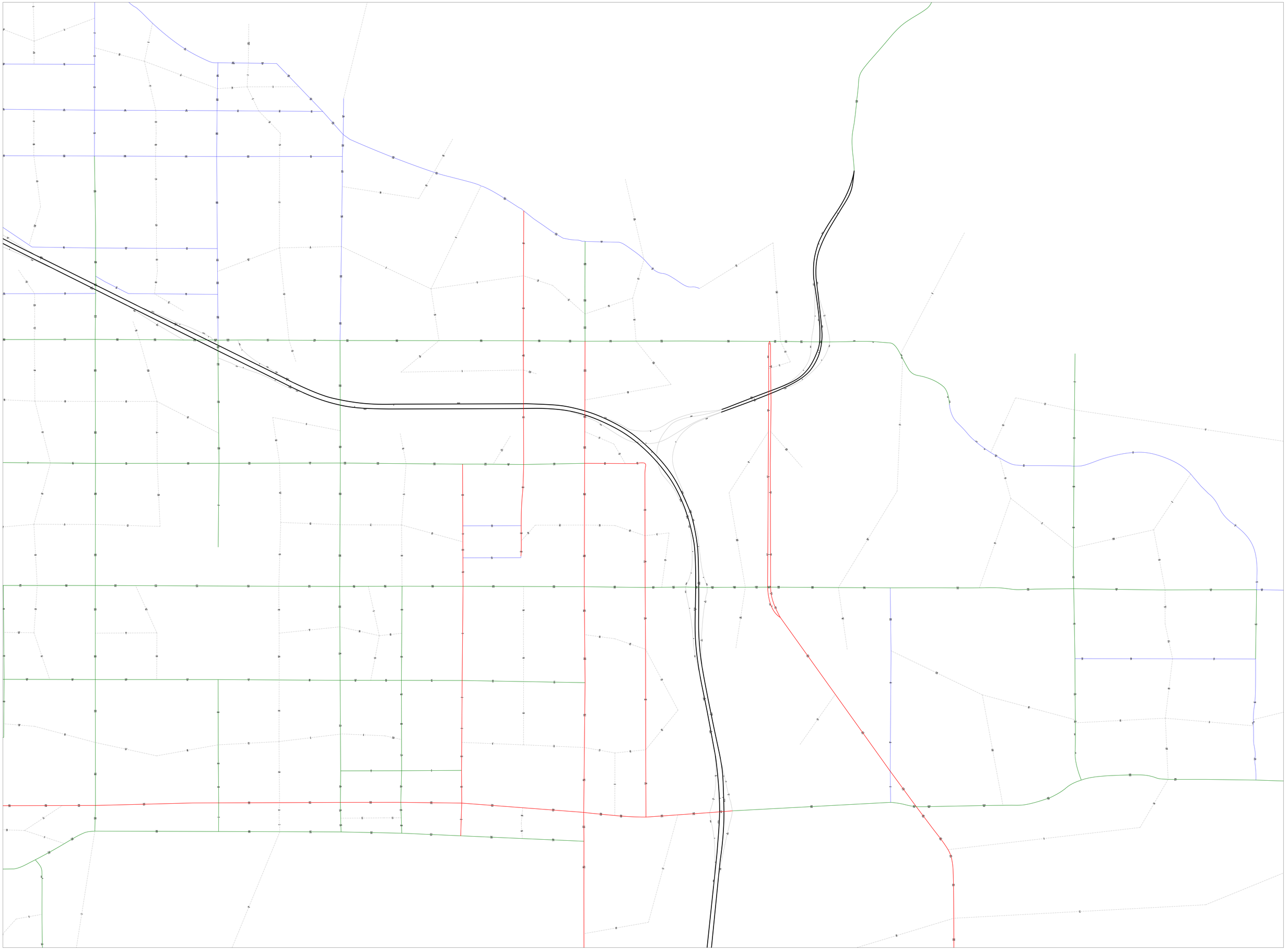
APPENDIX E

TRAFFIC MODEL POST-PROCESSING WORKSHEETS

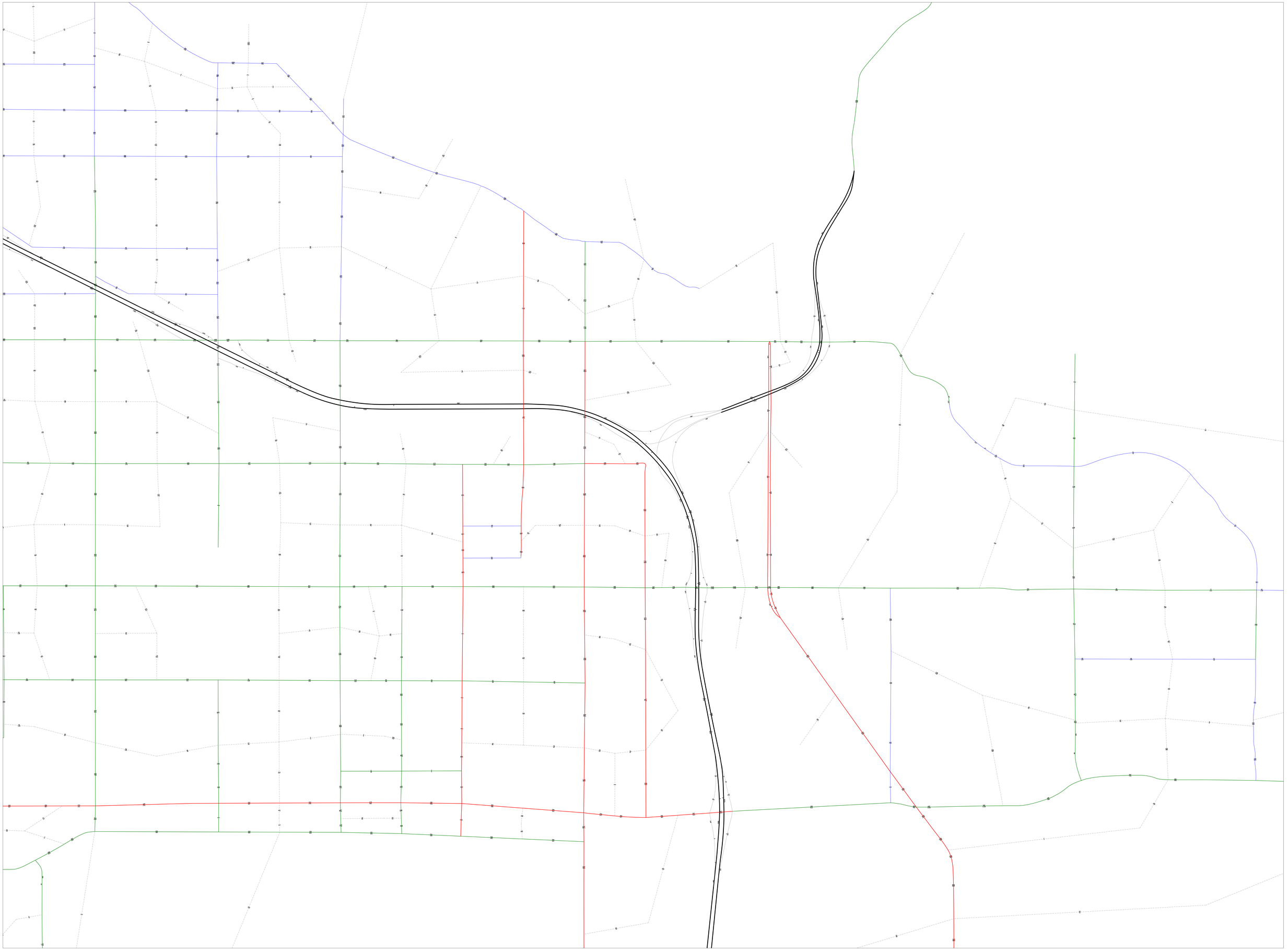
APPENDIX E-I

MODEL PLOTS

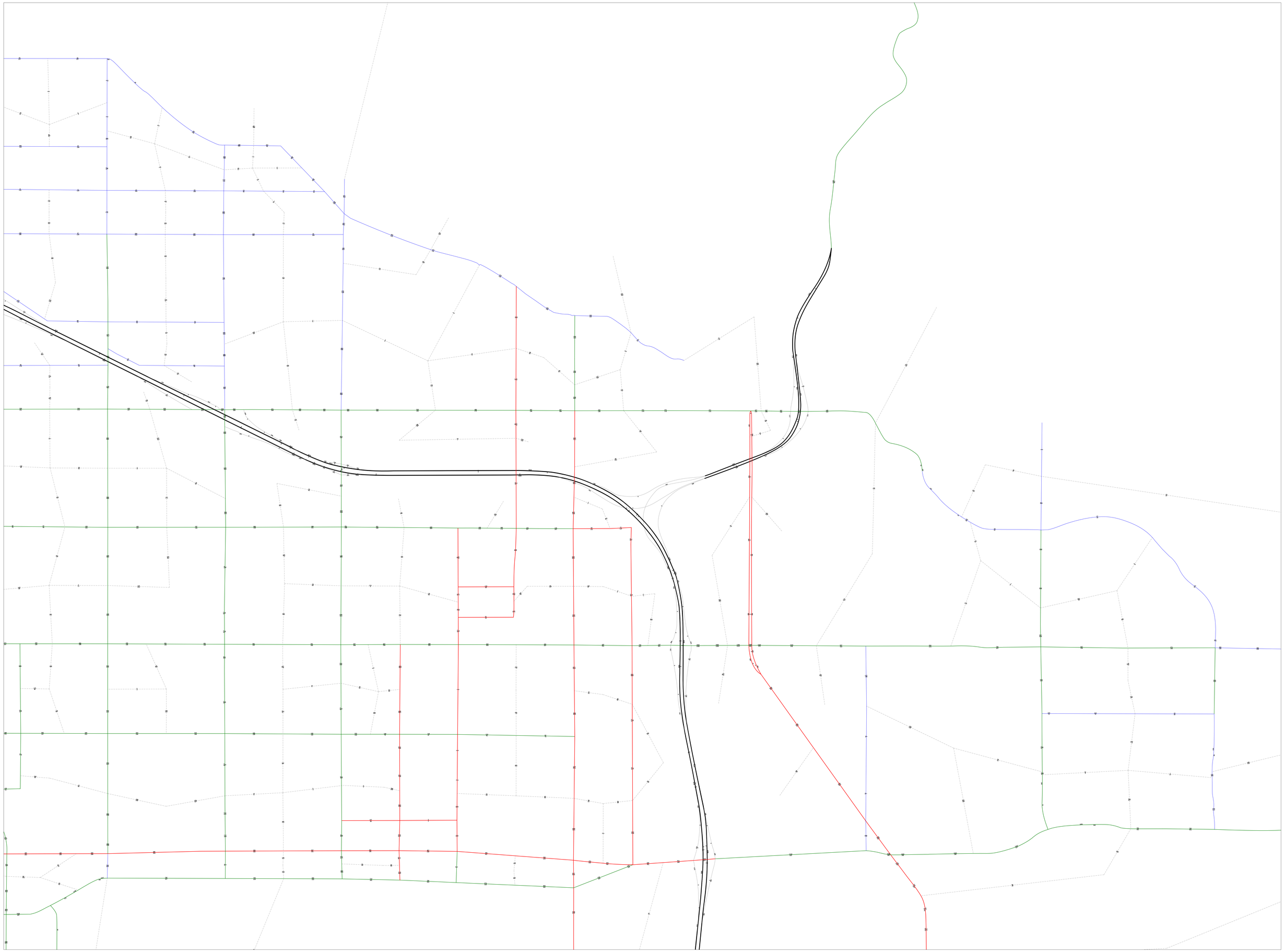
SBTAM Year 2008 AM Peak Hour



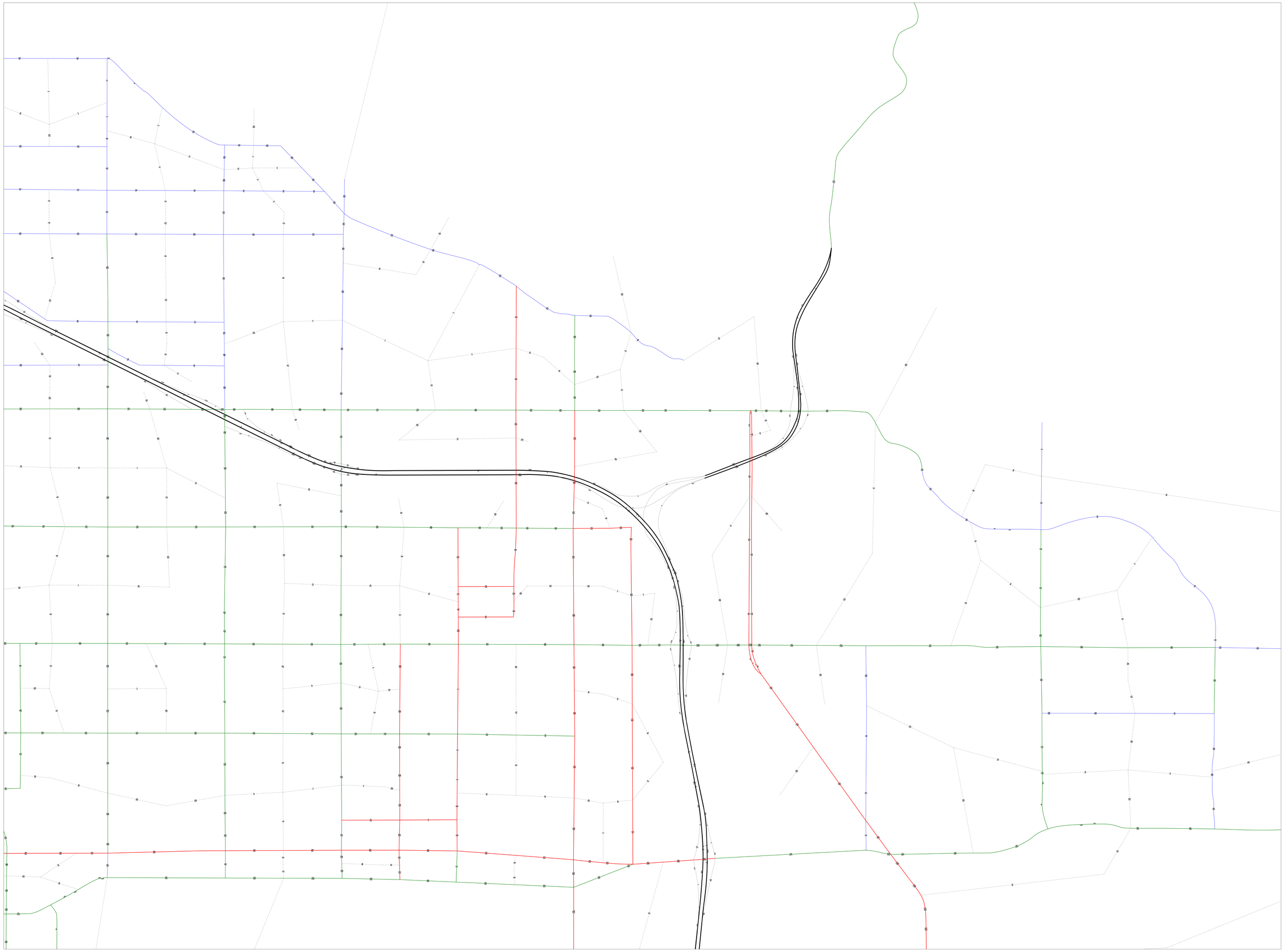
SBTAM Year 2008 PM Peak Hour



SBTAM Year 2035 AM Peak Hour



SBTAM Year 2035 PM Peak Hour



APPENDIX E-II

TRAFFIC MODEL POST-PROCESSING WORKSHEETS

1. SR-210 EB Ramps at 5th Street

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	0	NORTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	1259
SOUTH BOUND	LEFT	129	SOUTHBOUND	
	THRU	0	IN ...	388
	RIGHT	126	OUT ...	0
EAST BOUND	LEFT	0	EASTBOUND	
	THRU	356	IN ...	855
	RIGHT	351	OUT ...	1529
WEST BOUND	LEFT	848	WESTBOUND	
	THRU	927	IN ...	2176
	RIGHT	0	OUT ...	632

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	129	245
	THRU	0	0
	RIGHT	126	213
EAST BOUND	LEFT	0	0
	THRU	356	465
	RIGHT	351	399
WEST BOUND	LEFT	848	1,094
	THRU	927	1,316
	RIGHT	0	0

2. SR-210 WB Ramps at Greenspot Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	362	NORTHBOUND	
	THRU	0	IN ...	814
	RIGHT	342	OUT ...	0
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	525
EAST BOUND	LEFT	80	EASTBOUND	
	THRU	416	IN ...	643
	RIGHT	0	OUT ...	2172
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	1409	IN ...	2182
	RIGHT	302	OUT ...	943

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	362	407
	THRU	0	0
	RIGHT	342	473
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	80	108
	THRU	416	636
	RIGHT	0	0
WEST BOUND	LEFT	0	0
	THRU	1,409	1,838
	RIGHT	302	526

3. Lowes Center at Greenspot Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	60	NORTHBOUND	
	THRU	0	IN ...	72
	RIGHT	12	OUT ...	97
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	1
EAST BOUND	LEFT	1	EASTBOUND	
	THRU	680	IN ...	946
	RIGHT	80	OUT ...	2,175
WEST BOUND	LEFT	17	WESTBOUND	
	THRU	1644	IN ...	2,132
	RIGHT	0	OUT ...	877

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	60	64
	THRU	0	0
	RIGHT	12	14
SOUTH BOUND	LEFT	0	3
	THRU	0	0
	RIGHT	0	13
EAST BOUND	LEFT	1	20
	THRU	680	1,007
	RIGHT	80	85
WEST BOUND	LEFT	17	22
	THRU	1,644	2,281
	RIGHT	0	3

4. Shopping Center at Greenspot Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	74	NORTHBOUND	
	THRU	0	IN ...	98
	RIGHT	24	OUT ...	129
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
EAST BOUND	LEFT	0	EASTBOUND	
	THRU	606	IN ...	865
	RIGHT	74	OUT ...	2,132
WEST BOUND	LEFT	55	WESTBOUND	
	THRU	1587	IN ...	2,113
	RIGHT	0	OUT ...	815

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	74	83
	THRU	0	0
	RIGHT	24	29
SOUTH BOUND	LEFT	0	4
	THRU	0	0
	RIGHT	0	14
EAST BOUND	LEFT	0	15
	THRU	606	907
	RIGHT	74	86
WEST BOUND	LEFT	55	69
	THRU	1,587	2,207
	RIGHT	0	5

5. Boulder Avenue at Greenspot Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	188	NORTHBOUND	
	THRU	199	IN ...	920
	RIGHT	234	OUT ...	1,339
SOUTH BOUND	LEFT	39	SOUTHBOUND	
	THRU	324	IN ...	786
	RIGHT	8	OUT ...	396
EAST BOUND	LEFT	15	EASTBOUND	
	THRU	384	IN ...	694
	RIGHT	132	OUT ...	1,924
WEST BOUND	LEFT	422	WESTBOUND	
	THRU	1272	IN ...	2,137
	RIGHT	79	OUT ...	877

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	188	316
	THRU	199	290
	RIGHT	234	314
SOUTH BOUND	LEFT	39	75
	THRU	324	691
	RIGHT	8	51
EAST BOUND	LEFT	15	330
	THRU	384	534
	RIGHT	132	185
WEST BOUND	LEFT	422	553
	THRU	1,272	1,672
	RIGHT	79	158

6. Orange Street at Greenspot Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	5	NORTHBOUND	
	THRU	7	IN ...	13
	RIGHT	1	OUT ...	7
SOUTH BOUND	LEFT	120	SOUTHBOUND	
	THRU	3	IN ...	541
	RIGHT	418	OUT ...	262
EAST BOUND	LEFT	148	EASTBOUND	
	THRU	513	IN ...	883
	RIGHT	2	OUT ...	2,134
WEST BOUND	LEFT	2	WESTBOUND	
	THRU	1347	IN ...	1,820
	RIGHT	107	OUT ...	854

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	5	58
	THRU	7	7
	RIGHT	1	5
SOUTH BOUND	LEFT	120	134
	THRU	3	3
	RIGHT	418	445
EAST BOUND	LEFT	148	158
	THRU	513	728
	RIGHT	2	20
WEST BOUND	LEFT	2	2
	THRU	1,347	1,877
	RIGHT	107	115

7. Church Street at Greenspot Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	21	NORTHBOUND	
	THRU	12	IN ...	36
	RIGHT	3	OUT ...	28
SOUTH BOUND	LEFT	34	SOUTHBOUND	
	THRU	7	IN ...	401
	RIGHT	339	OUT ...	357
EAST BOUND	LEFT	228	EASTBOUND	
	THRU	349	IN ...	805
	RIGHT	16	OUT ...	1,765
WEST BOUND	LEFT	5	WESTBOUND	
	THRU	1083	IN ...	1,514
	RIGHT	104	OUT ...	605

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	21	22
	THRU	12	13
	RIGHT	3	4
SOUTH BOUND	LEFT	34	45
	THRU	7	7
	RIGHT	339	374
EAST BOUND	LEFT	228	268
	THRU	349	556
	RIGHT	16	17
WEST BOUND	LEFT	5	5
	THRU	1,083	1,476
	RIGHT	104	125

8. Club View Drive/Merris Street at Greenspot Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	2	NORTHBOUND	
	THRU	0	IN ...	-2
	RIGHT	3	OUT ...	59
SOUTH BOUND	LEFT	9	SOUTHBOUND	
	THRU	2	IN ...	268
	RIGHT	233	OUT ...	53
EAST BOUND	LEFT	53	EASTBOUND	
	THRU	298	IN ...	571
	RIGHT	1	OUT ...	1,553
WEST BOUND	LEFT	2	WESTBOUND	
	THRU	996	IN ...	1,347
	RIGHT	13	OUT ...	520

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	2	2
	THRU	0	0
	RIGHT	3	3
SOUTH BOUND	LEFT	9	10
	THRU	2	19
	RIGHT	233	254
EAST BOUND	LEFT	53	61
	THRU	298	511
	RIGHT	1	15
WEST BOUND	LEFT	2	25
	THRU	996	1,392
	RIGHT	13	14

9. Gold Buckle Road at Greenspot Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	0	NORTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	93
	RIGHT	93	OUT ...	20
EAST BOUND	LEFT	20	EASTBOUND	
	THRU	287	IN ...	517
	RIGHT	0	OUT ...	1353
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	924	IN ...	1260
	RIGHT	0	OUT ...	497

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	93	99
EAST BOUND	LEFT	20	21
	THRU	287	497
	RIGHT	0	0
WEST BOUND	LEFT	0	0
	THRU	924	1,315
	RIGHT	0	0

10. Project Dwy 2 at Greenspot Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	0	NORTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
EAST BOUND	LEFT	0	EASTBOUND	
	THRU	287	IN ...	497
	RIGHT	0	OUT ...	1260
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	924	IN ...	1260
	RIGHT	0	OUT ...	497

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	287	497
	RIGHT	0	0
WEST BOUND	LEFT	0	0
	THRU	924	1,315
	RIGHT	0	0

1. SR-210 EB Ramps at 5th Street

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	0	NORTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	904
SOUTH BOUND	LEFT	325	SOUTHBOUND	
	THRU	2	IN ...	981
	RIGHT	173	OUT ...	0
EAST BOUND	LEFT	0	EASTBOUND	
	THRU	958	IN ...	1966
	RIGHT	503	OUT ...	747
WEST BOUND	LEFT	339	WESTBOUND	
	THRU	445	IN ...	931
	RIGHT	0	OUT ...	2227

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	325	745
	THRU	2	3
	RIGHT	173	233
EAST BOUND	LEFT	0	0
	THRU	958	1,482
	RIGHT	503	533
WEST BOUND	LEFT	339	529
	THRU	445	624
	RIGHT	0	0

2. SR-210 WB Ramps at Greenspot Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	173	NORTHBOUND	
	THRU	0	IN ...	612
	RIGHT	485	OUT ...	0
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	799
EAST BOUND	LEFT	238	EASTBOUND	
	THRU	1070	IN ...	2252
	RIGHT	0	OUT ...	941
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	621	IN ...	1287
	RIGHT	295	OUT ...	2411

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	173	183
	THRU	0	0
	RIGHT	485	750
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	238	341
	THRU	1,070	1,918
	RIGHT	0	0
WEST BOUND	LEFT	0	0
	THRU	621	979
	RIGHT	295	483

3. Lowes Center at Greenspot Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	129	NORTHBOUND	
	THRU	0	IN ...	180
	RIGHT	51	OUT ...	166
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
EAST BOUND	LEFT	0	EASTBOUND	
	THRU	1401	IN ...	2,394
	RIGHT	137	OUT ...	1,275
WEST BOUND	LEFT	29	WESTBOUND	
	THRU	775	IN ...	1,175
	RIGHT	0	OUT ...	2,308

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	129	137
	THRU	0	0
	RIGHT	51	58
SOUTH BOUND	LEFT	0	8
	THRU	0	0
	RIGHT	0	37
EAST BOUND	LEFT	0	38
	THRU	1,401	2,256
	RIGHT	137	145
WEST BOUND	LEFT	29	34
	THRU	775	1,276
	RIGHT	0	5

4. Shopping Center at Greenspot Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	149	NORTHBOUND	
	THRU	0	IN ...	229
	RIGHT	80	OUT ...	227
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	3
EAST BOUND	LEFT	3	EASTBOUND	
	THRU	1284	IN ...	2,287
	RIGHT	144	OUT ...	1,179
WEST BOUND	LEFT	83	WESTBOUND	
	THRU	659	IN ...	1,113
	RIGHT	0	OUT ...	2,220

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	149	183
	THRU	0	0
	RIGHT	80	105
SOUTH BOUND	LEFT	0	10
	THRU	0	0
	RIGHT	0	39
EAST BOUND	LEFT	3	33
	THRU	1,284	2,139
	RIGHT	144	176
WEST BOUND	LEFT	83	104
	THRU	659	1,096
	RIGHT	0	10

5. Boulder Avenue at Greenspot Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	164	NORTHBOUND	
	THRU	313	IN ...	1,469
	RIGHT	506	OUT ...	1,545
SOUTH BOUND	LEFT	59	SOUTHBOUND	
	THRU	307	IN ...	573
	RIGHT	11	OUT ...	664
EAST BOUND	LEFT	27	EASTBOUND	
	THRU	884	IN ...	2,026
	RIGHT	288	OUT ...	1,014
WEST BOUND	LEFT	238	WESTBOUND	
	THRU	497	IN ...	1,057
	RIGHT	54	OUT ...	1,901

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	164	330
	THRU	313	545
	RIGHT	506	604
SOUTH BOUND	LEFT	59	155
	THRU	307	501
	RIGHT	11	44
EAST BOUND	LEFT	27	306
	THRU	884	1,344
	RIGHT	288	716
WEST BOUND	LEFT	238	328
	THRU	497	748
	RIGHT	54	114

6. Orange Street at Greenspot Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	4	NORTHBOUND	
	THRU	1	IN ...	7
	RIGHT	2	OUT ...	10
SOUTH BOUND	LEFT	32	SOUTHBOUND	
	THRU	0	IN ...	103
	RIGHT	71	OUT ...	173
EAST BOUND	LEFT	121	EASTBOUND	
	THRU	1309	IN ...	1,889
	RIGHT	7	OUT ...	1,040
WEST BOUND	LEFT	3	WESTBOUND	
	THRU	697	IN ...	1,019
	RIGHT	51	OUT ...	1,795

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	4	39
	THRU	1	1
	RIGHT	2	5
SOUTH BOUND	LEFT	32	39
	THRU	0	0
	RIGHT	71	76
EAST BOUND	LEFT	121	129
	THRU	1,309	1,896
	RIGHT	7	66
WEST BOUND	LEFT	3	3
	THRU	697	1,052
	RIGHT	51	62

7. Church Street at Greenspot Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	19	NORTHBOUND	
	THRU	3	IN ...	23
	RIGHT	1	OUT ...	30
SOUTH BOUND	LEFT	48	SOUTHBOUND	
	THRU	12	IN ...	299
	RIGHT	233	OUT ...	366
EAST BOUND	LEFT	314	EASTBOUND	
	THRU	923	IN ...	1,667
	RIGHT	16	OUT ...	1,010
WEST BOUND	LEFT	2	WESTBOUND	
	THRU	498	IN ...	822
	RIGHT	45	OUT ...	1,407

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	19	21
	THRU	3	3
	RIGHT	1	1
SOUTH BOUND	LEFT	48	69
	THRU	12	13
	RIGHT	233	278
EAST BOUND	LEFT	314	357
	THRU	923	1,368
	RIGHT	16	18
WEST BOUND	LEFT	2	3
	THRU	498	787
	RIGHT	45	58

8. Club View Drive/Merris Street at Greenspot Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	0	NORTHBOUND	
	THRU	0	IN ...	69
	RIGHT	3	OUT ...	0
SOUTH BOUND	LEFT	4	SOUTHBOUND	
	THRU	0	IN ...	88
	RIGHT	99	OUT ...	231
EAST BOUND	LEFT	203	EASTBOUND	
	THRU	716	IN ...	1,357
	RIGHT	3	OUT ...	783
WEST BOUND	LEFT	3	WESTBOUND	
	THRU	407	IN ...	680
	RIGHT	4	OUT ...	1,180

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	3	68
SOUTH BOUND	LEFT	4	4
	THRU	0	0
	RIGHT	99	109
EAST BOUND	LEFT	203	227
	THRU	716	1,162
	RIGHT	3	3
WEST BOUND	LEFT	3	3
	THRU	407	696
	RIGHT	4	4

9. Gold Buckle Road at Greenspot Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	0	NORTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
SOUTH BOUND	LEFT	1	SOUTHBOUND	
	THRU	0	IN ...	48
	RIGHT	47	OUT ...	58
EAST BOUND	LEFT	53	EASTBOUND	
	THRU	669	IN ...	1179
	RIGHT	0	OUT ...	680
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	367	IN ...	638
	RIGHT	5	OUT ...	1127

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	1	1
	THRU	0	0
	RIGHT	47	50
EAST BOUND	LEFT	53	56
	THRU	669	1,126
	RIGHT	0	0
WEST BOUND	LEFT	0	0
	THRU	367	654
	RIGHT	5	5

10. Project Dwy 2 at Greenspot Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86
Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
NORTH BOUND	LEFT	0	NORTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
SOUTH BOUND	LEFT	0	SOUTHBOUND	
	THRU	0	IN ...	0
	RIGHT	0	OUT ...	0
EAST BOUND	LEFT	0	EASTBOUND	
	THRU	670	IN ...	1127
	RIGHT	0	OUT ...	638
WEST BOUND	LEFT	0	WESTBOUND	
	THRU	372	IN ...	638
	RIGHT	0	OUT ...	1127

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES
NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)
*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
NORTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
SOUTH BOUND	LEFT	0	0
	THRU	0	0
	RIGHT	0	0
EAST BOUND	LEFT	0	0
	THRU	670	1,127
	RIGHT	0	0
WEST BOUND	LEFT	0	0
	THRU	372	659
	RIGHT	0	0

APPENDIX F

EXISTING TRAFFIC CONDITIONS INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX F-I

EXISTING TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	19.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		Yes			Yes			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	129	0	126	0	356	351	848	927	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	129	0	126	0	356	351	848	927	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9400	0.9400	0.9400	0.9500	0.9400	0.9400	0.9400	0.9400	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	34	0	34	0	95	93	226	247	0
Total Analysis Volume [veh/h]	0	0	0	137	0	134	0	379	373	902	986	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	20	0	0	18	0	52	70	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	7	0	0	7	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		9	9	40	40	29	73
g / C, Green / Cycle		0.11	0.11	0.44	0.44	0.32	0.81
(v / s)_i Volume / Saturation Flow Rate		0.08	0.07	0.11	0.21	0.28	0.27
s, saturation flow rate [veh/h]		1700	1800	3600	1800	3200	3600
c, Capacity [veh/h]		179	190	1584	792	1028	2900
d1, Uniform Delay [s]		39.18	38.92	15.79	17.82	28.88	2.34
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		6.61	4.74	0.36	2.01	2.58	0.32
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.76	0.71	0.24	0.47	0.88	0.34
d, Delay for Lane Group [s/veh]		45.79	43.66	16.14	19.82	31.46	2.66
Lane Group LOS		D	D	B	B	C	A
Critical Lane Group		Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.23	3.07	2.29	5.35	8.79	1.00
50th-Percentile Queue Length [ft/ln]		80.84	76.80	57.19	133.72	219.75	25.06
95th-Percentile Queue Length [veh/ln]		5.82	5.53	4.12	9.14	13.65	1.80
95th-Percentile Queue Length [ft/ln]		145.51	138.25	102.94	228.54	341.31	45.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	45.79	45.79	43.66	0.00	16.14	19.82	31.46	2.66	0.00
Movement LOS				D	D	D		B	B	C	A	
d_A, Approach Delay [s/veh]	0.00			44.74			17.97			16.42		
Approach LOS	A			D			B			B		
d_I, Intersection Delay [s/veh]	19.46											
Intersection LOS	B											
Intersection V/C	0.657											

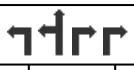
Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.492

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	362	0	342	0	0	0	80	416	0	0	1409	302
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	362	0	342	0	0	0	80	416	0	0	1409	302
Peak Hour Factor	0.9580	0.9580	0.9580	0.9500	0.9500	0.9500	0.9580	0.9580	0.9500	0.9500	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	94	0	89	0	0	0	21	109	0	0	368	79
Total Analysis Volume [veh/h]	378	0	357	0	0	0	84	434	0	0	1471	315
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	32	0	0	0	0	50	68	0	0	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	7	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	100	100	100		100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	14	14		6	78	67	67
g / C, Green / Cycle	0.14	0.14	0.14		0.06	0.78	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.10		0.05	0.12	0.27	0.18
s, saturation flow rate [veh/h]	1700	1700	3600		1700	3600	5400	1800
c, Capacity [veh/h]	246	246	521		109	2791	3624	1208
d1, Uniform Delay [s]	41.16	41.16	40.61		46.06	2.87	7.43	6.56
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.02	5.02	1.61		10.73	0.12	0.34	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.77	0.69		0.77	0.16	0.41	0.26
d, Delay for Lane Group [s/veh]	46.18	46.18	42.23		56.79	2.99	7.77	7.08
Lane Group LOS	D	D	D		E	A	A	A
Critical Lane Group	Yes	No	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.78	4.78	4.25		2.31	0.70	3.86	2.30
50th-Percentile Queue Length [ft/ln]	119.57	119.57	106.35		57.71	17.62	96.48	57.45
95th-Percentile Queue Length [veh/ln]	8.37	8.37	7.64		4.16	1.27	6.95	4.14
95th-Percentile Queue Length [ft/ln]	209.24	209.24	190.92		103.88	31.72	173.66	103.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.18	46.18	42.23	0.00	0.00	0.00	56.79	2.99	0.00	0.00	7.77	7.08
Movement LOS	D	D	D				E	A			A	A
d_A, Approach Delay [s/veh]	44.26			0.00			11.71			7.65		
Approach LOS	D			A			B			A		
d_I, Intersection Delay [s/veh]	17.20											
Intersection LOS	B											
Intersection V/C	0.492											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.402

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	60	0	12	0	0	0	1	680	80	17	1644	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	0	12	0	0	0	1	680	80	17	1644	0
Peak Hour Factor	0.9770	0.9500	0.9770	0.9500	0.9500	0.9500	0.9770	0.9770	0.9770	0.9770	0.9770	0.9770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	3	0	0	0	0	174	20	4	421	0
Total Analysis Volume [veh/h]	61	0	12	0	0	0	1	696	82	17	1683	0
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	0	0	0	0	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	6	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	30	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	0	0	0	0	0	11	70	0	10	69	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No						No	No		No	No	
Maximum Recall	No						No	No		No	No	
Pedestrian Recall	No						No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	R	L	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5		0	71	71	2	73	73
g / C, Green / Cycle	0.06	0.06		0.00	0.79	0.79	0.02	0.81	0.81
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01		0.00	0.13	0.05	0.01	0.31	0.00
s, saturation flow rate [veh/h]	1700	1800		1700	5400	1800	1700	5400	1800
c, Capacity [veh/h]	97	103		5	4244	1415	40	4356	1452
d1, Uniform Delay [s]	41.52	40.30		44.78	2.37	2.16	43.34	2.44	0.00
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.54	0.50		18.43	0.08	0.08	6.78	0.26	0.00
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

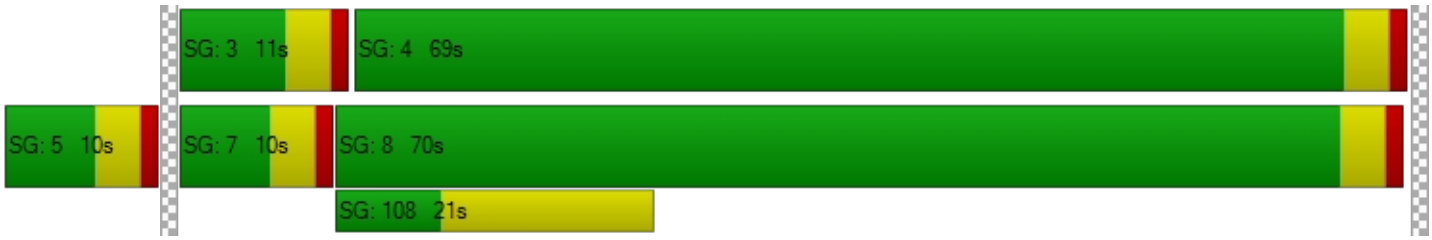
X, volume / capacity	0.63	0.12		0.20	0.16	0.06	0.42	0.39	0.00
d, Delay for Lane Group [s/veh]	48.07	40.80		63.21	2.45	2.24	50.12	2.70	0.00
Lane Group LOS	D	D		E	A	A	D	A	A
Critical Lane Group	Yes	No		Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.49	0.26		0.05	0.50	0.18	0.43	1.11	0.00
50th-Percentile Queue Length [ft/ln]	37.16	6.61		1.18	12.58	4.56	10.86	27.85	0.00
95th-Percentile Queue Length [veh/ln]	2.68	0.48		0.08	0.91	0.33	0.78	2.01	0.00
95th-Percentile Queue Length [ft/ln]	66.90	11.90		2.12	22.65	8.22	19.55	50.13	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.07	0.00	40.80	0.00	0.00	0.00	63.21	2.45	2.24	50.12	2.70	0.00
Movement LOS	D		D				E	A	A	D	A	A
d_A, Approach Delay [s/veh]	46.87			0.00			2.51			3.18		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	4.22											
Intersection LOS	A											
Intersection V/C	0.402											

Sequence

Ring 1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	5.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.382

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	74	0	24	0	0	0	0	606	74	55	1587	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	0	24	0	0	0	0	606	74	55	1587	0
Peak Hour Factor	0.9570	0.9570	0.9570	0.9500	0.9500	0.9500	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	0	6	0	0	0	0	158	19	14	415	0
Total Analysis Volume [veh/h]	77	0	25	0	0	0	0	633	77	57	1658	0
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	0	0	10	66	0	14	70	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	18	0	0	0	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No					No	No		No	No	
Maximum Recall		No					No	No		No	No	
Pedestrian Recall		No					No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C		L	C	R	L	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6		0	68	68	5	72	72
g / C, Green / Cycle	0.06	0.06		0.00	0.75	0.75	0.05	0.80	0.80
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01		0.00	0.12	0.04	0.02	0.31	0.00
s, saturation flow rate [veh/h]	3200	1800		1700	5400	1800	3200	5400	1800
c, Capacity [veh/h]	200	113		2	4063	1354	166	4336	1445
d1, Uniform Delay [s]	40.54	40.13		0.00	3.13	2.88	41.21	2.52	0.00
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.21	0.98		0.00	0.08	0.08	1.23	0.26	0.00
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

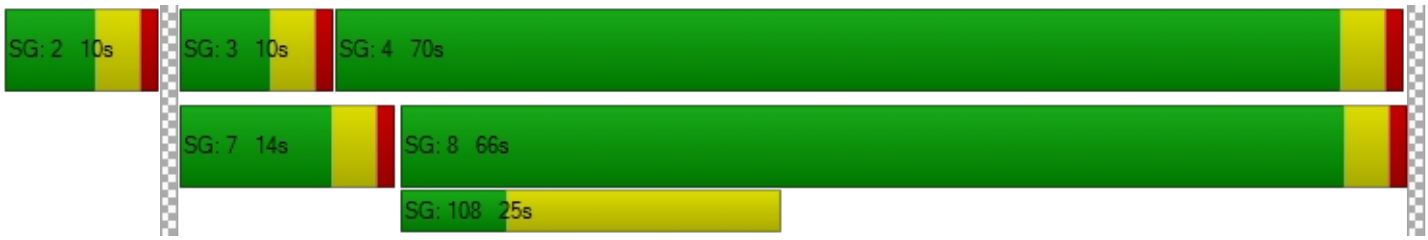
X, volume / capacity	0.38	0.22		0.00	0.16	0.06	0.34	0.38	0.00
d, Delay for Lane Group [s/veh]	41.75	41.11		0.00	3.21	2.96	42.44	2.78	0.00
Lane Group LOS	D	D		A	A	A	D	A	A
Critical Lane Group	Yes	No		No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.85	0.55		0.00	0.65	0.24	0.61	1.17	0.00
50th-Percentile Queue Length [ft/ln]	21.13	13.81		0.00	16.30	5.98	15.33	29.20	0.00
95th-Percentile Queue Length [veh/ln]	1.52	0.99		0.00	1.17	0.43	1.10	2.10	0.00
95th-Percentile Queue Length [ft/ln]	38.03	24.85		0.00	29.34	10.77	27.59	52.55	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.75	41.11	41.11	0.00	0.00	0.00	0.00	3.21	2.96	42.44	2.78	0.00
Movement LOS	D	D	D				A	A	A	D	A	A
d_A, Approach Delay [s/veh]	41.60			0.00			3.18			4.10		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	5.35											
Intersection LOS	A											
Intersection V/C	0.382											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	30.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.645

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	188	199	234	39	324	8	15	384	132	422	1272	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	199	234	39	324	8	15	384	132	422	1272	79
Peak Hour Factor	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	53	62	10	86	2	4	102	35	112	337	21
Total Analysis Volume [veh/h]	199	211	248	41	344	8	16	407	140	448	1349	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	43	0	10	42	0	10	32	0	15	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	16	16	4	14	2	35	35	28	61	61
g / C, Green / Cycle	0.07	0.16	0.16	0.04	0.14	0.02	0.35	0.35	0.28	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.06	0.12	0.14	0.02	0.10	0.01	0.11	0.08	0.26	0.37	0.05
s, saturation flow rate [veh/h]	3200	1800	1800	1700	3600	3200	3600	1800	1700	3600	1800
c, Capacity [veh/h]	224	297	297	69	489	69	1265	633	481	2206	1103
d1, Uniform Delay [s]	46.11	39.50	40.45	47.14	41.30	48.11	23.71	22.80	34.93	12.00	7.87
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.27	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.23	3.15	6.15	7.73	1.87	1.69	0.67	0.81	17.54	1.28	0.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

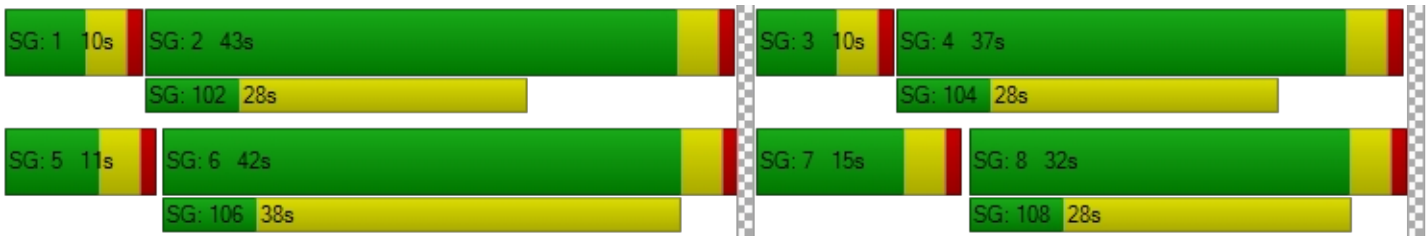
X, volume / capacity	0.89	0.71	0.84	0.59	0.70	0.23	0.32	0.22	0.93	0.61	0.08
d, Delay for Lane Group [s/veh]	57.34	42.65	46.59	54.87	43.17	49.79	24.38	23.61	52.47	13.28	8.00
Lane Group LOS	E	D	D	D	D	D	C	C	D	B	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.78	5.11	6.35	1.15	4.14	0.21	3.44	2.34	12.28	8.15	0.67
50th-Percentile Queue Length [ft/ln]	69.61	127.87	158.75	28.69	103.61	5.15	85.94	58.45	307.02	203.74	16.87
95th-Percentile Queue Length [veh/ln]	5.01	8.82	10.48	2.07	7.46	0.37	6.19	4.21	18.03	12.83	1.21
95th-Percentile Queue Length [ft/ln]	125.30	220.60	262.06	51.64	186.49	9.27	154.69	105.21	450.70	320.79	30.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.34	42.65	46.59	54.87	43.17	0.00	49.79	24.38	23.61	52.47	13.28	8.00
Movement LOS	E	D	D	D	D		D	C	C	D	B	A
d_A, Approach Delay [s/veh]	48.58			44.41			24.91			22.37		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.16											
Intersection LOS	C											
Intersection V/C	0.645											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.895

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	5	7	1	120	3	418	148	513	2	2	1347	107
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	7	1	120	3	418	148	513	2	2	1347	107
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	0	31	1	109	39	134	1	1	352	28
Total Analysis Volume [veh/h]	5	7	1	126	3	437	155	537	2	2	1409	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	10	55	0	10	55	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	2	29	29	29	12	63	63	0	51	51
g / C, Green / Cycle	0.02	0.02	0.26	0.26	0.26	0.11	0.57	0.57	0.00	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.07	0.00	0.24	0.09	0.15	0.15	0.00	0.43	0.42
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	31	33	447	474	474	182	1026	1026	6	839	839
d1, Uniform Delay [s]	53.19	53.27	32.26	29.92	39.45	48.25	11.98	11.97	54.69	27.33	26.97
k, delay calibration	0.11	0.11	0.11	0.11	0.28	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.42	3.81	0.34	0.01	17.16	10.53	0.62	0.62	30.02	16.14	14.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.24	0.28	0.01	0.92	0.85	0.26	0.26	0.34	0.91	0.90
d, Delay for Lane Group [s/veh]	55.61	57.08	32.60	29.93	56.61	58.79	12.60	12.60	84.71	43.47	41.39
Lane Group LOS	E	E	C	C	E	E	B	B	F	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.16	0.25	2.71	0.06	13.58	4.58	3.22	3.21	0.10	20.82	19.90
50th-Percentile Queue Length [ft/ln]	3.92	6.31	67.81	1.49	339.52	114.47	80.47	80.36	2.59	520.45	497.51
95th-Percentile Queue Length [veh/ln]	0.28	0.45	4.88	0.11	19.62	8.09	5.79	5.79	0.19	28.30	27.22
95th-Percentile Queue Length [ft/ln]	7.05	11.37	122.06	2.68	490.61	202.21	144.85	144.64	4.66	707.51	680.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.61	57.08	57.08	32.60	29.93	56.61	58.79	12.60	12.60	84.71	42.52	41.39
Movement LOS	E	E	E	C	C	E	E	B	B	F	D	D
d_A, Approach Delay [s/veh]	56.52			51.12			22.91			42.49		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	39.45											
Intersection LOS	D											
Intersection V/C	0.895											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.748

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	21	12	3	34	7	339	228	349	16	5	1083	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	12	3	34	7	339	228	349	16	5	1083	104
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	1	9	2	93	62	95	4	1	296	28
Total Analysis Volume [veh/h]	23	13	3	37	8	370	249	381	17	5	1182	114
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	51	0	0	51	0	10	29	0	10	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	21	21	21	9	56	56	1	48	48
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.23	0.11	0.62	0.62	0.01	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.02	0.00	0.21	0.08	0.11	0.11	0.00	0.36	0.36
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	3200	1800	1800	1700	1800	1800
c, Capacity [veh/h]	435	420	429	420	420	337	1123	1123	16	950	950
d1, Uniform Delay [s]	26.81	26.69	27.04	26.57	33.29	39.07	7.16	7.15	44.34	15.81	15.57
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.04	0.09	0.02	6.11	3.17	0.35	0.34	11.49	4.12	3.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.04	0.09	0.02	0.88	0.74	0.18	0.18	0.32	0.69	0.67
d, Delay for Lane Group [s/veh]	26.86	26.72	27.12	26.59	39.40	42.24	7.51	7.49	55.82	19.93	19.36
Lane Group LOS	C	C	C	C	D	D	A	A	E	B	B
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.39	0.27	0.63	0.13	8.30	2.69	1.42	1.40	0.16	9.60	9.16
50th-Percentile Queue Length [ft/ln]	9.64	6.68	15.65	3.32	207.46	67.21	35.49	34.95	3.90	240.08	228.96
95th-Percentile Queue Length [veh/ln]	0.69	0.48	1.13	0.24	13.02	4.84	2.56	2.52	0.28	14.69	14.12
95th-Percentile Queue Length [ft/ln]	17.36	12.02	28.18	5.98	325.57	120.97	63.88	62.92	7.02	367.14	353.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.86	26.72	26.72	27.12	26.59	39.40	42.24	7.50	7.49	55.82	19.68	19.36
Movement LOS	C	C	C	C	C	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	26.81			38.06			20.87			19.79		
Approach LOS	C			D			C			B		
d_I, Intersection Delay [s/veh]	23.35											
Intersection LOS	C											
Intersection V/C	0.748											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	50.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.084

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	2	0	3	9	2	233	53	298	1	2	996	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	0	3	9	2	233	53	298	1	2	996	13
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	2	1	61	14	78	0	1	260	3
Total Analysis Volume [veh/h]	2	0	3	9	2	243	55	311	1	2	1041	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.00	0.00	0.08	0.02	0.49	0.08	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	40.90	37.05	9.57	50.00	47.82	23.72	10.99	0.00	0.00	7.90	0.00	0.00
Movement LOS	E	E	A	F	E	C	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.07	0.07	0.07	3.72	3.72	3.72	0.27	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	1.78	1.78	1.78	92.98	92.98	92.98	6.84	0.00	0.00	0.12	0.00	0.00
d_A, Approach Delay [s/veh]	22.10			24.84			1.65			0.01		
Approach LOS	C			C			A			A		
d_I, Intersection Delay [s/veh]	4.18											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	25.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	0	93	20	287	924	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	93	20	287	924	0
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	24	5	74	238	0
Total Analysis Volume [veh/h]	0	96	21	295	951	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.18	0.03	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	25.55	13.18	10.16	0.00	0.00	0.00
Movement LOS	D	B	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.65	0.65	0.09	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	16.19	16.19	2.26	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	13.18		0.68		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	1.09					
Intersection LOS	D					

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	325	2	173	0	958	503	339	445	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	325	2	173	0	958	503	339	445	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9500	0.9000	0.9000	0.9000	0.9000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	90	1	48	0	266	140	94	124	0
Total Analysis Volume [veh/h]	0	0	0	361	2	192	0	1064	559	377	494	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	62	0	0	18	0	10	28	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	7	0	0	7	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		22	22	43	43	13	60
g / C, Green / Cycle		0.24	0.24	0.47	0.47	0.15	0.67
(v / s)_i Volume / Saturation Flow Rate		0.21	0.11	0.30	0.31	0.12	0.14
s, saturation flow rate [veh/h]		1700	1800	3600	1800	3200	3600
c, Capacity [veh/h]		415	439	1708	854	475	2402
d1, Uniform Delay [s]		32.73	28.81	17.65	18.03	37.02	5.78
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		5.96	0.69	1.72	3.89	3.07	0.19
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.88	0.44	0.62	0.65	0.79	0.21
d, Delay for Lane Group [s/veh]		38.68	29.50	19.37	21.93	40.09	5.97
Lane Group LOS		D	C	B	C	D	A
Critical Lane Group		Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		8.08	3.53	7.63	8.68	3.99	1.43
50th-Percentile Queue Length [ft/ln]		202.08	88.21	190.84	217.01	99.81	35.63
95th-Percentile Queue Length [veh/ln]		12.75	6.35	12.16	13.51	7.19	2.57
95th-Percentile Queue Length [ft/ln]		318.65	158.77	304.12	337.81	179.66	64.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	38.68	38.68	29.50	0.00	19.37	21.93	40.09	5.97	0.00
Movement LOS				D	D	C		B	C	D	A	
d_A, Approach Delay [s/veh]	0.00			35.51			20.25			20.74		
Approach LOS	A			D			C			C		
d_I, Intersection Delay [s/veh]	23.17											
Intersection LOS	C											
Intersection V/C	0.741											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	173	0	485	0	0	0	238	1070	0	0	621	295
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	0	485	0	0	0	238	1070	0	0	621	295
Peak Hour Factor	0.9260	0.9260	0.9260	0.9500	0.9500	0.9500	0.9260	0.9260	0.9500	0.9500	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	0	131	0	0	0	64	289	0	0	168	80
Total Analysis Volume [veh/h]	187	0	524	0	0	0	257	1156	0	0	671	319
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	27	0	0	0	0	45	63	0	0	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	7	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16		16	66	46	46
g / C, Green / Cycle	0.18	0.18	0.18		0.18	0.73	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.15		0.15	0.32	0.12	0.18
s, saturation flow rate [veh/h]	1700	1700	3600		1700	3600	5400	1800
c, Capacity [veh/h]	304	304	644		299	2637	2766	922
d1, Uniform Delay [s]	32.13	32.13	35.54		36.04	4.75	12.23	13.02
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.57	0.57	2.57		7.21	0.53	0.21	1.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

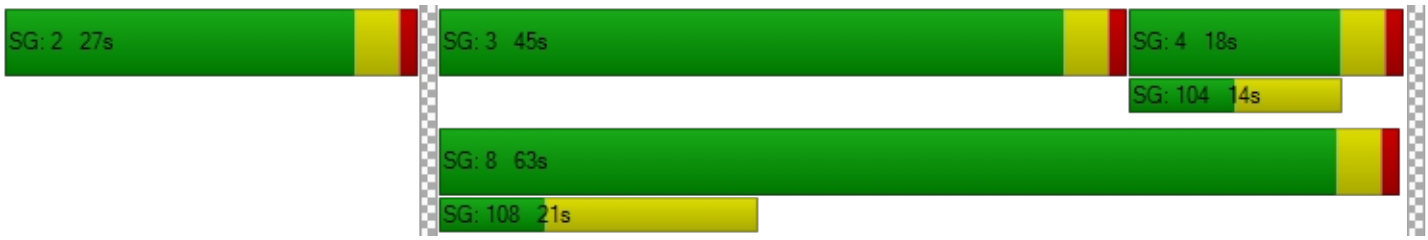
X, volume / capacity	0.31	0.31	0.81		0.86	0.44	0.24	0.35
d, Delay for Lane Group [s/veh]	32.70	32.70	38.11		43.26	5.28	12.44	14.04
Lane Group LOS	C	C	D		D	A	B	B
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.79	1.79	5.64		5.76	2.85	2.26	3.61
50th-Percentile Queue Length [ft/ln]	44.87	44.87	141.10		144.04	71.32	56.38	90.15
95th-Percentile Queue Length [veh/ln]	3.23	3.23	9.54		9.70	5.14	4.06	6.49
95th-Percentile Queue Length [ft/ln]	80.77	80.77	238.50		242.46	128.38	101.48	162.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.70	32.70	38.11	0.00	0.00	0.00	43.26	5.28	0.00	0.00	12.44	14.04
Movement LOS	C	C	D				D	A			B	B
d_A, Approach Delay [s/veh]	36.68			0.00			12.19			12.95		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	18.02											
Intersection LOS	B											
Intersection V/C	0.547											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	7.6
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.429

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	129	0	51	0	0	0	0	1401	137	29	775	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	0	51	0	0	0	0	1401	137	29	775	0
Peak Hour Factor	0.9480	0.9500	0.9480	0.9500	0.9500	0.9500	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	0	13	0	0	0	0	369	36	8	204	0
Total Analysis Volume [veh/h]	136	0	54	0	0	0	0	1478	145	31	818	0
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	0	0	0	0	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	6	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	30	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	55	0	0	0	0	0	19	25	0	10	16	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No						No	No		No	No	
Maximum Recall	No						No	No		No	No	
Pedestrian Recall	No						No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	R	L	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9		0	65	65	3	69	69
g / C, Green / Cycle	0.10	0.10		0.00	0.73	0.73	0.04	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.08	0.03		0.00	0.27	0.08	0.02	0.15	0.00
s, saturation flow rate [veh/h]	1700	1800		1700	5400	1800	1700	5400	1800
c, Capacity [veh/h]	178	189		2	3914	1305	63	4107	1369
d1, Uniform Delay [s]	39.22	37.20		0.00	4.70	3.71	42.51	3.04	0.00
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.63	0.82		0.00	0.28	0.17	5.78	0.11	0.00
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.29		0.00	0.38	0.11	0.49	0.20	0.00
d, Delay for Lane Group [s/veh]	45.85	38.02		0.00	4.98	3.88	48.29	3.15	0.00
Lane Group LOS	D	D		A	A	A	D	A	A
Critical Lane Group	Yes	No		No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.21	1.13		0.00	2.34	0.58	0.75	0.81	0.00
50th-Percentile Queue Length [ft/ln]	80.30	28.23		0.00	58.42	14.56	18.74	20.30	0.00
95th-Percentile Queue Length [veh/ln]	5.78	2.03		0.00	4.21	1.05	1.35	1.46	0.00
95th-Percentile Queue Length [ft/ln]	144.54	50.82		0.00	105.15	26.20	33.73	36.54	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.85	0.00	38.02	0.00	0.00	0.00	0.00	4.98	3.88	48.29	3.15	0.00
Movement LOS	D		D				A	A	A	D	A	A
d_A, Approach Delay [s/veh]	43.62			0.00			4.88			4.80		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	7.62											
Intersection LOS	A											
Intersection V/C	0.429											

Sequence

Ring 1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	9.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.382

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	149	0	80	0	0	0	3	1284	144	83	659	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	0	80	0	0	0	3	1284	144	83	659	0
Peak Hour Factor	0.9370	0.9370	0.9370	0.9500	0.9500	0.9500	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	0	21	0	0	0	1	343	38	22	176	0
Total Analysis Volume [veh/h]	159	0	85	0	0	0	3	1370	154	89	703	0
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	51	0	0	0	0	22	29	0	10	17	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	18	0	0	0	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No					No	No		No	No	
Maximum Recall		No					No	No		No	No	
Pedestrian Recall		No					No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C		L	C	R	L	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7		0	66	66	5	70	70
g / C, Green / Cycle	0.08	0.08		0.01	0.73	0.73	0.06	0.78	0.78
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05		0.00	0.25	0.09	0.03	0.13	0.00
s, saturation flow rate [veh/h]	3200	1800		1700	5400	1800	3200	5400	1800
c, Capacity [veh/h]	251	141		10	3929	1310	194	4223	1408
d1, Uniform Delay [s]	40.22	40.12		44.55	4.48	3.65	40.87	2.46	0.00
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.62	4.05		14.52	0.25	0.18	1.69	0.09	0.00
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

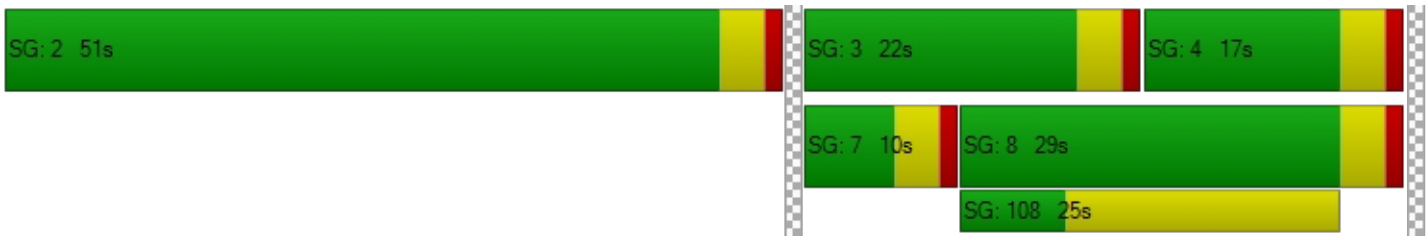
X, volume / capacity	0.63	0.60		0.29	0.35	0.12	0.46	0.17	0.00
d, Delay for Lane Group [s/veh]	42.84	44.17		59.08	4.72	3.84	42.57	2.54	0.00
Lane Group LOS	D	D		E	A	A	D	A	A
Critical Lane Group	Yes	No		No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.78	1.96		0.11	2.06	0.61	0.96	0.53	0.00
50th-Percentile Queue Length [ft/ln]	44.46	48.96		2.65	51.55	15.24	23.96	13.36	0.00
95th-Percentile Queue Length [veh/ln]	3.20	3.52		0.19	3.71	1.10	1.72	0.96	0.00
95th-Percentile Queue Length [ft/ln]	80.04	88.12		4.77	92.79	27.43	43.12	24.05	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.84	44.17	44.17	0.00	0.00	0.00	59.08	4.72	3.84	42.57	2.54	0.00
Movement LOS	D	D	D				E	A	A	D	A	A
d_A, Approach Delay [s/veh]	43.31			0.00			4.74			7.04		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	9.12											
Intersection LOS	A											
Intersection V/C	0.382											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.906

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	164	313	506	59	307	11	27	884	288	238	497	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	164	313	506	59	307	11	27	884	288	238	497	54
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	86	139	16	84	3	7	242	79	65	136	15
Total Analysis Volume [veh/h]	180	343	554	65	336	12	30	968	315	261	544	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	46	0	13	45	0	10	35	0	11	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	35	35	5	33	4	31	31	18	45	45
g / C, Green / Cycle	0.08	0.34	0.34	0.05	0.31	0.03	0.30	0.30	0.17	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.31	0.04	0.09	0.01	0.27	0.18	0.15	0.15	0.03
s, saturation flow rate [veh/h]	3200	1800	1800	1700	3600	3200	3600	1800	1700	3600	1800
c, Capacity [veh/h]	242	605	605	84	1115	110	1063	531	284	1541	771
d1, Uniform Delay [s]	47.59	28.64	33.49	49.37	27.61	49.48	35.72	31.65	43.06	20.25	17.77
k, delay calibration	0.11	0.11	0.25	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.50	0.84	12.23	13.73	0.15	1.33	13.07	4.81	11.95	0.64	0.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.57	0.92	0.77	0.30	0.27	0.91	0.59	0.92	0.35	0.08
d, Delay for Lane Group [s/veh]	52.09	29.48	45.72	63.09	27.77	50.81	48.79	36.46	55.01	20.89	17.97
Lane Group LOS	D	C	D	E	C	D	D	D	E	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.45	7.13	15.25	2.00	3.22	0.39	13.17	7.20	7.34	4.33	0.84
50th-Percentile Queue Length [ft/ln]	61.25	178.26	381.35	50.05	80.52	9.83	329.36	179.88	183.53	108.37	21.02
95th-Percentile Queue Length [veh/ln]	4.41	11.51	21.66	3.60	5.80	0.71	19.13	11.59	11.78	7.75	1.51
95th-Percentile Queue Length [ft/ln]	110.25	287.75	541.48	90.09	144.93	17.69	478.17	289.86	294.61	193.73	37.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.09	29.48	45.72	63.09	27.77	0.00	50.81	48.79	36.46	55.01	20.89	17.97
Movement LOS	D	C	D	E	C		D	D	D	E	C	B
d_A, Approach Delay [s/veh]	41.61			33.49			45.88			31.00		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	39.74											
Intersection LOS	D											
Intersection V/C	0.906											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	11.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	4	1	2	32	0	71	121	1309	7	3	697	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1	2	32	0	71	121	1309	7	3	697	51
Peak Hour Factor	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	8	0	19	32	347	2	1	185	14
Total Analysis Volume [veh/h]	4	1	2	34	0	75	128	1390	7	3	740	54
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	29	0	26	41	0	10	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	1	6	6	6	9	67	67	0	59	59
g / C, Green / Cycle	0.01	0.01	0.06	0.06	0.06	0.10	0.74	0.74	0.01	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.02	0.00	0.04	0.08	0.39	0.39	0.00	0.22	0.22
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	21	22	108	114	114	163	1334	1334	10	1172	1172
d1, Uniform Delay [s]	44.11	44.08	40.37	0.00	41.29	39.85	4.94	4.94	44.62	7.06	7.01
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.53	2.84	1.66	0.00	6.34	8.00	1.47	1.47	14.31	0.80	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.14	0.32	0.00	0.66	0.78	0.52	0.52	0.29	0.34	0.33
d, Delay for Lane Group [s/veh]	48.64	46.93	42.04	0.00	47.62	47.85	6.42	6.41	58.93	7.86	7.78
Lane Group LOS	D	D	D	A	D	D	A	A	E	A	A
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.11	0.08	0.76	0.00	1.81	3.00	3.83	3.82	0.11	2.91	2.82
50th-Percentile Queue Length [ft/ln]	2.84	2.07	19.08	0.00	45.25	75.06	95.73	95.54	2.64	72.74	70.57
95th-Percentile Queue Length [veh/ln]	0.20	0.15	1.37	0.00	3.26	5.40	6.89	6.88	0.19	5.24	5.08
95th-Percentile Queue Length [ft/ln]	5.11	3.73	34.35	0.00	81.46	135.12	172.31	171.96	4.76	130.92	127.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.64	46.93	46.93	42.04	0.00	47.62	47.85	6.41	6.41	58.93	7.82	7.78
Movement LOS	D	D	D	D	A	D	D	A	A	E	A	A
d_A, Approach Delay [s/veh]	47.91			45.88			9.89			8.01		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	10.99											
Intersection LOS	B											
Intersection V/C	0.528											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	17.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	19	3	1	48	12	233	314	923	16	2	498	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	3	1	48	12	233	314	923	16	2	498	45
Peak Hour Factor	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	0	12	3	59	80	235	4	1	127	11
Total Analysis Volume [veh/h]	19	3	1	49	12	237	319	939	16	2	507	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	51	0	0	51	0	10	29	0	10	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	14	14	14	14	12	63	63	0	52	52
g / C, Green / Cycle	0.16	0.16	0.16	0.16	0.16	0.13	0.70	0.70	0.00	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.03	0.01	0.13	0.10	0.27	0.26	0.00	0.16	0.15
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	3200	1800	1800	1700	1800	1800
c, Capacity [veh/h]	305	285	312	285	285	413	1267	1267	8	1043	1043
d1, Uniform Delay [s]	32.24	31.95	32.83	32.09	36.71	37.94	5.39	5.38	44.67	9.44	9.40
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	0.02	0.23	0.06	6.18	3.11	0.86	0.85	16.70	0.63	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.01	0.16	0.04	0.83	0.77	0.38	0.38	0.26	0.27	0.26
d, Delay for Lane Group [s/veh]	32.33	31.97	33.06	32.15	42.90	41.05	6.25	6.23	61.37	10.07	10.01
Lane Group LOS	C	C	C	C	D	D	A	A	E	B	B
Critical Lane Group	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.36	0.07	0.94	0.22	5.45	3.41	2.80	2.78	0.08	2.48	2.41
50th-Percentile Queue Length [ft/ln]	8.90	1.86	23.41	5.60	136.19	85.17	69.94	69.42	1.97	62.11	60.36
95th-Percentile Queue Length [veh/ln]	0.64	0.13	1.69	0.40	9.28	6.13	5.04	5.00	0.14	4.47	4.35
95th-Percentile Queue Length [ft/ln]	16.03	3.35	42.15	10.09	231.88	153.30	125.89	124.96	3.54	111.80	108.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.33	31.97	31.97	33.06	32.15	42.90	41.05	6.24	6.23	61.37	10.04	10.01
Movement LOS	C	C	C	C	C	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	32.26			40.85			14.96			10.23		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	17.51											
Intersection LOS	B											
Intersection V/C	0.460											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	54.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	0	0	3	4	0	99	203	716	3	3	407	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	3	4	0	99	203	716	3	3	407	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	1	0	26	53	188	1	1	107	1
Total Analysis Volume [veh/h]	0	0	3	4	0	104	214	754	3	3	428	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.04	0.00	0.13	0.19	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	54.01	48.82	10.84	38.50	49.89	10.69	8.95	0.00	0.00	9.25	0.00	0.00
Movement LOS	F	E	B	E	E	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.01	0.01	0.01	0.60	0.60	0.60	0.70	0.00	0.00	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.37	0.37	0.37	14.99	14.99	14.99	17.53	0.00	0.00	0.27	0.00	0.00
d_A, Approach Delay [s/veh]	10.84			11.72			1.97			0.06		
Approach LOS	B			B			A			A		
d_I, Intersection Delay [s/veh]	2.14											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	17.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	1	47	53	669	367	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	47	53	669	367	5
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	12	13	170	93	1
Total Analysis Volume [veh/h]	1	48	54	678	372	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.06	0.05	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	17.38	9.68	8.20	0.00	0.00	0.00
Movement LOS	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.20	0.20	0.14	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	4.93	4.93	3.60	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.84		0.61		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.80					
Intersection LOS	C					

APPENDIX F-II

EXISTING WITH PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		Yes			Yes			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	137	0	126	0	360	351	894	939	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	137	0	126	0	360	351	894	939	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9400	0.9400	0.9400	0.9500	0.9400	0.9400	0.9400	0.9400	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	36	0	34	0	96	93	238	250	0
Total Analysis Volume [veh/h]	0	0	0	146	0	134	0	383	373	951	999	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	19	0	0	18	0	53	71	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	7	0	0	7	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		10	10	38	38	30	72
g / C, Green / Cycle		0.11	0.11	0.42	0.42	0.34	0.80
(v / s)_i Volume / Saturation Flow Rate		0.09	0.07	0.11	0.21	0.30	0.28
s, saturation flow rate [veh/h]		1700	1800	3600	1800	3200	3600
c, Capacity [veh/h]		187	198	1509	755	1079	2883
d1, Uniform Delay [s]		38.99	38.51	16.99	19.15	28.14	2.47
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		6.85	3.97	0.41	2.31	2.55	0.33
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.78	0.68	0.25	0.49	0.88	0.35
d, Delay for Lane Group [s/veh]		45.85	42.48	17.40	21.46	30.69	2.80
Lane Group LOS		D	D	B	C	C	A
Critical Lane Group		Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.45	3.02	2.43	5.63	9.19	1.10
50th-Percentile Queue Length [ft/ln]		86.28	75.60	60.77	140.85	229.63	27.59
95th-Percentile Queue Length [veh/ln]		6.21	5.44	4.38	9.53	14.16	1.99
95th-Percentile Queue Length [ft/ln]		155.30	136.07	109.38	238.17	353.89	49.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	45.85	45.85	42.48	0.00	17.40	21.46	30.69	2.80	0.00
Movement LOS				D	D	D		B	C	C	A	
d_A, Approach Delay [s/veh]	0.00			44.24			19.40			16.40		
Approach LOS	A			D			B			B		
d_I, Intersection Delay [s/veh]	19.77											
Intersection LOS	B											
Intersection V/C	0.681											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	16.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	362	0	357	0	0	0	80	428	0	0	1467	326
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	362	0	357	0	0	0	80	428	0	0	1467	326
Peak Hour Factor	0.9580	0.9580	0.9580	0.9500	0.9500	0.9500	0.9580	0.9580	0.9500	0.9500	0.9580	0.9580
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	94	0	93	0	0	0	21	112	0	0	383	85
Total Analysis Volume [veh/h]	378	0	373	0	0	0	84	447	0	0	1531	340
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	27	0	0	0	0	50	68	0	0	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	7	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	95	95	95		95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	14	14		6	73	63	63
g / C, Green / Cycle	0.15	0.15	0.15		0.06	0.77	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.10		0.05	0.12	0.28	0.19
s, saturation flow rate [veh/h]	1700	1700	3600		1700	3600	5400	1800
c, Capacity [veh/h]	247	247	523		110	2774	3585	1195
d1, Uniform Delay [s]	39.05	39.05	38.72		43.74	2.86	7.49	6.62
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.90	4.90	1.82		10.52	0.12	0.37	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

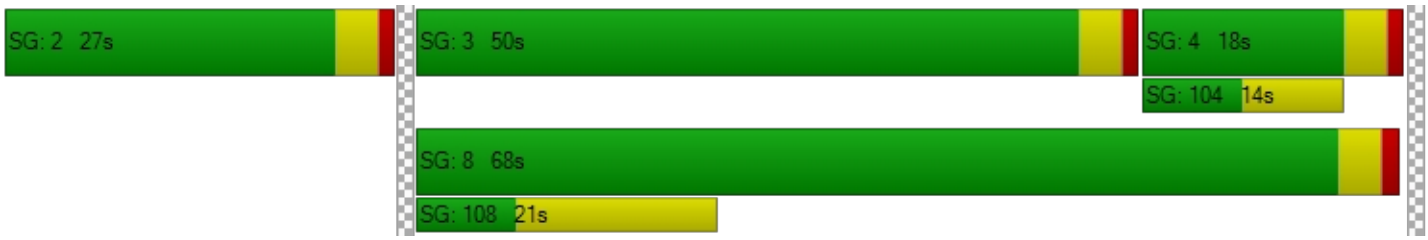
X, volume / capacity	0.77	0.77	0.71		0.77	0.16	0.43	0.28
d, Delay for Lane Group [s/veh]	43.95	43.95	40.54		54.26	2.98	7.87	7.22
Lane Group LOS	D	D	D		D	A	A	A
Critical Lane Group	Yes	No	No		Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.52	4.52	4.23		2.19	0.68	3.89	2.42
50th-Percentile Queue Length [ft/ln]	113.02	113.02	105.67		54.71	17.06	97.31	60.41
95th-Percentile Queue Length [veh/ln]	8.01	8.01	7.60		3.94	1.23	7.01	4.35
95th-Percentile Queue Length [ft/ln]	200.20	200.20	189.96		98.48	30.72	175.17	108.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.95	43.95	40.54	0.00	0.00	0.00	54.26	2.98	0.00	0.00	7.87	7.22
Movement LOS	D	D	D				D	A			A	A
d_A, Approach Delay [s/veh]	42.26			0.00			11.09			7.75		
Approach LOS	D			A			B			A		
d_I, Intersection Delay [s/veh]	16.53											
Intersection LOS	B											
Intersection V/C	0.508											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.420

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	60	0	12	0	0	0	1	707	80	17	1726	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	60	0	12	0	0	0	1	707	80	17	1726	0
Peak Hour Factor	0.9770	0.9500	0.9770	0.9500	0.9500	0.9500	0.9770	0.9770	0.9770	0.9770	0.9770	0.9770
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	3	0	0	0	0	181	20	4	442	0
Total Analysis Volume [veh/h]	61	0	12	0	0	0	1	724	82	17	1767	0
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	0	0	0	0	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	6	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	30	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	0	0	0	0	0	10	70	0	10	70	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No						No	No		No	No	
Maximum Recall	No						No	No		No	No	
Pedestrian Recall	No						No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	R	L	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5		0	71	71	2	73	73
g / C, Green / Cycle	0.06	0.06		0.00	0.79	0.79	0.02	0.81	0.81
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01		0.00	0.13	0.05	0.01	0.33	0.00
s, saturation flow rate [veh/h]	1700	1800		1700	5400	1800	1700	5400	1800
c, Capacity [veh/h]	97	103		5	4244	1415	40	4356	1452
d1, Uniform Delay [s]	41.52	40.30		44.78	2.38	2.16	43.34	2.50	0.00
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.54	0.50		18.43	0.09	0.08	6.78	0.28	0.00
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

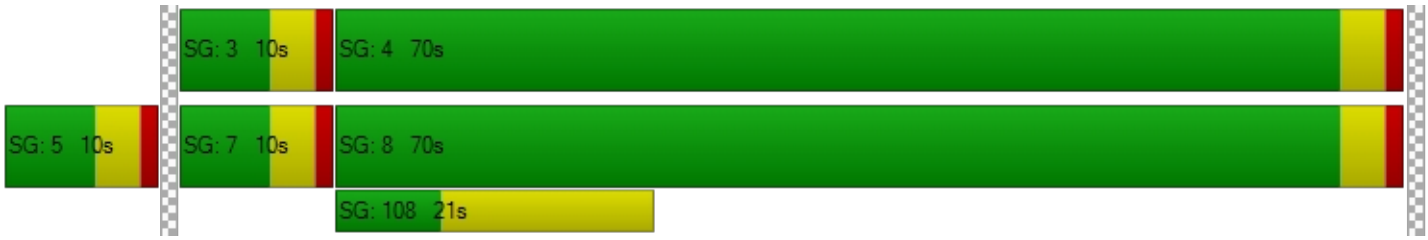
X, volume / capacity	0.63	0.12		0.20	0.17	0.06	0.42	0.41	0.00
d, Delay for Lane Group [s/veh]	48.07	40.80		63.21	2.47	2.24	50.12	2.78	0.00
Lane Group LOS	D	D		E	A	A	D	A	A
Critical Lane Group	Yes	No		Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.49	0.26		0.05	0.53	0.18	0.43	1.20	0.00
50th-Percentile Queue Length [ft/ln]	37.16	6.61		1.18	13.17	4.56	10.86	29.94	0.00
95th-Percentile Queue Length [veh/ln]	2.68	0.48		0.08	0.95	0.33	0.78	2.16	0.00
95th-Percentile Queue Length [ft/ln]	66.90	11.90		2.12	23.71	8.22	19.55	53.89	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.07	0.00	40.80	0.00	0.00	0.00	63.21	2.47	2.24	50.12	2.78	0.00
Movement LOS	D		D				E	A	A	D	A	A
d_A, Approach Delay [s/veh]	46.87			0.00			2.52			3.23		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	4.21											
Intersection LOS	A											
Intersection V/C	0.420											

Sequence

Ring 1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	5.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.397

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	74	0	24	0	0	0	0	633	74	55	1669	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	0	24	0	0	0	0	633	74	55	1669	0
Peak Hour Factor	0.9570	0.9570	0.9570	0.9500	0.9500	0.9500	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	0	6	0	0	0	0	165	19	14	436	0
Total Analysis Volume [veh/h]	77	0	25	0	0	0	0	661	77	57	1744	0
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	0	0	10	71	0	14	75	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	18	0	0	0	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No					No	No		No	No	
Maximum Recall		No					No	No		No	No	
Pedestrian Recall		No					No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C		L	C	R	L	C	R
C, Cycle Length [s]	95	95		95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6		0	73	73	5	77	77
g / C, Green / Cycle	0.06	0.06		0.00	0.76	0.76	0.05	0.81	0.81
(v / s)_i Volume / Saturation Flow Rate	0.02	0.01		0.00	0.12	0.04	0.02	0.32	0.00
s, saturation flow rate [veh/h]	3200	1800		1700	5400	1800	3200	5400	1800
c, Capacity [veh/h]	192	108		2	4124	1375	161	4388	1463
d1, Uniform Delay [s]	43.03	42.58		0.00	3.02	2.77	43.64	2.46	0.00
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.36	1.09		0.00	0.08	0.08	1.33	0.27	0.00
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

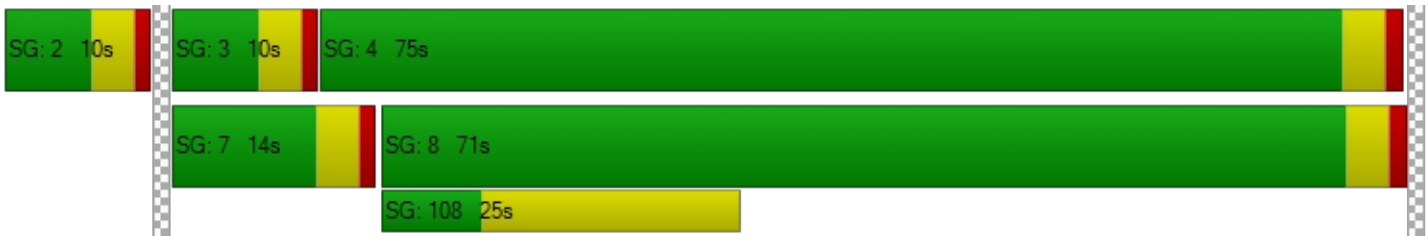
X, volume / capacity	0.40	0.23		0.00	0.16	0.06	0.35	0.40	0.00
d, Delay for Lane Group [s/veh]	44.38	43.67		0.00	3.11	2.85	44.97	2.73	0.00
Lane Group LOS	D	D		A	A	A	D	A	A
Critical Lane Group	Yes	No		No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.90	0.59		0.00	0.70	0.24	0.65	1.27	0.00
50th-Percentile Queue Length [ft/ln]	22.54	14.72		0.00	17.40	6.06	16.35	31.76	0.00
95th-Percentile Queue Length [veh/ln]	1.62	1.06		0.00	1.25	0.44	1.18	2.29	0.00
95th-Percentile Queue Length [ft/ln]	40.57	26.49		0.00	31.33	10.91	29.43	57.18	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.38	43.67	43.67	0.00	0.00	0.00	0.00	3.11	2.85	44.97	2.73	0.00
Movement LOS	D	D	D				A	A	A	D	A	A
d_A, Approach Delay [s/veh]	44.21			0.00			3.08			4.07		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	5.34											
Intersection LOS	A											
Intersection V/C	0.397											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	188	199	238	43	324	8	15	411	132	434	1354	91
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	199	238	43	324	8	15	411	132	434	1354	91
Peak Hour Factor	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430	0.9430
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	53	63	11	86	2	4	109	35	115	359	24
Total Analysis Volume [veh/h]	199	211	252	46	344	8	16	436	140	460	1436	97
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	42	0	13	42	0	10	32	0	18	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	17	17	4	13	2	37	37	30	65	65
g / C, Green / Cycle	0.08	0.17	0.17	0.04	0.13	0.02	0.35	0.35	0.29	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.06	0.12	0.14	0.03	0.10	0.01	0.12	0.08	0.27	0.40	0.05
s, saturation flow rate [veh/h]	3200	1800	1800	1700	3600	3200	3600	1800	1700	3600	1800
c, Capacity [veh/h]	256	299	299	72	461	68	1259	629	493	2225	1113
d1, Uniform Delay [s]	47.37	41.38	42.48	49.50	44.14	50.54	25.26	24.08	36.30	12.73	8.09
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.26	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.00	3.07	6.46	9.14	2.44	1.73	0.76	0.82	16.88	1.46	0.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.71	0.84	0.64	0.75	0.23	0.35	0.22	0.93	0.65	0.09
d, Delay for Lane Group [s/veh]	52.37	44.45	48.94	58.64	46.58	52.27	26.02	24.89	53.18	14.19	8.24
Lane Group LOS	D	D	D	E	D	D	C	C	D	B	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.72	5.38	6.82	1.37	4.44	0.22	3.96	2.48	13.12	9.49	0.82
50th-Percentile Queue Length [ft/ln]	67.97	134.51	170.50	34.17	111.12	5.43	98.89	62.07	327.94	237.32	20.60
95th-Percentile Queue Length [veh/ln]	4.89	9.18	11.10	2.46	7.90	0.39	7.12	4.47	19.06	14.55	1.48
95th-Percentile Queue Length [ft/ln]	122.34	229.61	277.57	61.50	197.56	9.78	178.00	111.72	476.44	363.64	37.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.37	44.45	48.94	58.64	46.58	0.00	52.27	26.02	24.89	53.18	14.19	8.24
Movement LOS	D	D	D	E	D		D	C	C	D	B	A
d_A, Approach Delay [s/veh]	48.54			48.00			26.46			22.90		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.84											
Intersection LOS	C											
Intersection V/C	0.674											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	43.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.925

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	5	7	1	122	3	418	148	548	2	2	1453	113
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	5	7	1	122	3	418	148	548	2	2	1453	113
Peak Hour Factor	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560	0.9560
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	2	0	32	1	109	39	143	1	1	380	30
Total Analysis Volume [veh/h]	5	7	1	128	3	437	155	573	2	2	1520	118
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	31	0	14	64	0	10	60	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	2	30	30	30	11	67	67	0	56	56
g / C, Green / Cycle	0.02	0.02	0.26	0.26	0.26	0.10	0.58	0.58	0.00	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.08	0.00	0.24	0.09	0.16	0.16	0.00	0.46	0.45
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	30	32	439	465	465	169	1047	1047	6	874	874
d1, Uniform Delay [s]	55.64	55.73	34.22	31.70	41.79	51.32	11.97	11.97	57.20	28.07	27.75
k, delay calibration	0.11	0.11	0.11	0.11	0.38	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.55	4.02	0.36	0.01	24.39	17.48	0.65	0.65	35.86	19.42	17.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.25	0.29	0.01	0.94	0.92	0.27	0.27	0.36	0.94	0.93
d, Delay for Lane Group [s/veh]	58.19	59.75	34.59	31.71	66.18	68.81	12.62	12.62	93.05	47.48	45.38
Lane Group LOS	E	E	C	C	E	E	B	B	F	D	D
Critical Lane Group	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.16	0.26	2.93	0.06	15.16	5.12	3.54	3.54	0.11	24.26	23.35
50th-Percentile Queue Length [ft/ln]	4.11	6.62	73.14	1.58	378.97	128.06	88.58	88.46	2.79	606.48	583.70
95th-Percentile Queue Length [veh/ln]	0.30	0.48	5.27	0.11	21.54	8.83	6.38	6.37	0.20	32.34	31.27
95th-Percentile Queue Length [ft/ln]	7.39	11.91	131.64	2.85	538.60	220.85	159.44	159.22	5.01	808.42	781.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.19	59.75	59.75	34.59	31.71	66.18	68.81	12.62	12.62	93.05	46.52	45.38
Movement LOS	E	E	E	C	C	E	E	B	B	F	D	D
d_A, Approach Delay [s/veh]	59.15			58.88			24.55			46.50		
Approach LOS	E			E			C			D		
d_I, Intersection Delay [s/veh]	43.51											
Intersection LOS	D											
Intersection V/C	0.925											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.789

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	21	12	3	36	7	339	228	386	16	5	1196	110
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	12	3	36	7	339	228	386	16	5	1196	110
Peak Hour Factor	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	1	10	2	93	62	105	4	1	326	30
Total Analysis Volume [veh/h]	23	13	3	39	8	370	249	421	17	5	1306	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	51	0	0	51	0	10	29	0	10	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	21	21	21	9	56	56	1	48	48
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.23	0.11	0.62	0.62	0.01	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.02	0.00	0.21	0.08	0.12	0.12	0.00	0.40	0.39
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	3200	1800	1800	1700	1800	1800
c, Capacity [veh/h]	435	420	429	420	420	337	1123	1123	16	950	950
d1, Uniform Delay [s]	26.81	26.69	27.07	26.57	33.29	39.07	7.25	7.24	44.34	16.75	16.50
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.04	0.09	0.02	6.10	3.17	0.39	0.38	11.49	5.68	5.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.04	0.09	0.02	0.88	0.74	0.20	0.19	0.32	0.76	0.74
d, Delay for Lane Group [s/veh]	26.86	26.72	27.16	26.58	39.39	42.24	7.64	7.62	55.82	22.43	21.71
Lane Group LOS	C	C	C	C	D	D	A	A	E	C	C
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.39	0.27	0.66	0.13	8.30	2.69	1.58	1.56	0.16	11.41	10.91
50th-Percentile Queue Length [ft/ln]	9.64	6.68	16.52	3.32	207.44	67.21	39.56	39.00	3.90	285.13	272.76
95th-Percentile Queue Length [veh/ln]	0.69	0.48	1.19	0.24	13.02	4.84	2.85	2.81	0.28	16.94	16.33
95th-Percentile Queue Length [ft/ln]	17.36	12.02	29.74	5.98	325.54	120.97	71.21	70.20	7.02	423.59	408.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	26.86	26.72	26.72	27.16	26.58	39.39	42.24	7.63	7.62	55.82	22.11	21.71
Movement LOS	C	C	C	C	C	D	D	A	A	E	C	C
d_A, Approach Delay [s/veh]	26.80			38.00			20.18			22.19		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	24.29											
Intersection LOS	C											
Intersection V/C	0.789											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	74.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	32	0	3	9	2	233	53	327	11	2	1084	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	0	3	9	2	233	53	327	11	2	1084	13
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	0	1	2	1	61	14	85	3	1	283	3
Total Analysis Volume [veh/h]	33	0	3	9	2	243	55	342	11	2	1133	14
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.40	0.00	0.00	0.10	0.02	0.53	0.09	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	74.87	68.93	35.02	61.01	58.57	28.23	11.55	0.00	0.00	8.00	0.00	0.00
Movement LOS	F	F	E	F	F	D	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.65	1.65	1.65	4.40	4.40	4.40	0.30	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	41.31	41.31	41.31	110.12	110.12	110.12	7.47	0.00	0.00	0.12	0.00	0.00
d_A, Approach Delay [s/veh]	71.55			29.63			1.56			0.01		
Approach LOS	F			D			A			A		
d_I, Intersection Delay [s/veh]	5.82											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	34.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.432

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	93	20	292	24	0	924	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	93	20	292	24	0	924	0
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	24	5	75	6	0	238	0
Total Analysis Volume [veh/h]	91	0	0	0	0	96	21	300	25	0	951	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.43	0.00	0.00	0.00	0.00	0.18	0.03	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	34.49	40.75	21.61	30.22	30.23	13.18	10.16	0.00	0.00	7.92	0.00	0.00
Movement LOS	D	E	C	D	D	B	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.01	2.01	2.01	0.65	0.65	0.65	0.09	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	50.28	50.28	50.28	16.19	16.19	16.19	2.26	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	34.49			13.18			0.62			0.00		
Approach LOS	D			B			A			A		
d_I, Intersection Delay [s/veh]	3.11											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	24.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	352	2	173	0	972	503	369	453	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	352	2	173	0	972	503	369	453	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9000	0.9000	0.9000	0.9500	0.9000	0.9000	0.9000	0.9000	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	98	1	48	0	270	140	103	126	0
Total Analysis Volume [veh/h]	0	0	0	391	2	192	0	1080	559	410	503	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	62	0	0	18	0	10	28	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	7	0	0	7	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		24	24	40	40	14	58
g / C, Green / Cycle		0.26	0.26	0.45	0.45	0.16	0.65
(v / s)_i Volume / Saturation Flow Rate		0.23	0.11	0.30	0.31	0.13	0.14
s, saturation flow rate [veh/h]		1700	1800	3600	1800	3200	3600
c, Capacity [veh/h]		445	471	1605	803	509	2338
d1, Uniform Delay [s]		31.93	27.48	19.74	20.05	36.51	6.43
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		5.96	0.57	2.27	4.96	3.05	0.21
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.88	0.41	0.67	0.70	0.81	0.22
d, Delay for Lane Group [s/veh]		37.89	28.04	22.01	25.01	39.56	6.64
Lane Group LOS		D	C	C	C	D	A
Critical Lane Group		Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		8.70	3.42	8.44	9.44	4.32	1.59
50th-Percentile Queue Length [ft/ln]		217.56	85.59	210.93	236.07	108.06	39.69
95th-Percentile Queue Length [veh/ln]		13.54	6.16	13.20	14.48	7.73	2.86
95th-Percentile Queue Length [ft/ln]		338.51	154.06	330.03	362.05	193.31	71.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	37.89	37.89	28.04	0.00	22.01	25.01	39.56	6.64	0.00
Movement LOS				D	D	C		C	C	D	A	
d_A, Approach Delay [s/veh]	0.00			34.66			23.03			21.42		
Approach LOS	A			C			C			C		
d_I, Intersection Delay [s/veh]	24.73											
Intersection LOS	C											
Intersection V/C	0.773											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	173	0	536	0	0	0	238	1111	0	0	659	311
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	0	536	0	0	0	238	1111	0	0	659	311
Peak Hour Factor	0.9260	0.9260	0.9260	0.9500	0.9500	0.9500	0.9260	0.9260	0.9500	0.9500	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	0	145	0	0	0	64	300	0	0	178	84
Total Analysis Volume [veh/h]	187	0	579	0	0	0	257	1200	0	0	712	336
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	30	0	0	0	0	42	60	0	0	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	7	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	18	18		16	64	45	45
g / C, Green / Cycle	0.20	0.20	0.20		0.18	0.72	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.16		0.15	0.33	0.13	0.19
s, saturation flow rate [veh/h]	1700	1700	3600		1700	3600	5400	1800
c, Capacity [veh/h]	334	334	706		299	2574	2672	891
d1, Uniform Delay [s]	30.78	30.78	34.66		36.05	5.49	13.23	14.13
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.45	0.45	2.43		7.22	0.61	0.24	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

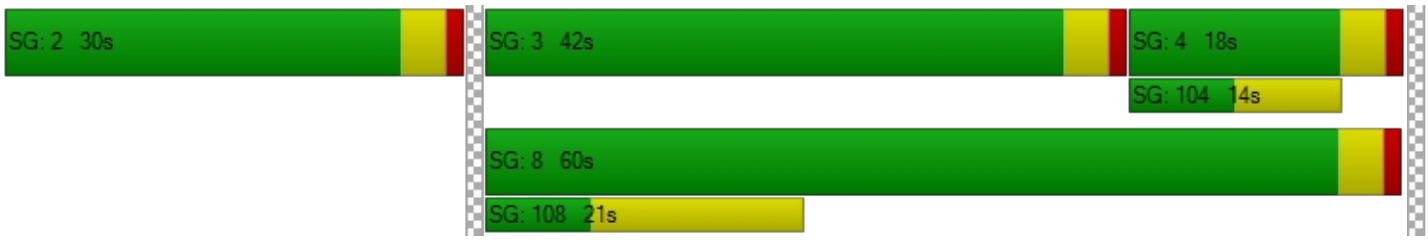
X, volume / capacity	0.28	0.28	0.82		0.86	0.47	0.27	0.38
d, Delay for Lane Group [s/veh]	31.23	31.23	37.09		43.26	6.10	13.48	15.34
Lane Group LOS	C	C	D		D	A	B	B
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.75	1.75	6.18		5.76	3.42	2.54	4.04
50th-Percentile Queue Length [ft/ln]	43.64	43.64	154.47		144.05	85.53	63.42	101.08
95th-Percentile Queue Length [veh/ln]	3.14	3.14	10.26		9.70	6.16	4.57	7.28
95th-Percentile Queue Length [ft/ln]	78.56	78.56	256.39		242.47	153.96	114.15	181.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.23	31.23	37.09	0.00	0.00	0.00	43.26	6.10	0.00	0.00	13.48	15.34
Movement LOS	C	C	D				D	A			B	B
d_A, Approach Delay [s/veh]	35.66			0.00			12.65			14.08		
Approach LOS	D			A			B			B		
d_I, Intersection Delay [s/veh]	18.50											
Intersection LOS	B											
Intersection V/C	0.575											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	7.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.450

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	129	0	51	0	0	0	0	1493	137	29	829	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	0	51	0	0	0	0	1493	137	29	829	0
Peak Hour Factor	0.9480	0.9500	0.9480	0.9500	0.9500	0.9500	0.9480	0.9480	0.9480	0.9480	0.9480	0.9480
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	0	13	0	0	0	0	394	36	8	219	0
Total Analysis Volume [veh/h]	136	0	54	0	0	0	0	1575	145	31	874	0
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	0	0	0	0	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	6	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	30	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	55	0	0	0	0	0	19	25	0	10	16	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No						No	No		No	No	
Maximum Recall	No						No	No		No	No	
Pedestrian Recall	No						No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	R	L	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	9		0	65	65	3	69	69
g / C, Green / Cycle	0.10	0.10		0.00	0.73	0.73	0.04	0.76	0.76
(v / s)_i Volume / Saturation Flow Rate	0.08	0.03		0.00	0.29	0.08	0.02	0.16	0.00
s, saturation flow rate [veh/h]	1700	1800		1700	5400	1800	1700	5400	1800
c, Capacity [veh/h]	178	189		2	3914	1305	63	4107	1369
d1, Uniform Delay [s]	39.22	37.20		0.00	4.82	3.71	42.51	3.08	0.00
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.63	0.82		0.00	0.31	0.17	5.78	0.12	0.00
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.29		0.00	0.40	0.11	0.49	0.21	0.00
d, Delay for Lane Group [s/veh]	45.85	38.02		0.00	5.12	3.88	48.29	3.20	0.00
Lane Group LOS	D	D		A	A	A	D	A	A
Critical Lane Group	Yes	No		No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.21	1.13		0.00	2.56	0.58	0.75	0.88	0.00
50th-Percentile Queue Length [ft/ln]	80.30	28.23		0.00	63.88	14.56	18.74	21.96	0.00
95th-Percentile Queue Length [veh/ln]	5.78	2.03		0.00	4.60	1.05	1.35	1.58	0.00
95th-Percentile Queue Length [ft/ln]	144.54	50.82		0.00	114.98	26.20	33.73	39.53	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.85	0.00	38.02	0.00	0.00	0.00	0.00	5.12	3.88	48.29	3.20	0.00
Movement LOS	D		D				A	A	A	D	A	A
d_A, Approach Delay [s/veh]	43.62			0.00			5.02			4.74		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	7.54											
Intersection LOS	A											
Intersection V/C	0.450											

Sequence

Ring 1	-	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	8.9
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.403

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			Yes			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	149	0	80	0	0	0	3	1376	144	83	713	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	0	80	0	0	0	3	1376	144	83	713	0
Peak Hour Factor	0.9370	0.9370	0.9370	0.9500	0.9500	0.9500	0.9370	0.9370	0.9370	0.9370	0.9370	0.9370
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	0	21	0	0	0	1	367	38	22	190	0
Total Analysis Volume [veh/h]	159	0	85	0	0	0	3	1469	154	89	761	0
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	51	0	0	0	0	22	29	0	10	17	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	18	0	0	0	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No					No	No		No	No	
Maximum Recall		No					No	No		No	No	
Pedestrian Recall		No					No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C		L	C	R	L	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7		0	66	66	5	70	70
g / C, Green / Cycle	0.08	0.08		0.01	0.73	0.73	0.06	0.78	0.78
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05		0.00	0.27	0.09	0.03	0.14	0.00
s, saturation flow rate [veh/h]	3200	1800		1700	5400	1800	3200	5400	1800
c, Capacity [veh/h]	251	141		10	3929	1310	194	4223	1408
d1, Uniform Delay [s]	40.22	40.12		44.55	4.59	3.65	40.87	2.49	0.00
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.62	4.05		14.52	0.27	0.18	1.69	0.09	0.00
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

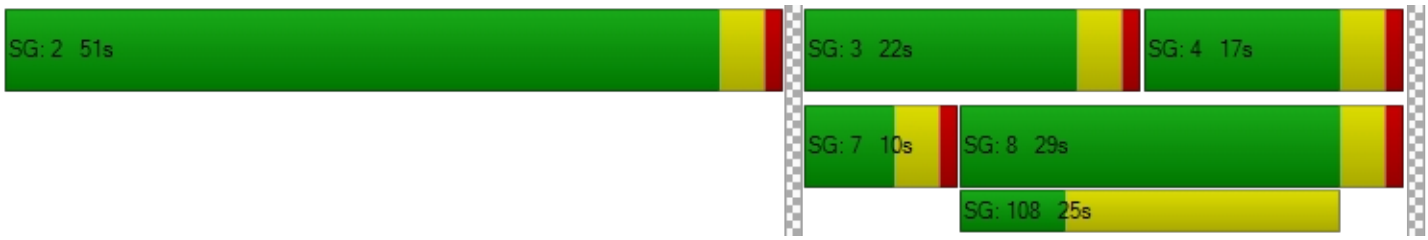
X, volume / capacity	0.63	0.60		0.29	0.37	0.12	0.46	0.18	0.00
d, Delay for Lane Group [s/veh]	42.84	44.17		59.08	4.86	3.84	42.57	2.58	0.00
Lane Group LOS	D	D		E	A	A	D	A	A
Critical Lane Group	Yes	No		No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.78	1.96		0.11	2.27	0.61	0.96	0.59	0.00
50th-Percentile Queue Length [ft/ln]	44.46	48.96		2.65	56.70	15.24	23.96	14.65	0.00
95th-Percentile Queue Length [veh/ln]	3.20	3.52		0.19	4.08	1.10	1.72	1.05	0.00
95th-Percentile Queue Length [ft/ln]	80.04	88.12		4.77	102.06	27.43	43.12	26.36	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.84	44.17	44.17	0.00	0.00	0.00	59.08	4.86	3.84	42.57	2.58	0.00
Movement LOS	D	D	D				E	A	A	D	A	A
d_A, Approach Delay [s/veh]	43.31			0.00			4.87			6.77		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	8.91											
Intersection LOS	A											
Intersection V/C	0.403											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	47.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.945

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	164	313	520	73	307	11	27	976	288	246	551	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	164	313	520	73	307	11	27	976	288	246	551	62
Peak Hour Factor	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130	0.9130
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	86	142	20	84	3	7	267	79	67	151	17
Total Analysis Volume [veh/h]	180	343	570	80	336	12	30	1069	315	269	604	68
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	47	0	10	42	0	10	42	0	21	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	40	40	6	37	4	38	38	20	54	54
g / C, Green / Cycle	0.07	0.34	0.34	0.05	0.31	0.03	0.32	0.32	0.17	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.06	0.19	0.32	0.05	0.09	0.01	0.30	0.18	0.16	0.17	0.04
s, saturation flow rate [veh/h]	3200	1800	1800	1700	3600	3200	3600	1800	1700	3600	1800
c, Capacity [veh/h]	232	603	603	85	1124	101	1135	567	283	1620	810
d1, Uniform Delay [s]	54.68	32.79	38.84	56.82	31.30	56.80	40.03	34.11	49.51	21.80	18.86
k, delay calibration	0.11	0.11	0.38	0.11	0.11	0.11	0.50	0.50	0.18	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.45	0.90	21.06	32.64	0.15	1.61	16.01	3.89	22.10	0.66	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.57	0.95	0.94	0.30	0.30	0.94	0.56	0.95	0.37	0.08
d, Delay for Lane Group [s/veh]	60.12	33.68	59.90	89.46	31.44	58.41	56.04	38.00	71.62	22.46	19.06
Lane Group LOS	E	C	E	F	C	E	E	D	E	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.85	8.32	19.61	3.19	3.74	0.46	17.15	7.96	9.49	5.51	1.09
50th-Percentile Queue Length [ft/ln]	71.22	208.03	490.29	79.68	93.39	11.44	428.75	198.96	237.14	137.68	27.23
95th-Percentile Queue Length [veh/ln]	5.13	13.05	26.87	5.74	6.72	0.82	23.94	12.59	14.54	9.36	1.96
95th-Percentile Queue Length [ft/ln]	128.19	326.30	671.86	143.43	168.11	20.58	598.55	314.63	363.41	233.89	49.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	60.12	33.68	59.90	89.46	31.44	0.00	58.41	56.04	38.00	71.62	22.46	19.06
Movement LOS	E	C	E	F	C		E	E	D	E	C	B
d_A, Approach Delay [s/veh]	51.71			42.60			52.07			36.27		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	47.10											
Intersection LOS	D											
Intersection V/C	0.945											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	11.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.570

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	4	1	2	39	0	71	121	1428	7	3	767	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	4	1	2	39	0	71	121	1428	7	3	767	55
Peak Hour Factor	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	10	0	19	32	379	2	1	204	15
Total Analysis Volume [veh/h]	4	1	2	41	0	75	128	1516	7	3	814	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	29	0	26	41	0	10	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	1	1	6	6	6	9	67	67	0	59	59
g / C, Green / Cycle	0.01	0.01	0.06	0.06	0.06	0.10	0.74	0.74	0.01	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.02	0.00	0.04	0.08	0.42	0.42	0.00	0.25	0.24
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	21	22	109	115	115	163	1333	1333	10	1171	1171
d1, Uniform Delay [s]	44.11	44.08	40.49	0.00	41.23	39.85	5.27	5.26	44.62	7.29	7.24
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.53	2.84	2.15	0.00	6.09	8.00	1.79	1.78	14.31	0.93	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.19	0.14	0.38	0.00	0.65	0.78	0.57	0.57	0.29	0.38	0.37
d, Delay for Lane Group [s/veh]	48.64	46.93	42.64	0.00	47.32	47.85	7.05	7.05	58.93	8.22	8.13
Lane Group LOS	D	D	D	A	D	D	A	A	E	A	A
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.11	0.08	0.93	0.00	1.80	3.00	4.48	4.47	0.11	3.31	3.20
50th-Percentile Queue Length [ft/ln]	2.84	2.07	23.21	0.00	45.08	75.06	111.97	111.80	2.64	82.64	80.10
95th-Percentile Queue Length [veh/ln]	0.20	0.15	1.67	0.00	3.25	5.40	7.95	7.94	0.19	5.95	5.77
95th-Percentile Queue Length [ft/ln]	5.11	3.73	41.78	0.00	81.14	135.12	198.74	198.51	4.76	148.75	144.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.64	46.93	46.93	42.64	0.00	47.32	47.85	7.05	7.05	58.93	8.18	8.13
Movement LOS	D	D	D	D	A	D	D	A	A	E	A	A
d_A, Approach Delay [s/veh]	47.91			45.66			10.21			8.35		
Approach LOS	D			D			B			A		
d_I, Intersection Delay [s/veh]	11.25											
Intersection LOS	B											
Intersection V/C	0.570											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	17.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.501

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	19	3	1	55	12	233	314	1049	16	2	572	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	19	3	1	55	12	233	314	1049	16	2	572	49
Peak Hour Factor	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830	0.9830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	1	0	14	3	59	80	267	4	1	145	12
Total Analysis Volume [veh/h]	19	3	1	56	12	237	319	1067	16	2	582	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	51	0	0	51	0	10	29	0	10	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	14	14	14	14	12	63	63	0	52	52
g / C, Green / Cycle	0.16	0.16	0.16	0.16	0.16	0.13	0.70	0.70	0.00	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.03	0.01	0.13	0.10	0.30	0.30	0.00	0.18	0.17
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	3200	1800	1800	1700	1800	1800
c, Capacity [veh/h]	306	286	312	286	286	413	1266	1266	8	1042	1042
d1, Uniform Delay [s]	32.23	31.94	32.96	32.09	36.70	37.94	5.66	5.65	44.67	9.70	9.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.08	0.02	0.27	0.06	6.15	3.11	1.06	1.05	16.70	0.76	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.01	0.18	0.04	0.83	0.77	0.43	0.43	0.26	0.31	0.30
d, Delay for Lane Group [s/veh]	32.32	31.96	33.23	32.15	42.86	41.05	6.73	6.71	61.37	10.46	10.39
Lane Group LOS	C	C	C	C	D	D	A	A	E	B	B
Critical Lane Group	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.36	0.07	1.08	0.22	5.44	3.41	3.35	3.33	0.08	2.92	2.84
50th-Percentile Queue Length [ft/ln]	8.90	1.86	26.88	5.60	136.12	85.17	83.67	83.15	1.97	73.10	70.93
95th-Percentile Queue Length [veh/ln]	0.64	0.13	1.94	0.40	9.27	6.13	6.02	5.99	0.14	5.26	5.11
95th-Percentile Queue Length [ft/ln]	16.03	3.35	48.39	10.09	231.79	153.30	150.60	149.68	3.54	131.58	127.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.32	31.96	31.96	33.23	32.15	42.86	41.05	6.72	6.71	61.37	10.43	10.39
Movement LOS	C	C	C	C	C	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	32.25			40.67			14.53			10.59		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	17.02											
Intersection LOS	B											
Intersection V/C	0.501											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	101.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.378

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	20	0	3	4	0	99	203	815	37	3	465	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	0	3	4	0	99	203	815	37	3	465	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	1	1	0	26	53	214	10	1	122	1
Total Analysis Volume [veh/h]	21	0	3	4	0	104	214	858	39	3	489	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.38	0.00	0.01	0.04	0.00	0.14	0.20	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	101.73	94.59	43.44	46.01	65.42	11.12	9.22	0.00	0.00	9.80	0.00	0.00
Movement LOS	F	F	E	E	F	B	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.44	1.44	1.44	0.66	0.66	0.66	0.75	0.00	0.00	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	35.90	35.90	35.90	16.51	16.51	16.51	18.69	0.00	0.00	0.30	0.00	0.00
d_A, Approach Delay [s/veh]	94.44			12.41			1.78			0.06		
Approach LOS	F			B			A			A		
d_I, Intersection Delay [s/veh]	3.23											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	37.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.347

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	47	53	687	81	0	367	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	47	53	687	81	0	367	5
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	12	13	174	21	0	93	1
Total Analysis Volume [veh/h]	59	0	0	1	0	48	54	697	82	0	372	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.35	0.00	0.00	0.00	0.00	0.06	0.05	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	37.05	37.06	21.78	19.54	27.66	9.69	8.20	0.00	0.00	9.32	0.00	0.00
Movement LOS	E	E	C	C	D	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.45	1.45	1.45	0.20	0.20	0.20	0.14	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	36.13	36.13	36.13	4.98	4.98	4.98	3.60	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	37.05			9.89			0.53			0.00		
Approach LOS	E			A			A			A		
d_I, Intersection Delay [s/veh]	2.36											
Intersection LOS	E											

APPENDIX F-III

EXISTING WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	32	0	3	9	2	233	53	327	11	2	1084	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	0	3	9	2	233	53	327	11	2	1084	13
Peak Hour Factor	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570	0.9570
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	0	1	2	1	61	14	85	3	1	283	3
Total Analysis Volume [veh/h]	33	0	3	9	2	243	55	342	11	2	1133	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	62	0	0	62	0	10	18	0	10	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	5	62	62	0	58	58
g / C, Green / Cycle	0.17	0.17	0.05	0.69	0.69	0.00	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.02	0.15	0.03	0.10	0.10	0.00	0.32	0.32
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	374	339	87	1237	1237	8	1153	1153
d1, Uniform Delay [s]	31.31	36.02	41.91	4.89	4.88	44.67	8.54	8.52
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	3.33	7.46	0.24	0.24	16.70	1.54	1.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.75	0.63	0.14	0.14	0.26	0.50	0.50
d, Delay for Lane Group [s/veh]	31.42	39.36	49.36	5.13	5.12	61.37	10.08	10.05
Lane Group LOS	C	D	D	A	A	E	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.66	5.61	1.33	0.92	0.91	0.08	5.05	5.02
50th-Percentile Queue Length [ft/ln]	16.61	140.36	33.17	22.91	22.72	1.97	126.32	125.52
95th-Percentile Queue Length [veh/ln]	1.20	9.50	2.39	1.65	1.64	0.14	8.74	8.70
95th-Percentile Queue Length [ft/ln]	29.89	237.50	59.70	41.23	40.90	3.54	218.48	217.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.42	31.42	31.42	39.36	39.36	39.36	49.36	5.13	5.12	61.37	10.06	10.05
Movement LOS	C	C	C	D	D	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	31.42			39.36			11.09			10.15		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	14.79											
Intersection LOS	B											
Intersection V/C	0.578											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	7.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.352

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	93	20	292	24	0	924	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	93	20	292	24	0	924	0
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	24	5	75	6	0	238	0
Total Analysis Volume [veh/h]	91	0	0	0	0	96	21	300	25	0	951	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	72	0	0	72	0	0	18	0	0	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	75	75	75	75	75	75
g / C, Green / Cycle	0.07	0.07	0.84	0.84	0.84	0.84	0.84	0.84
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.01	0.09	0.09	0.00	0.26	0.26
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	205	165	1350	1507	1507	1424	1507	1507
d1, Uniform Delay [s]	40.77	40.90	1.20	1.31	1.30	0.00	1.61	1.61
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.50	3.22	0.02	0.15	0.14	0.00	0.55	0.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.58	0.02	0.11	0.11	0.00	0.32	0.32
d, Delay for Lane Group [s/veh]	42.28	44.12	1.22	1.45	1.45	0.00	2.16	2.16
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.03	2.21	0.02	0.15	0.15	0.00	0.55	0.55
50th-Percentile Queue Length [ft/ln]	50.87	55.26	0.46	3.73	3.66	0.00	13.66	13.66
95th-Percentile Queue Length [veh/ln]	3.66	3.98	0.03	0.27	0.26	0.00	0.98	0.98
95th-Percentile Queue Length [ft/ln]	91.56	99.46	0.82	6.71	6.59	0.00	24.58	24.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.28	42.28	42.28	44.12	44.12	44.12	1.22	1.45	1.45	0.00	2.16	2.16
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	42.28			44.12			1.44			2.16		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	7.17											
Intersection LOS	A											
Intersection V/C	0.352											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	12.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.377

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	20	0	3	4	0	99	203	815	37	3	465	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	0	3	4	0	99	203	815	37	3	465	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	1	1	0	26	53	214	10	1	122	1
Total Analysis Volume [veh/h]	21	0	3	4	0	104	214	858	39	3	489	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	29	0	43	51	0	10	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	13	70	70	0	57	57
g / C, Green / Cycle	0.08	0.08	0.15	0.78	0.78	0.01	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.01	0.06	0.13	0.25	0.25	0.00	0.14	0.14
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	214	181	255	1402	1402	10	1143	1143
d1, Uniform Delay [s]	38.50	40.53	37.23	2.94	2.93	44.55	6.95	6.94
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.23	3.15	7.29	0.61	0.60	14.52	0.43	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

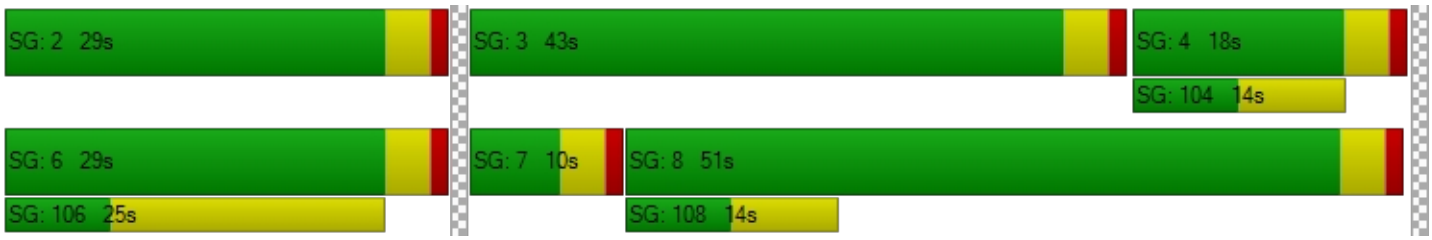
X, volume / capacity	0.11	0.60	0.84	0.32	0.32	0.29	0.22	0.22
d, Delay for Lane Group [s/veh]	38.73	43.69	44.52	3.55	3.52	59.08	7.38	7.38
Lane Group LOS	D	D	D	A	A	E	A	A
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.50	2.47	4.85	1.41	1.38	0.11	1.72	1.72
50th-Percentile Queue Length [ft/ln]	12.57	61.87	121.23	35.20	34.49	2.65	43.08	42.97
95th-Percentile Queue Length [veh/ln]	0.90	4.45	8.46	2.53	2.48	0.19	3.10	3.09
95th-Percentile Queue Length [ft/ln]	22.62	111.36	211.52	63.36	62.09	4.77	77.54	77.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.73	38.73	38.73	43.69	43.69	43.69	44.52	3.54	3.52	59.08	7.38	7.38
Movement LOS	D	D	D	D	D	D	D	A	A	E	A	A
d_A, Approach Delay [s/veh]	38.73			43.69			11.43			7.69		
Approach LOS	D			D			B			A		
d_I, Intersection Delay [s/veh]	12.74											
Intersection LOS	B											
Intersection V/C	0.377											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	4.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.280

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	47	53	687	81	0	367	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	47	53	687	81	0	367	5
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	12	13	174	21	0	93	1
Total Analysis Volume [veh/h]	59	0	0	1	0	48	54	697	82	0	372	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	61	0	0	61	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	77	77	77	77	77	77
g / C, Green / Cycle	0.05	0.05	0.86	0.86	0.86	0.86	0.86	0.86
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.03	0.22	0.21	0.00	0.10	0.10
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	169	130	1460	1546	1546	1418	1546	1546
d1, Uniform Delay [s]	41.82	41.57	0.93	1.15	1.14	0.00	1.00	1.00
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.23	1.80	0.05	0.40	0.38	0.00	0.16	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

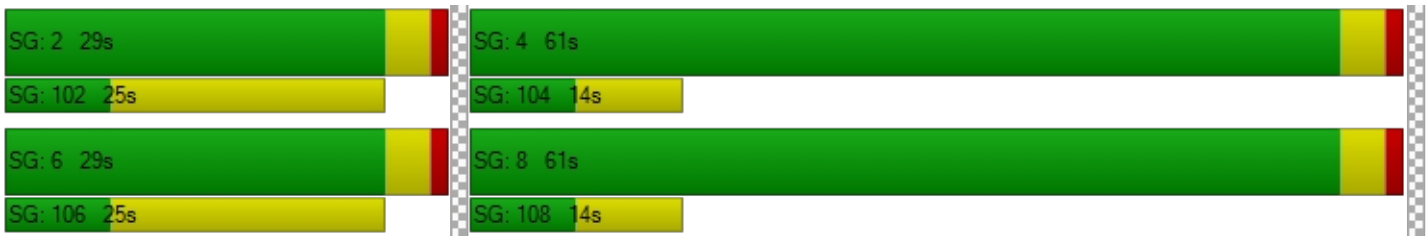
X, volume / capacity	0.35	0.38	0.04	0.26	0.25	0.00	0.12	0.12
d, Delay for Lane Group [s/veh]	43.05	43.37	0.98	1.55	1.52	0.00	1.17	1.17
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.33	1.11	0.02	0.17	0.16	0.00	0.07	0.07
50th-Percentile Queue Length [ft/ln]	33.23	27.87	0.48	4.31	4.11	0.00	1.74	1.73
95th-Percentile Queue Length [veh/ln]	2.39	2.01	0.03	0.31	0.30	0.00	0.13	0.12
95th-Percentile Queue Length [ft/ln]	59.82	50.16	0.86	7.76	7.39	0.00	3.13	3.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.05	43.05	43.05	43.37	43.37	43.37	0.98	1.54	1.52	0.00	1.17	1.17
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	43.05			43.37			1.50			1.17		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	4.82											
Intersection LOS	A											
Intersection V/C	0.280											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX G

YEAR 2019 TRAFFIC CONDITIONS INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX G-I

YEAR 2019 WITHOUT PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	19.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.635

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	245	0	134	0	465	372	1094	1131	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	245	0	134	0	465	372	1094	1131	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	64	0	35	0	122	98	288	298	0
Total Analysis Volume [veh/h]	0	0	0	258	0	141	0	489	392	1152	1191	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	19	0	0	10	0	61	71	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		10	10	10	32	32	36	72
g / C, Green / Cycle		0.11	0.11	0.11	0.36	0.36	0.40	0.80
(v / s)_i Volume / Saturation Flow Rate		0.08	0.08	0.07	0.07	0.11	0.36	0.33
s, saturation flow rate [veh/h]		1700	1700	1800	7200	3600	3200	3600
c, Capacity [veh/h]		184	184	195	2559	1280	1290	2891
d1, Uniform Delay [s]		38.99	38.94	38.46	20.07	20.99	25.06	2.61
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		6.12	5.80	3.43	0.17	0.62	2.40	0.44
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.75	0.74	0.64	0.19	0.31	0.89	0.41
d, Delay for Lane Group [s/veh]		45.10	44.74	41.89	20.23	21.61	27.46	3.05
Lane Group LOS		D	D	D	C	C	C	A
Critical Lane Group		Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.24	3.18	2.77	1.67	2.87	10.66	1.38
50th-Percentile Queue Length [ft/ln]		81.03	79.49	69.32	41.86	71.72	266.42	34.49
95th-Percentile Queue Length [veh/ln]		5.83	5.72	4.99	3.01	5.16	16.01	2.48
95th-Percentile Queue Length [ft/ln]		145.85	143.08	124.78	75.35	129.10	400.27	62.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	44.93	44.74	42.07	0.00	20.23	21.61	27.46	3.05	0.00
Movement LOS				D	D	D		C	C	C	A	
d_A, Approach Delay [s/veh]	0.00			43.98			20.85			15.05		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	19.65											
Intersection LOS	B											
Intersection V/C	0.635											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	15.6
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	384	0	473	0	0	0	85	636	0	0	1838	526
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	384	0	473	0	0	0	85	636	0	0	1838	526
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	0	124	0	0	0	22	167	0	0	484	138
Total Analysis Volume [veh/h]	404	0	498	0	0	0	89	669	0	0	1935	554
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	39	0	0	0	0	29	51	0	0	22	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	11	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16		6	66	56	56
g / C, Green / Cycle	0.18	0.18	0.18		0.07	0.73	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.12	0.12	0.14		0.05	0.12	0.27	0.31
s, saturation flow rate [veh/h]	1700	1700	3600		1700	5400	7200	1800
c, Capacity [veh/h]	307	307	651		116	3944	4446	1111
d1, Uniform Delay [s]	34.28	34.28	35.06		41.23	3.74	9.01	9.52
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.39	2.39	1.91		9.96	0.09	0.31	1.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

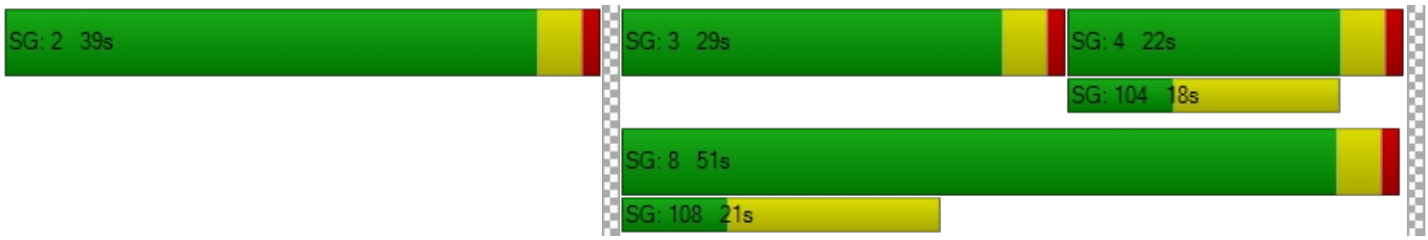
X, volume / capacity	0.66	0.66	0.76		0.77	0.17	0.44	0.50
d, Delay for Lane Group [s/veh]	36.67	36.67	36.97		51.19	3.83	9.32	11.12
Lane Group LOS	D	D	D		D	A	A	B
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.24	4.24	5.26		2.18	0.84	4.06	5.28
50th-Percentile Queue Length [ft/ln]	105.99	105.99	131.50		54.40	21.05	101.40	132.10
95th-Percentile Queue Length [veh/ln]	7.62	7.62	9.02		3.92	1.52	7.30	9.05
95th-Percentile Queue Length [ft/ln]	190.40	190.40	225.53		97.91	37.90	182.52	226.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.67	36.67	36.97	0.00	0.00	0.00	51.19	3.83	0.00	0.00	9.32	11.12
Movement LOS	D	D	D				D	A			A	B
d_A, Approach Delay [s/veh]	36.83			0.00			9.39			9.72		
Approach LOS	D			A			A			A		
d_I, Intersection Delay [s/veh]	15.56											
Intersection LOS	B											
Intersection V/C	0.575											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	8.1
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.613

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	64	0	14	3	0	13	20	1007	85	22	2281	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	0	14	3	0	13	20	1007	85	22	2281	3
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	0	4	1	0	3	5	265	22	6	600	1
Total Analysis Volume [veh/h]	67	0	15	3	0	14	21	1060	89	23	2401	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	39	0	10	27	0	10	31	0	10	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	0	0	0	14	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	6	0	2	3	65	65	3	65	65
g / C, Green / Cycle	0.05	0.07	0.01	0.02	0.03	0.72	0.72	0.03	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.00	0.01	0.01	0.20	0.05	0.01	0.44	0.00
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1700	5400	1800	1700	5400	1800
c, Capacity [veh/h]	94	127	10	38	49	3864	1288	52	3874	1291
d1, Uniform Delay [s]	41.88	39.29	44.62	43.55	43.08	4.54	3.84	42.97	6.48	3.60
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.46	0.41	14.31	5.86	5.97	0.18	0.10	5.86	0.75	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

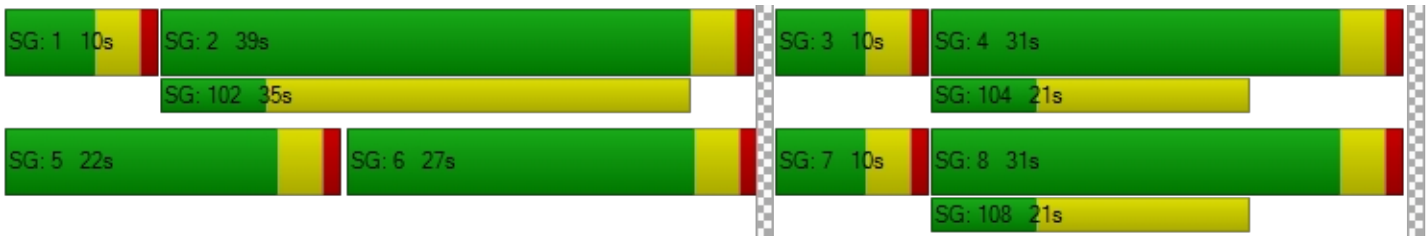
X, volume / capacity	0.71	0.12	0.29	0.37	0.43	0.27	0.07	0.44	0.62	0.00
d, Delay for Lane Group [s/veh]	51.34	39.71	58.93	49.41	49.06	4.71	3.94	48.83	7.23	3.61
Lane Group LOS	D	D	E	D	D	A	A	D	A	A
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.70	0.32	0.11	0.37	0.52	1.61	0.37	0.57	5.26	0.01
50th-Percentile Queue Length [ft/ln]	42.41	8.07	2.69	9.18	13.05	40.14	9.14	14.18	131.44	0.29
95th-Percentile Queue Length [veh/ln]	3.05	0.58	0.19	0.66	0.94	2.89	0.66	1.02	9.02	0.02
95th-Percentile Queue Length [ft/ln]	76.33	14.53	4.85	16.52	23.49	72.25	16.45	25.53	225.44	0.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.34	39.71	39.71	58.93	49.41	49.41	49.06	4.71	3.94	48.83	7.23	3.61
Movement LOS	D	D	D	E	D	D	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	49.21			51.09			5.45			7.62		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	8.06											
Intersection LOS	A											
Intersection V/C	0.613											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	9.3
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.595

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	83	0	29	4	0	14	15	907	86	69	2207	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	0	29	4	0	14	15	907	86	69	2207	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	0	8	1	0	4	4	239	23	18	581	1
Total Analysis Volume [veh/h]	87	0	31	4	0	15	16	955	91	73	2323	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	46	46	0	10	10	0	10	29	0	10	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	0	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	8	8	1	2	2	2	66	66	5	69	69
g / C, Green / Cycle	0.07	0.08	0.08	0.01	0.02	0.02	0.02	0.69	0.69	0.05	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.05	0.00	0.02	0.00	0.00	0.01	0.01	0.18	0.05	0.02	0.43	0.00
s, saturation flow rate [veh/h]	1700	1800	1800	1700	1800	1800	3200	5400	1800	3200	5400	1800
c, Capacity [veh/h]	113	146	146	12	38	38	72	3723	1241	174	3896	1299
d1, Uniform Delay [s]	43.66	0.00	40.86	46.99	0.00	45.92	45.66	5.57	4.83	43.50	6.47	3.70
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.40	0.00	0.72	15.90	0.00	6.36	1.56	0.17	0.11	1.60	0.68	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

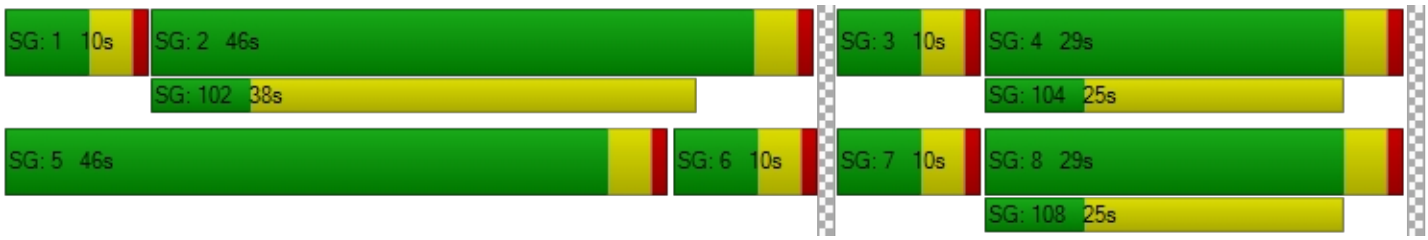
X, volume / capacity	0.77	0.00	0.21	0.34	0.00	0.39	0.22	0.26	0.07	0.42	0.60	0.00
d, Delay for Lane Group [s/veh]	54.06	0.00	41.58	62.89	0.00	52.28	47.22	5.74	4.94	45.10	7.15	3.70
Lane Group LOS	D	A	D	E	A	D	D	A	A	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.32	0.00	0.70	0.15	0.00	0.42	0.19	1.84	0.48	0.84	5.36	0.02
50th-Percentile Queue Length [ft/ln]	58.07	0.00	17.60	3.65	0.00	10.38	4.86	46.04	12.04	20.96	134.04	0.52
95th-Percentile Queue Length [veh/ln]	4.18	0.00	1.27	0.26	0.00	0.75	0.35	3.31	0.87	1.51	9.16	0.04
95th-Percentile Queue Length [ft/ln]	104.52	0.00	31.67	6.57	0.00	18.68	8.75	82.87	21.68	37.72	228.98	0.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.06	0.00	41.58	62.89	0.00	52.28	47.22	5.74	4.94	45.10	7.15	3.70
Movement LOS	D	A	D	E	A	D	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	50.78			54.51			6.29			8.30		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	9.34											
Intersection LOS	A											
Intersection V/C	0.595											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	315	199	268	72	435	51	330	534	149	553	1672	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	315	199	268	72	435	51	330	534	149	553	1672	158
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	83	52	71	19	114	13	87	141	39	146	440	42
Total Analysis Volume [veh/h]	332	209	282	76	458	54	347	562	157	582	1760	166
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	42	0	17	42	0	10	32	0	14	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	23	5	16	14	38	38	22	46	46
g / C, Green / Cycle	0.12	0.22	0.05	0.15	0.13	0.37	0.37	0.21	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.10	0.06	0.02	0.13	0.11	0.10	0.09	0.18	0.33	0.09
s, saturation flow rate [veh/h]	3200	3600	3200	3600	3200	5400	1800	3200	5400	1800
c, Capacity [veh/h]	390	802	166	550	426	1970	657	667	2377	792
d1, Uniform Delay [s]	45.22	33.71	48.40	43.23	44.31	23.67	23.23	40.26	24.44	18.15
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.29	0.17	1.96	3.38	3.85	0.36	0.86	3.76	2.12	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.26	0.46	0.83	0.82	0.29	0.24	0.87	0.74	0.21
d, Delay for Lane Group [s/veh]	50.51	33.88	50.36	46.61	48.16	24.04	24.09	44.02	26.56	18.75
Lane Group LOS	D	C	D	D	D	C	C	D	C	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.50	2.22	1.01	5.99	4.46	3.19	2.73	7.29	11.56	2.46
50th-Percentile Queue Length [ft/ln]	112.51	55.41	25.26	149.78	111.46	79.87	68.25	182.37	289.12	61.60
95th-Percentile Queue Length [veh/ln]	7.98	3.99	1.82	10.01	7.92	5.75	4.91	11.72	17.14	4.44
95th-Percentile Queue Length [ft/ln]	199.49	99.73	45.47	250.14	198.03	143.76	122.85	293.11	428.55	110.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	50.51	33.88	0.00	50.36	46.61	0.00	48.16	24.04	24.09	44.02	26.56	18.75
Movement LOS	D	C		D	D		D	C	C	D	C	B
d_A, Approach Delay [s/veh]	44.08			47.14			31.90			30.10		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	34.09											
Intersection LOS	C											
Intersection V/C	0.785											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	81.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.087

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	7	5	134	3	445	158	703	20	2	1877	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	7	5	134	3	445	158	703	20	2	1877	115
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	2	1	35	1	117	42	185	5	1	494	30
Total Analysis Volume [veh/h]	61	7	5	141	3	468	166	740	21	2	1976	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	14	65	0	10	61	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	31	31	31	10	67	67	0	57	57
g / C, Green / Cycle	0.05	0.05	0.26	0.26	0.26	0.08	0.56	0.56	0.00	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.08	0.00	0.26	0.10	0.21	0.01	0.00	0.55	0.07
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	3600	1800	1700	3600	1800
c, Capacity [veh/h]	81	86	443	469	469	144	1999	1000	5	1705	852
d1, Uniform Delay [s]	56.46	54.80	35.77	32.86	44.33	54.90	14.93	12.00	59.68	31.58	17.82
k, delay calibration	0.11	0.11	0.11	0.11	0.45	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.22	0.74	0.41	0.01	38.92	83.90	0.53	0.04	36.07	78.54	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

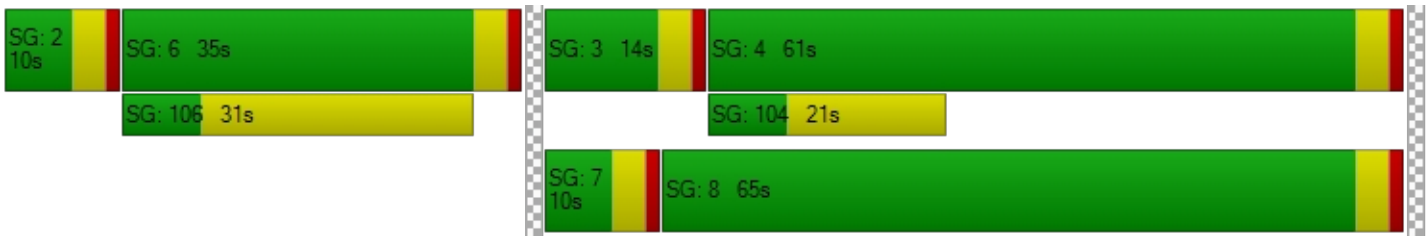
X, volume / capacity	0.75	0.14	0.32	0.01	1.00	1.15	0.37	0.02	0.36	1.16	0.14
d, Delay for Lane Group [s/veh]	69.68	55.54	36.18	32.87	83.25	138.80	15.46	12.04	95.76	110.13	18.17
Lane Group LOS	E	E	D	C	F	F	B	B	F	F	B
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.12	0.37	3.40	0.07	18.83	7.62	5.39	0.25	0.11	41.21	1.89
50th-Percentile Queue Length [ft/ln]	53.08	9.16	84.90	1.65	470.80	190.50	134.78	6.25	2.86	1030.25	47.34
95th-Percentile Queue Length [veh/ln]	3.82	0.66	6.11	0.12	25.95	12.74	9.20	0.45	0.21	57.67	3.41
95th-Percentile Queue Length [ft/ln]	95.54	16.48	152.82	2.97	648.73	318.39	229.98	11.25	5.15	1441.64	85.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.68	55.54	55.54	36.18	32.87	83.25	138.80	15.46	12.04	95.76	110.13	18.17
Movement LOS	E	E	E	D	C	F	F	B	B	F	F	B
d_A, Approach Delay [s/veh]	67.35			72.16			37.47			104.81		
Approach LOS	E			E			D			F		
d_I, Intersection Delay [s/veh]	81.87											
Intersection LOS	F											
Intersection V/C	1.087											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	22	13	3	41	7	374	268	513	17	5	1476	125
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	13	3	41	7	374	268	513	17	5	1476	125
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	1	11	2	98	71	135	4	1	388	33
Total Analysis Volume [veh/h]	23	14	3	43	7	394	282	540	18	5	1554	132
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	45	0	0	45	0	10	45	0	10	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	24	24	24	11	63	63	1	52	52
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.24	0.11	0.63	0.63	0.01	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.03	0.00	0.22	0.09	0.16	0.15	0.00	0.47	0.47
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	3200	1800	1800	1700	1800	1800
c, Capacity [veh/h]	448	438	440	438	438	359	1130	1130	15	944	944
d1, Uniform Delay [s]	29.01	28.89	29.36	28.73	36.64	43.22	8.22	8.20	49.26	21.40	21.16
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.04	0.10	0.01	7.26	3.81	0.53	0.52	12.11	13.15	12.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.04	0.10	0.02	0.90	0.79	0.25	0.25	0.33	0.90	0.89
d, Delay for Lane Group [s/veh]	29.06	28.93	29.46	28.74	43.89	47.04	8.74	8.72	61.37	34.55	33.31
Lane Group LOS	C	C	C	C	D	D	A	A	E	C	C
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.43	0.32	0.81	0.13	10.03	3.45	2.41	2.38	0.17	18.92	18.29
50th-Percentile Queue Length [ft/ln]	10.71	7.89	20.29	3.23	250.73	86.33	60.32	59.52	4.28	472.98	457.35
95th-Percentile Queue Length [veh/ln]	0.77	0.57	1.46	0.23	15.22	6.22	4.34	4.29	0.31	26.05	25.31
95th-Percentile Queue Length [ft/ln]	19.29	14.20	36.52	5.81	380.57	155.39	108.58	107.14	7.71	651.32	632.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.06	28.93	28.93	29.46	28.74	43.89	47.04	8.73	8.72	61.37	33.99	33.31
Movement LOS	C	C	C	C	C	D	D	A	A	E	C	C
d_A, Approach Delay [s/veh]	29.00			42.26			21.59			34.01		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	31.70											
Intersection LOS	C											
Intersection V/C	0.884											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	187.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.269

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	2	0	3	10	2	254	61	460	1	2	1392	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	0	3	10	2	254	61	460	1	2	1392	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	3	1	67	16	121	0	1	366	4
Total Analysis Volume [veh/h]	2	0	3	11	2	267	64	484	1	2	1465	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.00	0.00	0.27	0.04	0.74	0.14	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	160.45	92.60	15.64	187.02	180.00	109.15	14.30	0.00	0.00	8.36	0.00	0.00
Movement LOS	F	F	C	F	F	F	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.27	0.27	0.27	11.23	11.23	11.23	0.49	0.00	0.00	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	6.86	6.86	6.86	280.71	280.71	280.71	12.28	0.00	0.00	0.14	0.00	0.00
d_A, Approach Delay [s/veh]	73.56			112.71			1.67			0.01		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	14.19											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	51.4
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	0	99	21	448	1315	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	99	21	448	1315	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	26	6	118	346	0
Total Analysis Volume [veh/h]	0	104	22	472	1384	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.27	0.04	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	51.36	17.71	12.68	0.00	0.00	0.00
Movement LOS	F	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	1.07	1.07	0.14	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	26.81	26.81	3.51	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	17.71		0.56		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	1.07					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	22.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	584	2	183	0	1211	533	529	624	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	584	2	183	0	1211	533	529	624	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	154	1	48	0	319	140	139	164	0
Total Analysis Volume [veh/h]	0	0	0	615	2	193	0	1275	561	557	657	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	35	0	0	10	0	45	55	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		20	20	20	40	40	19	63
g / C, Green / Cycle		0.22	0.22	0.22	0.44	0.44	0.21	0.69
(v / s)_i Volume / Saturation Flow Rate		0.18	0.18	0.11	0.18	0.16	0.17	0.18
s, saturation flow rate [veh/h]		1700	1700	1800	7200	3600	3200	3600
c, Capacity [veh/h]		369	369	390	3181	1591	666	2499
d1, Uniform Delay [s]		33.73	33.73	30.93	17.04	16.61	34.19	5.15
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		5.06	5.06	0.97	0.38	0.62	2.88	0.26
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.84	0.84	0.49	0.40	0.35	0.84	0.26
d, Delay for Lane Group [s/veh]		38.79	38.80	31.90	17.42	17.23	37.08	5.40
Lane Group LOS		D	D	C	B	B	D	A
Critical Lane Group		No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		6.81	6.81	3.72	4.11	3.59	5.74	1.73
50th-Percentile Queue Length [ft/ln]		170.32	170.36	92.90	102.64	89.65	143.60	43.17
95th-Percentile Queue Length [veh/ln]		11.09	11.10	6.69	7.39	6.46	9.67	3.11
95th-Percentile Queue Length [ft/ln]		277.33	277.39	167.23	184.75	161.38	241.87	77.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	38.79	38.80	31.90	0.00	17.42	17.23	37.08	5.40	0.00
Movement LOS				D	D	C		B	B	D	A	
d_A, Approach Delay [s/veh]	0.00			37.15			17.36			19.94		
Approach LOS	A			D			B			B		
d_I, Intersection Delay [s/veh]	22.32											
Intersection LOS	C											
Intersection V/C	0.615											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	19.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	183	0	750	0	0	0	252	1570	0	0	979	483
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	0	750	0	0	0	252	1570	0	0	979	483
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	0	197	0	0	0	66	413	0	0	258	127
Total Analysis Volume [veh/h]	193	0	789	0	0	0	265	1653	0	0	1031	508
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	30	0	0	0	0	23	60	0	0	37	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	11	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	23		16	59	39	39
g / C, Green / Cycle	0.25	0.25	0.25		0.18	0.66	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.22		0.16	0.31	0.14	0.28
s, saturation flow rate [veh/h]	1700	1700	3600		1700	5400	7200	1800
c, Capacity [veh/h]	427	427	905		303	3562	3148	787
d1, Uniform Delay [s]	26.75	26.75	32.31		36.04	7.51	16.64	19.86
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.27	0.27	2.78		7.92	0.44	0.28	4.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

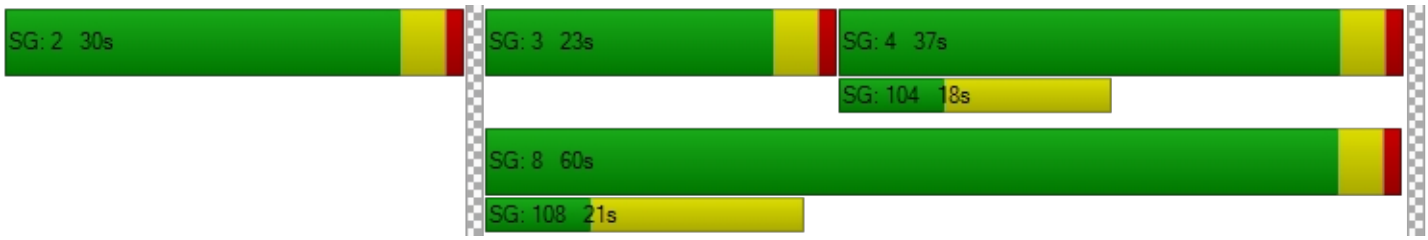
X, volume / capacity	0.23	0.23	0.87		0.88	0.46	0.33	0.65
d, Delay for Lane Group [s/veh]	27.01	27.01	35.09		43.96	7.95	16.92	23.92
Lane Group LOS	C	C	D		D	A	B	C
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.65	1.65	8.35		6.00	4.07	3.22	8.32
50th-Percentile Queue Length [ft/ln]	41.30	41.30	208.80		150.03	101.69	80.48	207.96
95th-Percentile Queue Length [veh/ln]	2.97	2.97	13.09		10.02	7.32	5.79	13.05
95th-Percentile Queue Length [ft/ln]	74.33	74.33	327.28		250.47	183.04	144.87	326.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	27.01	27.01	35.09	0.00	0.00	0.00	43.96	7.95	0.00	0.00	16.92	23.92
Movement LOS	C	C	D				D	A			B	C
d_A, Approach Delay [s/veh]	33.50			0.00			12.93			19.23		
Approach LOS	C			A			B			B		
d_I, Intersection Delay [s/veh]	19.66											
Intersection LOS	B											
Intersection V/C	0.758											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	137	0	58	8	0	37	38	2121	145	34	1276	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	137	0	58	8	0	37	38	2121	145	34	1276	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	0	15	2	0	10	10	558	38	9	336	1
Total Analysis Volume [veh/h]	144	0	61	8	0	39	40	2233	153	36	1343	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	45	45	0	10	10	0	10	25	0	10	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	0	0	0	14	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	12	1	4	4	57	57	4	57	57
g / C, Green / Cycle	0.11	0.14	0.01	0.04	0.04	0.63	0.63	0.04	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.08	0.03	0.00	0.02	0.02	0.41	0.09	0.02	0.25	0.00
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1700	5400	1800	1700	5400	1800
c, Capacity [veh/h]	181	245	23	77	74	3413	1138	69	3400	1133
d1, Uniform Delay [s]	39.31	34.82	44.09	42.22	42.26	10.41	6.67	42.38	8.24	6.20
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.61	0.52	8.86	5.02	6.08	0.99	0.25	5.89	0.35	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

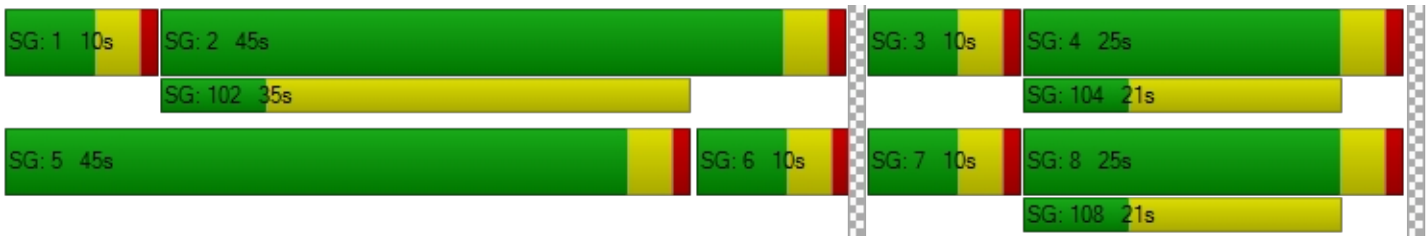
X, volume / capacity	0.79	0.25	0.35	0.50	0.54	0.65	0.13	0.52	0.40	0.00
d, Delay for Lane Group [s/veh]	46.92	35.35	52.95	47.24	48.34	11.40	6.91	48.27	8.58	6.21
Lane Group LOS	D	D	D	D	D	B	A	D	A	A
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.45	1.22	0.23	0.95	0.96	7.42	1.01	0.87	3.48	0.03
50th-Percentile Queue Length [ft/ln]	86.23	30.49	5.79	23.71	23.99	185.49	25.35	21.64	87.08	0.77
95th-Percentile Queue Length [veh/ln]	6.21	2.19	0.42	1.71	1.73	11.89	1.83	1.56	6.27	0.06
95th-Percentile Queue Length [ft/ln]	155.21	54.87	10.43	42.67	43.19	297.17	45.63	38.96	156.75	1.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.92	35.35	35.35	52.95	47.24	47.24	48.34	11.40	6.91	48.27	8.58	6.21
Movement LOS	D	D	D	D	D	D	D	B	A	D	A	A
d_A, Approach Delay [s/veh]	43.47			48.21			11.72			9.60		
Approach LOS	D			D			B			A		
d_I, Intersection Delay [s/veh]	13.03											
Intersection LOS	B											
Intersection V/C	0.658											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.662

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	183	0	105	10	0	39	33	1948	176	104	1096	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	0	105	10	0	39	33	1948	176	104	1096	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	0	28	3	0	10	9	513	46	27	288	3
Total Analysis Volume [veh/h]	193	0	111	11	0	41	35	2051	185	109	1154	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	46	46	0	10	10	0	10	29	0	10	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	0	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	15	15	2	4	4	4	56	56	6	58	58
g / C, Green / Cycle	0.14	0.16	0.16	0.02	0.04	0.04	0.04	0.59	0.59	0.06	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.11	0.00	0.06	0.01	0.00	0.02	0.01	0.38	0.10	0.03	0.21	0.01
s, saturation flow rate [veh/h]	1700	1800	1800	1700	1800	1800	3200	5400	1800	3200	5400	1800
c, Capacity [veh/h]	232	292	292	29	77	77	125	3197	1066	193	3311	1104
d1, Uniform Delay [s]	40.02	0.00	35.58	46.26	0.00	44.59	44.41	12.77	8.83	43.49	9.06	7.17
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.53	0.00	0.81	7.79	0.00	5.51	1.19	1.00	0.35	2.57	0.29	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

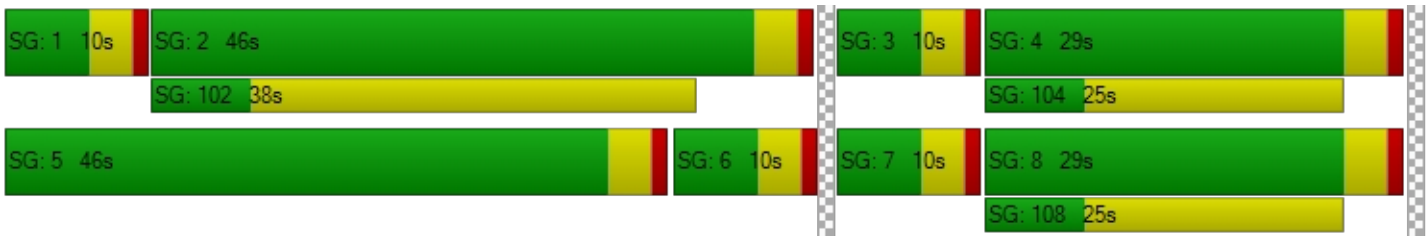
X, volume / capacity	0.83	0.00	0.38	0.38	0.00	0.53	0.28	0.64	0.17	0.56	0.35	0.01
d, Delay for Lane Group [s/veh]	47.55	0.00	36.40	54.04	0.00	50.10	45.60	13.78	9.18	46.06	9.35	7.18
Lane Group LOS	D	A	D	D	A	D	D	B	A	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.83	0.00	2.34	0.32	0.00	1.06	0.41	8.21	1.58	1.27	3.32	0.08
50th-Percentile Queue Length [ft/ln]	120.64	0.00	58.59	7.97	0.00	26.47	10.17	205.18	39.62	31.72	83.10	1.96
95th-Percentile Queue Length [veh/ln]	8.43	0.00	4.22	0.57	0.00	1.91	0.73	12.91	2.85	2.28	5.98	0.14
95th-Percentile Queue Length [ft/ln]	210.71	0.00	105.46	14.35	0.00	47.64	18.31	322.64	71.31	57.09	149.59	3.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.55	0.00	36.40	54.04	0.00	50.10	45.60	13.78	9.18	46.06	9.35	7.18
Movement LOS	D	A	D	D	A	D	D	B	A	D	A	A
d_A, Approach Delay [s/veh]	43.48			50.93			13.89			12.47		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	16.23											
Intersection LOS	B											
Intersection V/C	0.662											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	29.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	267	341	604	155	377	44	306	1344	328	323	748	114
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	267	341	604	155	377	44	306	1344	328	323	748	114
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	90	159	41	99	12	81	354	86	85	197	30
Total Analysis Volume [veh/h]	281	359	636	163	397	46	322	1415	345	340	787	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	42	0	16	42	0	10	32	0	10	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	17	7	14	13	46	46	13	47	47
g / C, Green / Cycle	0.11	0.17	0.07	0.14	0.13	0.46	0.46	0.13	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.09	0.10	0.05	0.11	0.10	0.26	0.19	0.11	0.15	0.07
s, saturation flow rate [veh/h]	3200	3600	3200	3600	3200	5400	1800	3200	5400	1800
c, Capacity [veh/h]	346	622	230	491	406	2501	834	424	2533	844
d1, Uniform Delay [s]	43.67	38.07	45.46	41.98	42.45	19.55	17.85	42.15	16.52	15.12
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.62	0.85	4.02	3.23	3.56	0.93	1.52	3.55	0.32	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.58	0.71	0.81	0.79	0.57	0.41	0.80	0.31	0.14
d, Delay for Lane Group [s/veh]	48.29	38.92	49.47	45.21	46.01	20.49	19.37	45.70	16.84	15.48
Lane Group LOS	D	D	D	D	D	C	B	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.60	4.09	2.10	4.94	3.91	7.46	5.19	4.12	3.50	1.52
50th-Percentile Queue Length [ft/ln]	89.96	102.15	52.43	123.38	97.72	186.44	129.67	102.96	87.60	37.96
95th-Percentile Queue Length [veh/ln]	6.48	7.35	3.78	8.58	7.04	11.94	8.92	7.41	6.31	2.73
95th-Percentile Queue Length [ft/ln]	161.93	183.87	94.38	214.46	175.90	298.41	223.04	185.33	157.68	68.33

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.29	38.92	0.00	49.47	45.21	0.00	46.01	20.49	19.37	45.70	16.84	15.48
Movement LOS	D	D		D	D		D	C	B	D	B	B
d_A, Approach Delay [s/veh]	43.04			46.45			24.25			24.58		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.74											
Intersection LOS	C											
Intersection V/C	0.674											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	14.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	39	1	5	39	0	76	129	1896	66	3	1052	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1	5	39	0	76	129	1896	66	3	1052	62
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	0	1	10	0	20	34	499	17	1	277	16
Total Analysis Volume [veh/h]	41	1	5	41	0	80	136	1996	69	3	1107	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	20	35	0	10	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	6	6	6	9	63	63	0	55	55
g / C, Green / Cycle	0.05	0.05	0.07	0.07	0.07	0.10	0.70	0.70	0.01	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.02	0.00	0.04	0.08	0.55	0.04	0.00	0.31	0.04
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	3600	1800	1700	3600	1800
c, Capacity [veh/h]	81	85	113	120	120	172	2529	1264	10	2186	1093
d1, Uniform Delay [s]	41.93	41.05	40.25	0.00	41.11	39.59	8.96	4.15	44.62	10.04	7.21
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.88	0.34	1.94	0.00	6.25	7.85	2.60	0.08	14.31	0.84	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.07	0.36	0.00	0.67	0.79	0.79	0.05	0.29	0.51	0.06
d, Delay for Lane Group [s/veh]	46.81	41.39	42.19	0.00	47.36	47.43	11.56	4.24	58.93	10.88	7.32
Lane Group LOS	D	D	D	A	D	D	B	A	E	B	A
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.99	0.13	0.92	0.00	1.92	3.17	9.51	0.30	0.11	5.23	0.45
50th-Percentile Queue Length [ft/ln]	24.76	3.36	23.04	0.00	48.08	79.37	237.77	7.61	2.64	130.74	11.28
95th-Percentile Queue Length [veh/ln]	1.78	0.24	1.66	0.00	3.46	5.71	14.57	0.55	0.19	8.98	0.81
95th-Percentile Queue Length [ft/ln]	44.57	6.05	41.48	0.00	86.55	142.87	364.21	13.69	4.76	224.50	20.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.81	41.39	41.39	42.19	0.00	47.36	47.43	11.56	4.24	58.93	10.88	7.32
Movement LOS	D	D	D	D	A	D	D	B	A	E	B	A
d_A, Approach Delay [s/veh]	46.12			45.61			13.55			10.81		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	14.17											
Intersection LOS	B											
Intersection V/C	0.760											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.657

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	21	3	1	69	13	278	357	1368	18	2	787	58
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	3	1	69	13	278	357	1368	18	2	787	58
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	0	18	3	73	94	360	5	1	207	15
Total Analysis Volume [veh/h]	22	3	1	73	14	293	376	1440	19	2	828	61
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	51	0	0	51	0	10	29	0	10	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	17	17	13	61	61	0	48	48
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.19	0.15	0.67	0.67	0.00	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.04	0.01	0.16	0.12	0.41	0.41	0.00	0.25	0.24
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	3200	1800	1800	1700	1800	1800
c, Capacity [veh/h]	358	343	366	343	343	473	1209	1209	8	951	951
d1, Uniform Delay [s]	29.88	29.56	30.81	29.72	35.23	37.06	8.17	8.17	44.67	13.35	13.25
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.01	0.26	0.05	6.06	3.10	2.24	2.24	16.70	1.69	1.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.01	0.20	0.04	0.85	0.80	0.60	0.60	0.26	0.47	0.46
d, Delay for Lane Group [s/veh]	29.95	29.57	31.08	29.77	41.28	40.16	10.41	10.40	61.37	15.04	14.86
Lane Group LOS	C	C	C	C	D	D	B	B	E	B	B
Critical Lane Group	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.39	0.07	1.35	0.25	6.65	3.99	6.44	6.42	0.08	5.37	5.20
50th-Percentile Queue Length [ft/ln]	9.85	1.77	33.77	6.24	166.32	99.64	160.88	160.60	1.97	134.37	130.01
95th-Percentile Queue Length [veh/ln]	0.71	0.13	2.43	0.45	10.88	7.17	10.60	10.58	0.14	9.18	8.94
95th-Percentile Queue Length [ft/ln]	17.73	3.19	60.79	11.23	272.07	179.35	264.89	264.52	3.54	229.42	223.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.95	29.57	29.57	31.08	29.77	41.28	40.16	10.41	10.40	61.37	14.96	14.86
Movement LOS	C	C	C	C	C	D	D	B	B	E	B	B
d_A, Approach Delay [s/veh]	29.89			38.90			16.50			15.05		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	18.92											
Intersection LOS	B											
Intersection V/C	0.657											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	180.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	0	0	3	4	0	109	219	1162	3	3	696	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	3	4	0	109	219	1162	3	3	696	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	1	1	0	29	58	306	1	1	183	1
Total Analysis Volume [veh/h]	0	0	3	4	0	115	231	1223	3	3	733	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.10	0.00	0.18	0.27	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	180.07	161.76	13.32	102.30	165.05	14.19	10.67	0.00	0.00	11.41	0.00	0.00
Movement LOS	F	F	B	F	F	B	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	0.02	0.02	0.02	1.17	1.17	1.17	1.08	0.00	0.00	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.52	0.52	0.52	29.29	29.29	29.29	26.98	0.00	0.00	0.40	0.00	0.00
d_A, Approach Delay [s/veh]	13.32			17.15			1.69			0.05		
Approach LOS	B			C			A			A		
d_I, Intersection Delay [s/veh]	1.98											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	34.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	1	50	56	1112	654	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	50	56	1112	654	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	15	293	172	1
Total Analysis Volume [veh/h]	1	53	59	1171	688	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.08	0.07	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	34.66	11.13	9.29	0.00	0.00	0.00
Movement LOS	D	B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.29	0.29	0.21	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	7.36	7.36	5.26	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	11.57		0.45		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.59					
Intersection LOS	D					

APPENDIX G-II

YEAR 2019 WITH PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	253	0	134	0	469	372	1140	1143	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	253	0	134	0	469	372	1140	1143	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	67	0	35	0	123	98	300	301	0
Total Analysis Volume [veh/h]	0	0	0	266	0	141	0	494	392	1200	1203	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	18	0	0	10	0	62	72	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		10	10	10	31	31	38	72
g / C, Green / Cycle		0.11	0.11	0.11	0.34	0.34	0.42	0.80
(v / s)_i Volume / Saturation Flow Rate		0.08	0.08	0.07	0.07	0.11	0.38	0.33
s, saturation flow rate [veh/h]		1700	1700	1800	7200	3600	3200	3600
c, Capacity [veh/h]		185	185	196	2441	1221	1340	2888
d1, Uniform Delay [s]		38.98	38.93	38.44	21.12	22.07	24.35	2.65
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		6.32	6.04	3.50	0.19	0.70	2.37	0.44
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.76	0.75	0.64	0.20	0.32	0.90	0.42
d, Delay for Lane Group [s/veh]		45.30	44.97	41.94	21.31	22.77	26.72	3.09
Lane Group LOS		D	D	D	C	C	C	A
Critical Lane Group		Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.31	3.26	2.83	1.75	2.97	10.98	1.42
50th-Percentile Queue Length [ft/ln]		82.83	81.48	70.69	43.73	74.17	274.46	35.53
95th-Percentile Queue Length [veh/ln]		5.96	5.87	5.09	3.15	5.34	16.41	2.56
95th-Percentile Queue Length [ft/ln]		149.10	146.66	127.25	78.71	133.51	410.31	63.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	45.14	44.97	42.06	0.00	21.31	22.77	26.72	3.09	0.00
Movement LOS				D	D	D		C	C	C	A	
d_A, Approach Delay [s/veh]	0.00			44.14			21.95			14.89		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	19.81											
Intersection LOS	B											
Intersection V/C	0.654											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.596

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	384	0	488	0	0	0	85	648	0	0	1896	550
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	384	0	488	0	0	0	85	648	0	0	1896	550
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	0	128	0	0	0	22	171	0	0	499	145
Total Analysis Volume [veh/h]	404	0	514	0	0	0	89	682	0	0	1996	579
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	55	0	0	0	0	13	35	0	0	22	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	11	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17		6	65	55	55
g / C, Green / Cycle	0.19	0.19	0.19		0.07	0.72	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.12	0.12	0.14		0.05	0.13	0.28	0.32
s, saturation flow rate [veh/h]	1700	1700	3600		1700	5400	7200	1800
c, Capacity [veh/h]	317	317	671		116	3913	4405	1101
d1, Uniform Delay [s]	33.82	33.82	34.76		41.23	3.91	9.39	10.00
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.13	2.13	1.86		9.95	0.10	0.34	1.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.64	0.77		0.77	0.17	0.45	0.53
d, Delay for Lane Group [s/veh]	35.94	35.94	36.62		51.18	4.00	9.72	11.80
Lane Group LOS	D	D	D		D	A	A	B
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.19	4.19	5.41		2.18	0.90	4.33	5.78
50th-Percentile Queue Length [ft/ln]	104.77	104.77	135.23		54.39	22.45	108.33	144.48
95th-Percentile Queue Length [veh/ln]	7.54	7.54	9.22		3.92	1.62	7.75	9.72
95th-Percentile Queue Length [ft/ln]	188.58	188.58	230.59		97.90	40.41	193.68	243.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.94	35.94	36.62	0.00	0.00	0.00	51.18	4.00	0.00	0.00	9.72	11.80
Movement LOS	D	D	D				D	A			A	B
d_A, Approach Delay [s/veh]	36.32			0.00			9.45			10.19		
Approach LOS	D			A			A			B		
d_I, Intersection Delay [s/veh]	15.68											
Intersection LOS	B											
Intersection V/C	0.596											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	8.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.632

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	64	0	14	3	0	13	20	1034	85	22	2363	3
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	0	14	3	0	13	20	1034	85	22	2363	3
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	0	4	1	0	3	5	272	22	6	622	1
Total Analysis Volume [veh/h]	67	0	15	3	0	14	21	1088	89	23	2487	3
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	39	0	10	27	0	10	31	0	10	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	0	0	0	14	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	6	0	2	3	65	65	3	65	65
g / C, Green / Cycle	0.05	0.07	0.01	0.02	0.03	0.72	0.72	0.03	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.00	0.01	0.01	0.20	0.05	0.01	0.46	0.00
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1700	5400	1800	1700	5400	1800
c, Capacity [veh/h]	94	127	10	38	49	3864	1288	52	3874	1291
d1, Uniform Delay [s]	41.88	39.29	44.62	43.55	43.08	4.57	3.84	42.97	6.67	3.60
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.46	0.41	14.31	5.86	5.97	0.18	0.10	5.86	0.83	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

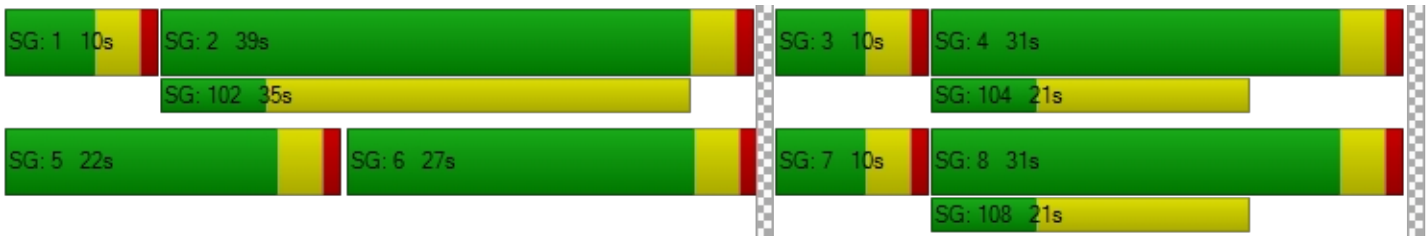
X, volume / capacity	0.71	0.12	0.29	0.37	0.43	0.28	0.07	0.44	0.64	0.00
d, Delay for Lane Group [s/veh]	51.34	39.71	58.93	49.41	49.06	4.75	3.94	48.83	7.50	3.61
Lane Group LOS	D	D	E	D	D	A	A	D	A	A
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.70	0.32	0.11	0.37	0.52	1.66	0.37	0.57	5.62	0.01
50th-Percentile Queue Length [ft/ln]	42.41	8.07	2.69	9.18	13.05	41.47	9.14	14.18	140.38	0.29
95th-Percentile Queue Length [veh/ln]	3.05	0.58	0.19	0.66	0.94	2.99	0.66	1.02	9.50	0.02
95th-Percentile Queue Length [ft/ln]	76.33	14.53	4.85	16.52	23.49	74.65	16.45	25.53	237.54	0.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.34	39.71	39.71	58.93	49.41	49.41	49.06	4.75	3.94	48.83	7.50	3.61
Movement LOS	D	D	D	E	D	D	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	49.21			51.09			5.47			7.87		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	8.20											
Intersection LOS	A											
Intersection V/C	0.632											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	9.4
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	83	0	29	4	0	14	15	934	86	69	2289	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	0	29	4	0	14	15	934	86	69	2289	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	0	8	1	0	4	4	246	23	18	602	1
Total Analysis Volume [veh/h]	87	0	31	4	0	15	16	983	91	73	2409	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	46	46	0	10	10	0	10	29	0	10	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	0	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	8	8	1	2	2	2	66	66	5	69	69
g / C, Green / Cycle	0.07	0.08	0.08	0.01	0.02	0.02	0.02	0.69	0.69	0.05	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.05	0.00	0.02	0.00	0.00	0.01	0.01	0.18	0.05	0.02	0.45	0.00
s, saturation flow rate [veh/h]	1700	1800	1800	1700	1800	1800	3200	5400	1800	3200	5400	1800
c, Capacity [veh/h]	113	146	146	12	38	38	72	3723	1241	174	3896	1299
d1, Uniform Delay [s]	43.66	0.00	40.86	46.99	0.00	45.92	45.66	5.61	4.83	43.50	6.66	3.70
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.40	0.00	0.72	15.90	0.00	6.36	1.56	0.17	0.11	1.60	0.75	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

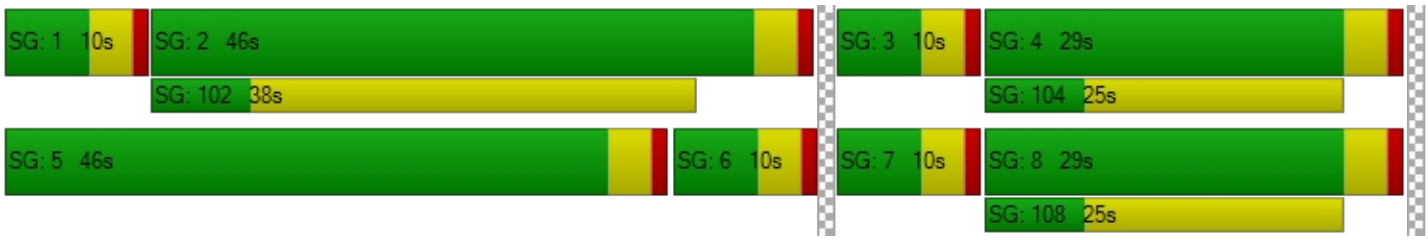
X, volume / capacity	0.77	0.00	0.21	0.34	0.00	0.39	0.22	0.26	0.07	0.42	0.62	0.00
d, Delay for Lane Group [s/veh]	54.06	0.00	41.58	62.89	0.00	52.28	47.22	5.78	4.94	45.10	7.40	3.70
Lane Group LOS	D	A	D	E	A	D	D	A	A	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.32	0.00	0.70	0.15	0.00	0.42	0.19	1.91	0.48	0.84	5.73	0.02
50th-Percentile Queue Length [ft/ln]	58.07	0.00	17.60	3.65	0.00	10.38	4.86	47.70	12.04	20.96	143.18	0.52
95th-Percentile Queue Length [veh/ln]	4.18	0.00	1.27	0.26	0.00	0.75	0.35	3.43	0.87	1.51	9.65	0.04
95th-Percentile Queue Length [ft/ln]	104.52	0.00	31.67	6.57	0.00	18.68	8.75	85.85	21.68	37.72	241.30	0.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.06	0.00	41.58	62.89	0.00	52.28	47.22	5.78	4.94	45.10	7.40	3.70
Movement LOS	D	A	D	E	A	D	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	50.78			54.51			6.32			8.50		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	9.44											
Intersection LOS	A											
Intersection V/C	0.614											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	35.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	315	199	272	76	435	51	330	561	149	565	1754	170
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	315	199	272	76	435	51	330	561	149	565	1754	170
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	83	52	72	20	114	13	87	148	39	149	462	45
Total Analysis Volume [veh/h]	332	209	286	80	458	54	347	591	157	595	1846	179
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	42	0	17	42	0	13	32	0	19	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	24	6	17	15	41	41	23	50	50
g / C, Green / Cycle	0.12	0.22	0.05	0.15	0.13	0.37	0.37	0.21	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.10	0.06	0.03	0.13	0.11	0.11	0.09	0.19	0.34	0.10
s, saturation flow rate [veh/h]	3200	3600	3200	3600	3200	5400	1800	3200	5400	1800
c, Capacity [veh/h]	380	790	162	545	423	2009	670	680	2443	814
d1, Uniform Delay [s]	47.71	35.61	50.88	45.42	46.51	24.38	23.78	41.93	25.08	18.33
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.40	0.18	2.31	3.57	4.02	0.37	0.82	3.75	2.23	0.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

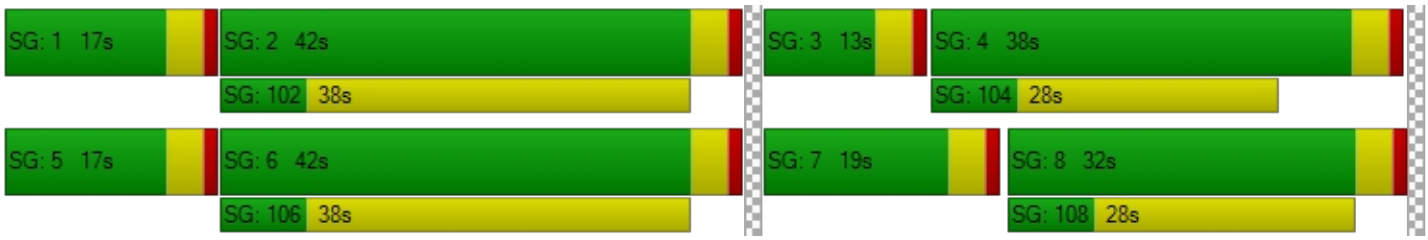
X, volume / capacity	0.87	0.26	0.49	0.84	0.82	0.29	0.23	0.87	0.76	0.22
d, Delay for Lane Group [s/veh]	54.11	35.79	53.19	48.99	50.53	24.75	24.61	45.68	27.31	18.95
Lane Group LOS	D	D	D	D	D	C	C	D	C	B
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	4.79	2.35	1.12	6.32	4.71	3.52	2.84	7.85	12.80	2.76
50th-Percentile Queue Length [ft/ln]	119.86	58.68	28.12	158.05	117.65	88.11	70.98	196.21	320.09	68.88
95th-Percentile Queue Length [veh/ln]	8.39	4.22	2.02	10.45	8.26	6.34	5.11	12.44	18.67	4.96
95th-Percentile Queue Length [ft/ln]	209.64	105.62	50.61	261.14	206.60	158.59	127.76	311.07	466.79	123.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.11	35.79	0.00	53.19	48.99	0.00	50.53	24.75	24.61	45.68	27.31	18.95
Movement LOS	D	D		D	D		D	C	C	D	C	B
d_A, Approach Delay [s/veh]	47.03			49.61			32.90			30.91		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	35.28											
Intersection LOS	D											
Intersection V/C	0.797											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	97.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.123

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	7	5	136	3	445	158	738	20	2	1983	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	7	5	136	3	445	158	738	20	2	1983	121
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	2	1	36	1	117	42	194	5	1	522	32
Total Analysis Volume [veh/h]	61	7	5	143	3	468	166	777	21	2	2087	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	14	65	0	10	61	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	31	31	31	10	67	67	0	57	57
g / C, Green / Cycle	0.05	0.05	0.26	0.26	0.26	0.08	0.56	0.56	0.00	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.08	0.00	0.26	0.10	0.22	0.01	0.00	0.58	0.07
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	3600	1800	1700	3600	1800
c, Capacity [veh/h]	81	86	443	469	469	144	1999	1000	5	1705	852
d1, Uniform Delay [s]	56.46	54.80	35.82	32.86	44.33	54.90	15.13	12.00	59.68	31.58	17.89
k, delay calibration	0.11	0.11	0.11	0.11	0.45	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.22	0.74	0.42	0.01	38.92	83.93	0.57	0.04	36.07	106.30	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

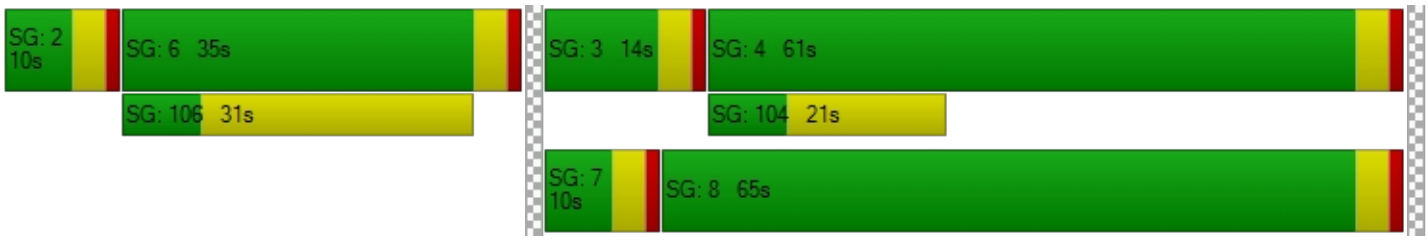
X, volume / capacity	0.75	0.14	0.32	0.01	1.00	1.15	0.39	0.02	0.36	1.22	0.15
d, Delay for Lane Group [s/veh]	69.68	55.54	36.24	32.87	83.25	138.83	15.70	12.04	95.76	137.88	18.26
Lane Group LOS	E	E	D	C	F	F	B	B	F	F	B
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.12	0.37	3.45	0.07	18.83	7.62	5.74	0.25	0.11	47.78	2.00
50th-Percentile Queue Length [ft/ln]	53.08	9.16	86.22	1.65	470.80	190.52	143.44	6.25	2.86	1194.55	49.88
95th-Percentile Queue Length [veh/ln]	3.82	0.66	6.21	0.12	25.95	12.74	9.67	0.45	0.21	68.23	3.59
95th-Percentile Queue Length [ft/ln]	95.54	16.48	155.20	2.97	648.72	318.42	241.65	11.25	5.15	1705.84	89.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.68	55.54	55.54	36.24	32.87	83.25	138.83	15.70	12.04	95.76	137.88	18.26
Movement LOS	E	E	E	D	C	F	F	B	B	F	F	B
d_A, Approach Delay [s/veh]	67.35			72.05			36.83			130.99		
Approach LOS	E			E			D			F		
d_I, Intersection Delay [s/veh]	96.95											
Intersection LOS	F											
Intersection V/C	1.123											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.902

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	22	13	3	43	7	374	268	550	17	5	1589	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	13	3	43	7	374	268	550	17	5	1589	131
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	1	11	2	98	71	145	4	1	418	34
Total Analysis Volume [veh/h]	23	14	3	45	7	394	282	579	18	5	1673	138
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	56	0	0	56	0	10	54	0	10	54	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	29	29	29	29	29	13	78	78	1	66	66
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.24	0.11	0.65	0.65	0.01	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.03	0.00	0.22	0.09	0.17	0.16	0.00	0.50	0.50
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	3200	1800	1800	1700	1800	1800
c, Capacity [veh/h]	432	431	425	431	431	347	1174	1174	15	994	994
d1, Uniform Delay [s]	35.17	35.02	35.64	34.83	44.41	52.26	8.72	8.70	59.11	24.30	24.14
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.05	0.04	0.11	0.01	7.99	4.58	0.53	0.52	13.24	14.15	13.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.04	0.11	0.02	0.91	0.81	0.26	0.25	0.34	0.91	0.91
d, Delay for Lane Group [s/veh]	35.22	35.06	35.74	34.84	52.40	56.84	9.24	9.22	72.35	38.45	37.65
Lane Group LOS	D	D	D	C	D	E	A	A	E	D	D
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.53	0.39	1.05	0.16	12.28	4.26	3.06	3.02	0.20	24.76	24.31
50th-Percentile Queue Length [ft/ln]	13.24	9.75	26.27	3.99	307.08	106.58	76.51	75.55	5.04	619.02	607.64
95th-Percentile Queue Length [veh/ln]	0.95	0.70	1.89	0.29	18.03	7.65	5.51	5.44	0.36	32.92	32.39
95th-Percentile Queue Length [ft/ln]	23.83	17.54	47.29	7.18	450.77	191.23	137.72	135.98	9.07	823.03	809.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	35.22	35.06	35.06	35.74	34.84	52.40	56.84	9.23	9.22	72.35	38.08	37.65
Movement LOS	D	D	D	D	C	D	E	A	A	E	D	D
d_A, Approach Delay [s/veh]	35.15			50.45			24.50			38.15		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	36.06											
Intersection LOS	D											
Intersection V/C	0.902											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	984.8
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	2.106

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	32	0	3	10	2	254	61	489	11	2	1480	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	0	3	10	2	254	61	489	11	2	1480	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	0	1	3	1	67	16	129	3	1	389	4
Total Analysis Volume [veh/h]	34	0	3	11	2	267	64	515	12	2	1558	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	2.11	0.00	0.00	0.33	0.06	0.80	0.15	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	984.81	862.05	766.76	251.91	244.47	155.26	15.25	0.00	0.00	8.48	0.00	0.00
Movement LOS	F	F	F	F	F	F	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.13	5.13	5.13	13.28	13.28	13.28	0.54	0.00	0.00	0.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	128.37	128.37	128.37	332.00	332.00	332.00	13.51	0.00	0.00	0.15	0.00	0.00
d_A, Approach Delay [s/veh]	967.13			159.69			1.65			0.01		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	32.82											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	167.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.978

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	99	21	453	24	0	1315	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	99	21	453	24	0	1315	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	26	6	119	6	0	346	0
Total Analysis Volume [veh/h]	93	0	0	0	0	104	22	477	25	0	1384	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.98	0.00	0.00	0.00	0.00	0.27	0.04	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	166.98	185.63	133.94	67.38	65.92	17.71	12.68	0.00	0.00	8.40	0.00	0.00
Movement LOS	F	F	F	F	F	C	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.77	5.77	5.77	1.07	1.07	1.07	0.14	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	144.37	144.37	144.37	26.81	26.81	26.81	3.51	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	166.98			17.71			0.53			0.00		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	8.38											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	23.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.637

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	611	2	183	0	1225	533	559	632	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	611	2	183	0	1225	533	559	632	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	161	1	48	0	322	140	147	166	0
Total Analysis Volume [veh/h]	0	0	0	643	2	193	0	1289	561	588	665	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	36	0	0	10	0	44	54	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		20	20	20	38	38	20	62
g / C, Green / Cycle		0.23	0.23	0.23	0.42	0.42	0.22	0.69
(v / s)_i Volume / Saturation Flow Rate		0.19	0.19	0.11	0.18	0.16	0.18	0.18
s, saturation flow rate [veh/h]		1700	1700	1800	7200	3600	3200	3600
c, Capacity [veh/h]		383	383	406	3046	1523	698	2468
d1, Uniform Delay [s]		33.33	33.33	30.25	18.26	17.76	33.71	5.46
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		5.10	5.11	0.87	0.43	0.69	2.86	0.27
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.84	0.84	0.48	0.42	0.37	0.84	0.27
d, Delay for Lane Group [s/veh]		38.43	38.44	31.11	18.69	18.44	36.57	5.73
Lane Group LOS		D	D	C	B	B	D	A
Critical Lane Group		No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		7.10	7.11	3.66	4.35	3.75	6.04	1.84
50th-Percentile Queue Length [ft/ln]		177.62	177.66	91.55	108.81	93.81	150.90	46.06
95th-Percentile Queue Length [veh/ln]		11.48	11.48	6.59	7.77	6.75	10.07	3.32
95th-Percentile Queue Length [ft/ln]		286.90	286.96	164.78	194.35	168.86	251.63	82.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	38.43	38.44	31.11	0.00	18.69	18.44	36.57	5.73	0.00
Movement LOS				D	D	C		B	B	D	A	
d_A, Approach Delay [s/veh]	0.00			36.75			18.62			20.20		
Approach LOS	A			D			B			C		
d_I, Intersection Delay [s/veh]	22.97											
Intersection LOS	C											
Intersection V/C	0.637											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	20.5
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	183	0	801	0	0	0	252	1611	0	0	1017	499
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	0	801	0	0	0	252	1611	0	0	1017	499
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	0	211	0	0	0	66	424	0	0	268	131
Total Analysis Volume [veh/h]	193	0	843	0	0	0	265	1696	0	0	1071	525
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	34	0	0	0	0	34	56	0	0	22	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	11	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	24		16	58	37	37
g / C, Green / Cycle	0.27	0.27	0.27		0.18	0.64	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.23		0.16	0.31	0.15	0.29
s, saturation flow rate [veh/h]	1700	1700	3600		1700	5400	7200	1800
c, Capacity [veh/h]	462	462	979		306	3451	2986	746
d1, Uniform Delay [s]	25.30	25.30	31.16		35.86	8.55	18.12	21.78
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.22	2.37		7.30	0.50	0.34	5.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.21	0.86		0.87	0.49	0.36	0.70
d, Delay for Lane Group [s/veh]	25.52	25.52	33.53		43.16	9.05	18.46	27.27
Lane Group LOS	C	C	C		D	A	B	C
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.60	1.60	8.76		5.94	4.66	3.55	9.34
50th-Percentile Queue Length [ft/ln]	39.91	39.91	218.91		148.51	116.41	88.74	233.47
95th-Percentile Queue Length [veh/ln]	2.87	2.87	13.61		9.94	8.20	6.39	14.35
95th-Percentile Queue Length [ft/ln]	71.83	71.83	340.24		248.44	204.89	159.74	358.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.52	25.52	33.53	0.00	0.00	0.00	43.16	9.05	0.00	0.00	18.46	27.27
Movement LOS	C	C	C				D	A			B	C
d_A, Approach Delay [s/veh]	32.03			0.00			13.66			21.36		
Approach LOS	C			A			B			C		
d_I, Intersection Delay [s/veh]	20.48											
Intersection LOS	C											
Intersection V/C	0.787											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.680

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	137	0	58	8	0	37	38	2213	145	34	1330	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	137	0	58	8	0	37	38	2213	145	34	1330	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	0	15	2	0	10	10	582	38	9	350	1
Total Analysis Volume [veh/h]	144	0	61	8	0	39	40	2329	153	36	1400	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	45	45	0	10	10	0	10	25	0	10	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	0	0	0	14	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	12	1	4	4	57	57	4	57	57
g / C, Green / Cycle	0.11	0.14	0.01	0.04	0.04	0.63	0.63	0.04	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.08	0.03	0.00	0.02	0.02	0.43	0.09	0.02	0.26	0.00
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1700	5400	1800	1700	5400	1800
c, Capacity [veh/h]	181	245	23	77	74	3413	1138	69	3400	1133
d1, Uniform Delay [s]	39.31	34.82	44.09	42.22	42.26	10.73	6.67	42.38	8.35	6.20
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.61	0.52	8.86	5.02	6.08	1.12	0.25	5.89	0.37	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

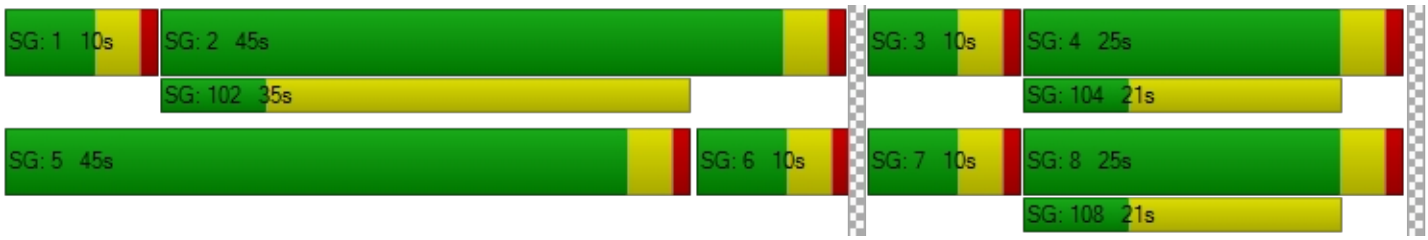
X, volume / capacity	0.79	0.25	0.35	0.50	0.54	0.68	0.13	0.52	0.41	0.00
d, Delay for Lane Group [s/veh]	46.92	35.35	52.95	47.24	48.34	11.85	6.91	48.27	8.72	6.21
Lane Group LOS	D	D	D	D	D	B	A	D	A	A
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.45	1.22	0.23	0.95	0.96	8.00	1.01	0.87	3.68	0.03
50th-Percentile Queue Length [ft/ln]	86.23	30.49	5.79	23.71	23.99	199.97	25.35	21.64	92.11	0.77
95th-Percentile Queue Length [veh/ln]	6.21	2.19	0.42	1.71	1.73	12.64	1.83	1.56	6.63	0.06
95th-Percentile Queue Length [ft/ln]	155.21	54.87	10.43	42.67	43.19	315.92	45.63	38.96	165.80	1.38

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	46.92	35.35	35.35	52.95	47.24	47.24	48.34	11.85	6.91	48.27	8.72	6.21
Movement LOS	D	D	D	D	D	D	D	B	A	D	A	A
d_A, Approach Delay [s/veh]	43.47			48.21			12.13			9.70		
Approach LOS	D			D			B			A		
d_I, Intersection Delay [s/veh]	13.23											
Intersection LOS	B											
Intersection V/C	0.680											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.683

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	183	0	105	10	0	39	33	2040	176	104	1150	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	0	105	10	0	39	33	2040	176	104	1150	10
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	0	28	3	0	10	9	537	46	27	303	3
Total Analysis Volume [veh/h]	193	0	111	11	0	41	35	2147	185	109	1211	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	46	46	0	10	10	0	10	29	0	10	29	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	0	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	15	15	2	4	4	4	56	56	6	58	58
g / C, Green / Cycle	0.14	0.16	0.16	0.02	0.04	0.04	0.04	0.59	0.59	0.06	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.11	0.00	0.06	0.01	0.00	0.02	0.01	0.40	0.10	0.03	0.22	0.01
s, saturation flow rate [veh/h]	1700	1800	1800	1700	1800	1800	3200	5400	1800	3200	5400	1800
c, Capacity [veh/h]	232	292	292	29	77	77	125	3197	1066	193	3311	1104
d1, Uniform Delay [s]	40.02	0.00	35.58	46.26	0.00	44.59	44.41	13.15	8.83	43.49	9.18	7.17
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.53	0.00	0.81	7.79	0.00	5.51	1.19	1.14	0.35	2.57	0.31	0.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

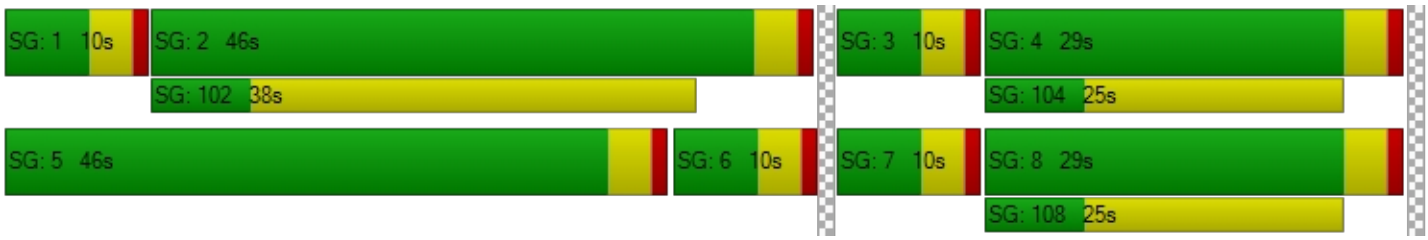
X, volume / capacity	0.83	0.00	0.38	0.38	0.00	0.53	0.28	0.67	0.17	0.56	0.37	0.01
d, Delay for Lane Group [s/veh]	47.55	0.00	36.40	54.04	0.00	50.10	45.60	14.29	9.18	46.06	9.49	7.18
Lane Group LOS	D	A	D	D	A	D	D	B	A	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.83	0.00	2.34	0.32	0.00	1.06	0.41	8.86	1.58	1.27	3.54	0.08
50th-Percentile Queue Length [ft/ln]	120.64	0.00	58.59	7.97	0.00	26.47	10.17	221.59	39.62	31.72	88.43	1.96
95th-Percentile Queue Length [veh/ln]	8.43	0.00	4.22	0.57	0.00	1.91	0.73	13.75	2.85	2.28	6.37	0.14
95th-Percentile Queue Length [ft/ln]	210.71	0.00	105.46	14.35	0.00	47.64	18.31	343.65	71.31	57.09	159.17	3.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.55	0.00	36.40	54.04	0.00	50.10	45.60	14.29	9.18	46.06	9.49	7.18
Movement LOS	D	A	D	D	A	D	D	B	A	D	A	A
d_A, Approach Delay [s/veh]	43.48			50.93			14.36			12.47		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	16.39											
Intersection LOS	B											
Intersection V/C	0.683											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	29.8
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	267	341	618	169	377	44	306	1436	328	331	802	122
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	267	341	618	169	377	44	306	1436	328	331	802	122
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	90	163	44	99	12	81	378	86	87	211	32
Total Analysis Volume [veh/h]	281	359	651	178	397	46	322	1512	345	348	844	128
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	42	0	16	42	0	10	32	0	10	32	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	17	8	14	13	46	46	14	47	47
g / C, Green / Cycle	0.11	0.17	0.08	0.14	0.13	0.46	0.46	0.14	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.09	0.10	0.06	0.11	0.10	0.28	0.19	0.11	0.16	0.07
s, saturation flow rate [veh/h]	3200	3600	3200	3600	3200	5400	1800	3200	5400	1800
c, Capacity [veh/h]	346	604	245	491	406	2487	829	433	2533	844
d1, Uniform Delay [s]	43.67	38.52	45.20	41.98	42.45	20.24	18.03	42.01	16.73	15.20
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.62	0.94	4.06	3.23	3.56	1.12	1.54	3.54	0.35	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.59	0.73	0.81	0.79	0.61	0.42	0.80	0.33	0.15
d, Delay for Lane Group [s/veh]	48.29	39.46	49.26	45.21	46.01	21.35	19.56	45.56	17.08	15.58
Lane Group LOS	D	D	D	D	D	C	B	D	B	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.60	4.12	2.29	4.94	3.91	8.24	5.22	4.21	3.81	1.63
50th-Percentile Queue Length [ft/ln]	89.96	102.96	57.17	123.38	97.72	205.97	130.53	105.28	95.16	40.70
95th-Percentile Queue Length [veh/ln]	6.48	7.41	4.12	8.58	7.04	12.95	8.97	7.58	6.85	2.93
95th-Percentile Queue Length [ft/ln]	161.93	185.32	102.90	214.46	175.90	323.65	224.21	189.42	171.29	73.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.29	39.46	0.00	49.26	45.21	0.00	46.01	21.35	19.56	45.56	17.08	15.58
Movement LOS	D	D		D	D		D	C	B	D	B	B
d_A, Approach Delay [s/veh]	43.34			46.46			24.71			24.44		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.82											
Intersection LOS	C											
Intersection V/C	0.699											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	39	1	5	46	0	76	129	2015	66	3	1122	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1	5	46	0	76	129	2015	66	3	1122	66
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	0	1	12	0	20	34	530	17	1	295	17
Total Analysis Volume [veh/h]	41	1	5	48	0	80	136	2121	69	3	1181	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	35	50	0	10	25	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	7	7	7	10	77	77	1	67	67
g / C, Green / Cycle	0.04	0.04	0.06	0.06	0.06	0.10	0.74	0.74	0.01	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.03	0.00	0.04	0.08	0.59	0.04	0.00	0.33	0.04
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	3600	1800	1700	3600	1800
c, Capacity [veh/h]	73	78	109	115	115	168	2646	1323	9	2310	1155
d1, Uniform Delay [s]	49.28	48.25	47.34	0.00	48.15	46.37	8.98	3.84	52.06	10.04	7.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.49	0.42	2.77	0.00	7.21	8.93	2.67	0.07	19.72	0.81	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.08	0.44	0.00	0.69	0.81	0.80	0.05	0.33	0.51	0.06
d, Delay for Lane Group [s/veh]	55.77	48.67	50.11	0.00	55.36	55.30	11.65	3.91	71.78	10.86	7.12
Lane Group LOS	E	D	D	A	E	E	B	A	E	B	A
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.18	0.16	1.29	0.00	2.28	3.78	11.68	0.32	0.13	6.30	0.52
50th-Percentile Queue Length [ft/ln]	29.61	3.99	32.26	0.00	56.91	94.43	292.00	8.12	3.16	157.52	13.12
95th-Percentile Queue Length [veh/ln]	2.13	0.29	2.32	0.00	4.10	6.80	17.28	0.58	0.23	10.42	0.94
95th-Percentile Queue Length [ft/ln]	53.30	7.19	58.07	0.00	102.43	169.98	432.12	14.62	5.69	260.43	23.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.77	48.67	48.67	50.11	0.00	55.36	55.30	11.65	3.91	71.78	10.86	7.12
Movement LOS	E	D	D	D	A	E	E	B	A	E	B	A
d_A, Approach Delay [s/veh]	54.87			53.39			13.97			10.80		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	14.77											
Intersection LOS	B											
Intersection V/C	0.778											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	21	3	1	76	13	278	357	1494	18	2	861	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	3	1	76	13	278	357	1494	18	2	861	62
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	0	20	3	73	94	393	5	1	227	16
Total Analysis Volume [veh/h]	22	3	1	80	14	293	376	1573	19	2	906	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	51	0	0	51	0	10	29	0	10	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	17	17	13	61	61	0	48	48
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.19	0.15	0.67	0.67	0.00	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.05	0.01	0.16	0.12	0.44	0.44	0.00	0.27	0.27
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	3200	1800	1800	1700	1800	1800
c, Capacity [veh/h]	358	343	366	343	343	473	1209	1209	8	951	951
d1, Uniform Delay [s]	29.87	29.55	30.94	29.72	35.22	37.06	8.71	8.71	44.67	13.78	13.66
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.01	0.30	0.05	6.04	3.10	2.82	2.82	16.70	2.00	1.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.01	0.22	0.04	0.85	0.80	0.66	0.66	0.26	0.52	0.50
d, Delay for Lane Group [s/veh]	29.94	29.56	31.24	29.76	41.25	40.16	11.54	11.54	61.37	15.78	15.57
Lane Group LOS	C	C	C	C	D	D	B	B	E	B	B
Critical Lane Group	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.39	0.07	1.49	0.25	6.65	3.99	7.56	7.56	0.08	6.08	5.88
50th-Percentile Queue Length [ft/ln]	9.85	1.77	37.18	6.24	166.25	99.64	188.93	188.93	1.97	152.10	147.07
95th-Percentile Queue Length [veh/ln]	0.71	0.13	2.68	0.45	10.88	7.17	12.07	12.07	0.14	10.13	9.86
95th-Percentile Queue Length [ft/ln]	17.73	3.19	66.93	11.23	271.98	179.35	301.64	301.64	3.54	253.24	246.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.94	29.56	29.56	31.24	29.76	41.25	40.16	11.54	11.54	61.37	15.69	15.57
Movement LOS	C	C	C	C	C	D	D	B	B	E	B	B
d_A, Approach Delay [s/veh]	29.88			38.77			17.01			15.77		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	19.26											
Intersection LOS	B											
Intersection V/C	0.699											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	693.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.371

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	20	0	3	4	0	109	219	1261	37	3	754	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	0	3	4	0	109	219	1261	37	3	754	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	1	1	0	29	58	332	10	1	198	1
Total Analysis Volume [veh/h]	21	0	3	4	0	115	231	1327	39	3	794	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.37	0.00	0.01	0.13	0.00	0.19	0.28	0.01	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	693.09	668.31	467.33	125.63	225.26	15.50	11.10	0.00	0.00	12.26	0.00	0.00
Movement LOS	F	F	F	F	F	C	B	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	3.44	3.44	3.44	1.36	1.36	1.36	1.16	0.00	0.00	0.02	0.00	0.00
95th-Percentile Queue Length [ft/ln]	85.99	85.99	85.99	33.92	33.92	33.92	28.95	0.00	0.00	0.45	0.00	0.00
d_A, Approach Delay [s/veh]	664.87			19.20			1.61			0.05		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	8.20											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	301.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.160

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	50	56	1130	81	0	654	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	50	56	1130	81	0	654	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	13	15	297	21	0	172	1
Total Analysis Volume [veh/h]	61	0	0	1	0	53	59	1189	85	0	688	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.16	0.00	0.00	0.01	0.00	0.08	0.07	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	301.68	302.48	241.82	43.71	79.00	11.17	9.29	0.00	0.00	11.66	0.00	0.00
Movement LOS	F	F	F	E	F	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	5.34	5.34	5.34	0.30	0.30	0.30	0.21	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	133.40	133.40	133.40	7.58	7.58	7.58	5.26	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	301.68			11.77			0.41			0.00		
Approach LOS	F			B			A			A		
d_I, Intersection Delay [s/veh]	9.15											
Intersection LOS	F											

APPENDIX G-III

YEAR 2019 WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	49.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.974

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	7	5	136	3	445	158	738	20	2	1983	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	7	5	136	3	445	158	738	20	2	1983	121
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	2	1	36	1	117	42	194	5	1	522	32
Total Analysis Volume [veh/h]	61	7	5	143	3	468	166	777	21	2	2087	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	10	18	0	57	65	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	19	19	19	14	79	79	0	66	66
g / C, Green / Cycle	0.05	0.05	0.16	0.16	0.16	0.11	0.66	0.66	0.00	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.08	0.13	0.13	0.10	0.22	0.01	0.00	0.58	0.07
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	3600	1800	1700	3600	1800
c, Capacity [veh/h]	82	87	266	281	281	192	2369	1184	7	1977	988
d1, Uniform Delay [s]	56.40	54.74	46.66	49.18	49.16	52.33	8.95	7.10	59.60	27.07	13.13
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.38	0.72	1.69	6.56	6.50	10.84	0.37	0.03	19.99	36.87	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

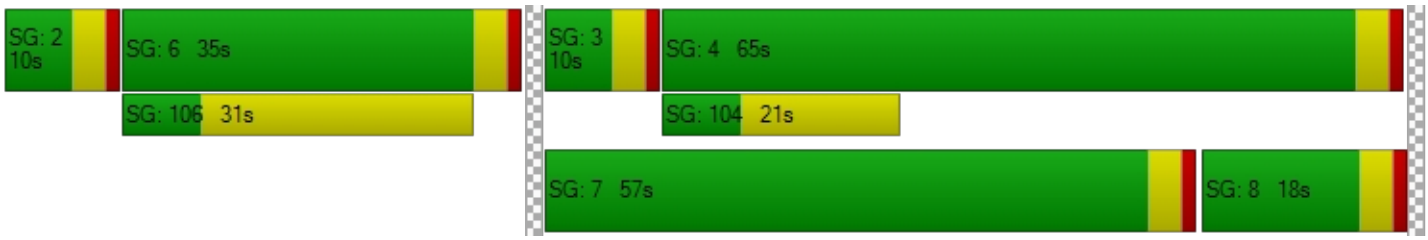
X, volume / capacity	0.74	0.14	0.54	0.84	0.84	0.86	0.33	0.02	0.28	1.06	0.13
d, Delay for Lane Group [s/veh]	68.78	55.45	48.35	55.74	55.66	63.17	9.32	7.13	79.59	63.94	13.40
Lane Group LOS	E	E	D	E	E	E	A	A	E	F	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.11	0.37	4.07	7.36	7.34	5.36	3.99	0.17	0.10	35.24	1.64
50th-Percentile Queue Length [ft/ln]	52.71	9.15	101.68	184.03	183.55	134.05	99.77	4.37	2.47	881.06	41.00
95th-Percentile Queue Length [veh/ln]	3.79	0.66	7.32	11.81	11.79	9.16	7.18	0.31	0.18	47.04	2.95
95th-Percentile Queue Length [ft/ln]	94.87	16.47	183.02	295.27	294.65	229.00	179.58	7.87	4.45	1176.09	73.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.78	55.45	55.45	48.35	55.74	55.70	63.17	9.32	7.13	79.59	63.94	13.40
Movement LOS	E	E	E	D	E	E	E	A	A	E	F	B
d_A, Approach Delay [s/veh]	66.59			53.99			18.55			61.06		
Approach LOS	E			D			B			E		
d_I, Intersection Delay [s/veh]	49.44											
Intersection LOS	D											
Intersection V/C	0.974											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	17.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	32	0	3	10	2	254	61	489	11	2	1480	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	0	3	10	2	254	61	489	11	2	1480	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	0	1	3	1	67	16	129	3	1	389	4
Total Analysis Volume [veh/h]	34	0	3	11	2	267	64	515	12	2	1558	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	62	0	0	62	0	10	18	0	10	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	5	61	61	0	56	56
g / C, Green / Cycle	0.19	0.19	0.05	0.67	0.67	0.00	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.04	0.15	0.15	0.00	0.44	0.44
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	401	366	92	1209	1209	8	1119	1119
d1, Uniform Delay [s]	30.15	35.31	41.84	5.69	5.69	44.67	11.45	11.43
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.10	3.37	8.91	0.42	0.41	16.70	3.71	3.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.09	0.77	0.69	0.22	0.22	0.26	0.70	0.70
d, Delay for Lane Group [s/veh]	30.25	38.67	50.75	6.11	6.10	61.37	15.17	15.12
Lane Group LOS	C	D	D	A	A	E	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.67	6.16	1.57	1.57	1.56	0.08	9.38	9.34
50th-Percentile Queue Length [ft/ln]	16.69	154.02	39.13	39.37	39.05	1.97	234.47	233.52
95th-Percentile Queue Length [veh/ln]	1.20	10.23	2.82	2.83	2.81	0.14	14.40	14.35
95th-Percentile Queue Length [ft/ln]	30.04	255.79	70.44	70.86	70.29	3.54	360.03	358.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.25	30.25	30.25	38.67	38.67	38.67	50.75	6.11	6.10	61.37	15.14	15.12
Movement LOS	C	C	C	D	D	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	30.25			38.67			10.94			15.20		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	17.06											
Intersection LOS	B											
Intersection V/C	0.738											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	6.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.489

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	99	21	453	24	0	1315	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	99	21	453	24	0	1315	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	26	6	119	6	0	346	0
Total Analysis Volume [veh/h]	93	0	0	0	0	104	22	477	25	0	1384	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	72	0	0	72	0	0	18	0	0	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	75	75	75	75	75	75
g / C, Green / Cycle	0.08	0.08	0.83	0.83	0.83	0.83	0.83	0.83
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.01	0.14	0.14	0.00	0.38	0.38
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	215	175	1260	1497	1497	1394	1497	1497
d1, Uniform Delay [s]	40.32	40.60	1.29	1.48	1.48	0.00	2.07	2.07
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.38	3.22	0.03	0.24	0.24	0.00	1.03	1.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.60	0.02	0.17	0.17	0.00	0.46	0.46
d, Delay for Lane Group [s/veh]	41.70	43.82	1.31	1.72	1.72	0.00	3.09	3.09
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.06	2.39	0.02	0.29	0.28	0.00	1.14	1.14
50th-Percentile Queue Length [ft/ln]	51.56	59.65	0.57	7.19	7.07	0.00	28.47	28.47
95th-Percentile Queue Length [veh/ln]	3.71	4.29	0.04	0.52	0.51	0.00	2.05	2.05
95th-Percentile Queue Length [ft/ln]	92.81	107.37	1.03	12.94	12.73	0.00	51.25	51.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.70	41.70	41.70	43.82	43.82	43.82	1.31	1.72	1.72	0.00	3.09	3.09
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	41.70			43.82			1.70			3.09		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	6.47											
Intersection LOS	A											
Intersection V/C	0.489											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	14.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	39	1	5	46	0	76	129	2015	66	3	1122	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1	5	46	0	76	129	2015	66	3	1122	66
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	0	1	12	0	20	34	530	17	1	295	17
Total Analysis Volume [veh/h]	41	1	5	48	0	80	136	2121	69	3	1181	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	12	0	0	35	0	27	43	0	10	26	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	6	6	6	10	73	73	1	64	64
g / C, Green / Cycle	0.04	0.04	0.06	0.06	0.06	0.10	0.73	0.73	0.01	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.03	0.02	0.02	0.08	0.59	0.04	0.00	0.33	0.04
s, saturation flow rate [veh/h]	1700	1800	1700	1800	1800	1700	3600	1800	1700	3600	1800
c, Capacity [veh/h]	76	81	101	107	107	170	2629	1314	10	2291	1145
d1, Uniform Delay [s]	46.81	45.83	45.60	45.32	45.32	44.10	8.87	3.79	49.56	9.85	6.88
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.76	0.39	3.47	2.18	2.18	8.47	2.77	0.08	15.24	0.83	0.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.07	0.48	0.38	0.38	0.80	0.81	0.05	0.29	0.52	0.06
d, Delay for Lane Group [s/veh]	52.57	46.22	49.08	47.50	47.50	52.57	11.65	3.87	64.80	10.69	6.99
Lane Group LOS	D	D	D	D	D	D	B	A	E	B	A
Critical Lane Group	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.12	0.15	1.25	1.02	1.02	3.57	11.07	0.31	0.12	5.98	0.50
50th-Percentile Queue Length [ft/ln]	27.93	3.78	31.17	25.42	25.42	89.32	276.64	7.68	2.89	149.60	12.47
95th-Percentile Queue Length [veh/ln]	2.01	0.27	2.24	1.83	1.83	6.43	16.52	0.55	0.21	10.00	0.90
95th-Percentile Queue Length [ft/ln]	50.27	6.80	56.11	45.76	45.76	160.77	413.02	13.82	5.20	249.89	22.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.57	46.22	46.22	49.08	47.50	47.50	52.57	11.65	3.87	64.80	10.69	6.99
Movement LOS	D	D	D	D	D	D	D	B	A	E	B	A
d_A, Approach Delay [s/veh]	51.76			48.09			13.81			10.61		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	14.39											
Intersection LOS	B											
Intersection V/C	0.766											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	12.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.522

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	20	0	3	4	0	109	219	1261	37	3	754	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	0	3	4	0	109	219	1261	37	3	754	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	1	1	0	29	58	332	10	1	198	1
Total Analysis Volume [veh/h]	21	0	3	4	0	115	231	1327	39	3	794	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	29	0	43	51	0	10	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	14	70	70	0	56	56
g / C, Green / Cycle	0.09	0.09	0.16	0.77	0.77	0.01	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07	0.14	0.38	0.38	0.00	0.22	0.22
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	227	193	272	1388	1388	10	1111	1111
d1, Uniform Delay [s]	37.87	40.15	36.75	3.80	3.79	44.55	8.48	8.47
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	3.17	7.24	1.26	1.24	14.52	0.91	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

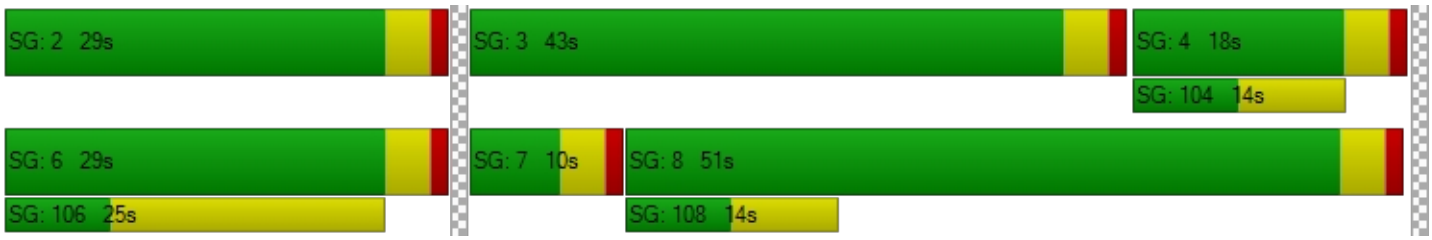
X, volume / capacity	0.11	0.62	0.85	0.49	0.49	0.29	0.36	0.36
d, Delay for Lane Group [s/veh]	38.07	43.32	44.00	5.06	5.03	59.08	9.38	9.37
Lane Group LOS	D	D	D	A	A	E	A	A
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.50	2.72	5.21	2.84	2.81	0.11	3.35	3.35
50th-Percentile Queue Length [ft/ln]	12.43	67.90	130.27	71.00	70.30	2.65	83.86	83.67
95th-Percentile Queue Length [veh/ln]	0.89	4.89	8.95	5.11	5.06	0.19	6.04	6.02
95th-Percentile Queue Length [ft/ln]	22.37	122.22	223.86	127.79	126.54	4.77	150.95	150.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.07	38.07	38.07	43.32	43.32	43.32	44.00	5.05	5.03	59.08	9.38	9.37
Movement LOS	D	D	D	D	D	D	D	A	A	E	A	A
d_A, Approach Delay [s/veh]	38.07			43.32			10.68			9.56		
Approach LOS	D			D			B			A		
d_I, Intersection Delay [s/veh]	12.12											
Intersection LOS	B											
Intersection V/C	0.522											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.432

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	50	56	1130	81	0	654	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	50	56	1130	81	0	654	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	13	15	297	21	0	172	1
Total Analysis Volume [veh/h]	61	0	0	1	0	53	59	1189	85	0	688	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	61	0	0	61	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	77	77	77	77	77	77
g / C, Green / Cycle	0.05	0.05	0.86	0.86	0.86	0.86	0.86	0.86
(v / s)_i Volume / Saturation Flow Rate	0.04	0.03	0.03	0.36	0.35	0.00	0.19	0.19
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	170	131	1428	1544	1544	1347	1544	1544
d1, Uniform Delay [s]	41.80	41.63	0.94	1.41	1.40	0.00	1.12	1.12
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.27	2.06	0.05	0.83	0.80	0.00	0.34	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

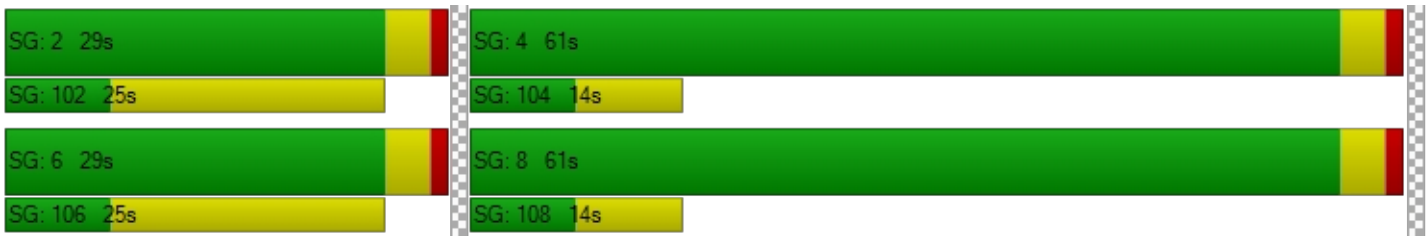
X, volume / capacity	0.36	0.41	0.04	0.42	0.41	0.00	0.22	0.22
d, Delay for Lane Group [s/veh]	43.07	43.69	1.00	2.24	2.20	0.00	1.46	1.46
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.38	1.23	0.02	0.36	0.34	0.00	0.14	0.14
50th-Percentile Queue Length [ft/ln]	34.38	30.86	0.54	8.90	8.60	0.00	3.62	3.61
95th-Percentile Queue Length [veh/ln]	2.48	2.22	0.04	0.64	0.62	0.00	0.26	0.26
95th-Percentile Queue Length [ft/ln]	61.89	55.55	0.97	16.02	15.48	0.00	6.51	6.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.07	43.07	43.07	43.69	43.69	43.69	1.00	2.22	2.20	0.00	1.46	1.46
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	43.07			43.69			2.17			1.46		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	4.15											
Intersection LOS	A											
Intersection V/C	0.432											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX H

YEAR 2040 TRAFFIC CONDITIONS INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX H-I

YEAR 2040 WITHOUT PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	391	0	213	0	624	399	1356	1545	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	391	0	213	0	624	399	1356	1545	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	103	0	56	0	164	105	357	407	0
Total Analysis Volume [veh/h]	0	0	0	412	0	224	0	657	420	1427	1626	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	22	0	0	10	0	58	68	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		14	14	14	22	22	42	68
g / C, Green / Cycle		0.15	0.15	0.15	0.25	0.25	0.47	0.76
(v / s)_i Volume / Saturation Flow Rate		0.12	0.12	0.10	0.09	0.12	0.42	0.43
s, saturation flow rate [veh/h]		1800	1800	1900	7600	3600	3400	3800
c, Capacity [veh/h]		272	272	288	1893	897	1586	2887
d1, Uniform Delay [s]		36.95	36.88	36.21	27.79	28.74	22.10	4.54
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		5.65	5.33	2.95	0.50	1.76	2.11	0.80
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.81	0.80	0.69	0.35	0.47	0.90	0.56
d, Delay for Lane Group [s/veh]		42.60	42.21	39.16	28.30	30.50	24.20	5.34
Lane Group LOS		D	D	D	C	C	C	A
Critical Lane Group		Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		5.03	4.94	4.30	2.80	3.83	12.49	3.78
50th-Percentile Queue Length [ft/ln]		125.74	123.47	107.51	70.00	95.84	312.30	94.52
95th-Percentile Queue Length [veh/ln]		8.71	8.58	7.70	5.04	6.90	18.29	6.81
95th-Percentile Queue Length [ft/ln]		217.70	214.59	192.54	126.00	172.51	457.21	170.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	42.41	42.21	39.34	0.00	28.30	30.50	24.20	5.34	0.00
Movement LOS				D	D	D		C	C	C	A	
d_A, Approach Delay [s/veh]	0.00			41.39			29.16			14.16		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	21.18											
Intersection LOS	C											
Intersection V/C	0.760											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	18.5
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	407	0	654	0	0	0	108	940	0	0	2329	773
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	407	0	654	0	0	0	108	940	0	0	2329	773
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	0	172	0	0	0	28	247	0	0	613	203
Total Analysis Volume [veh/h]	428	0	688	0	0	0	114	989	0	0	2452	814
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	58	0	0	0	0	10	32	0	0	22	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	11	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	90	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	22		7	60	49	49
g / C, Green / Cycle	0.24	0.24	0.24		0.08	0.67	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.12	0.12	0.19		0.06	0.17	0.32	0.43
s, saturation flow rate [veh/h]	1800	1800	3600		1800	5700	7600	1900
c, Capacity [veh/h]	432	432	865		149	3824	4133	1033
d1, Uniform Delay [s]	29.50	29.50	32.13		40.45	5.90	13.83	16.39
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.88	0.88	1.72		7.98	0.16	0.63	6.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.49	0.80		0.77	0.26	0.59	0.79
d, Delay for Lane Group [s/veh]	30.37	30.37	33.85		48.43	6.06	14.46	22.47
Lane Group LOS	C	C	C		D	A	B	C
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.02	4.02	7.06		2.69	1.92	7.27	12.89
50th-Percentile Queue Length [ft/ln]	100.51	100.51	176.53		67.22	47.93	181.64	322.31
95th-Percentile Queue Length [veh/ln]	7.24	7.24	11.42		4.84	3.45	11.69	18.78
95th-Percentile Queue Length [ft/ln]	180.91	180.91	285.48		121.00	86.27	292.16	469.52

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.37	30.37	33.85	0.00	0.00	0.00	48.43	6.06	0.00	0.00	14.46	22.47
Movement LOS	C	C	C				D	A			B	C
d_A, Approach Delay [s/veh]	32.52			0.00			10.44			16.46		
Approach LOS	C			A			B			B		
d_I, Intersection Delay [s/veh]	18.51											
Intersection LOS	B											
Intersection V/C	0.788											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.781

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	64	0	19	14	0	65	95	1418	85	36	2968	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	0	19	14	0	65	95	1418	85	36	2968	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	0	5	4	0	17	25	373	22	9	781	3
Total Analysis Volume [veh/h]	67	0	20	15	0	68	100	1493	89	38	3124	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	10	39	0	46	61	0	10	25	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	0	0	0	14	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	9	2	6	8	88	88	4	84	84
g / C, Green / Cycle	0.05	0.08	0.02	0.05	0.07	0.73	0.73	0.04	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.01	0.04	0.06	0.26	0.05	0.02	0.55	0.01
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1800	5700	1900	1800	5700	1900
c, Capacity [veh/h]	87	144	36	91	127	4185	1395	65	3988	1329
d1, Uniform Delay [s]	56.48	51.78	58.11	56.40	54.86	5.74	4.45	56.94	11.98	5.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.53	0.43	7.36	11.31	10.05	0.24	0.09	7.95	1.61	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

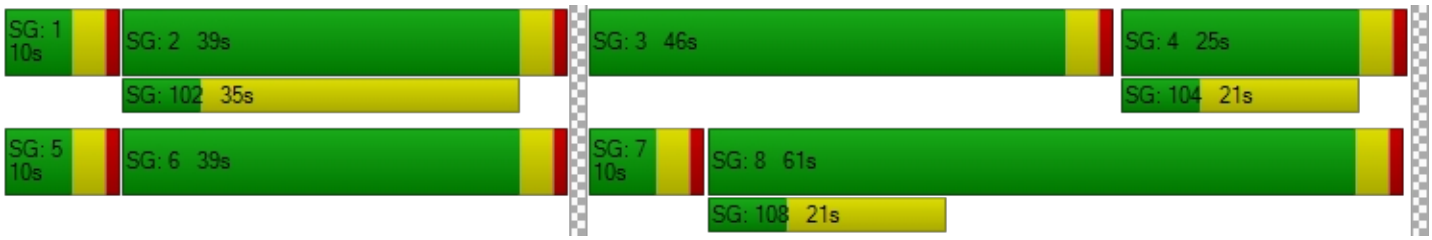
X, volume / capacity	0.77	0.14	0.41	0.74	0.78	0.36	0.06	0.58	0.78	0.01
d, Delay for Lane Group [s/veh]	70.01	52.21	65.46	67.71	64.92	5.98	4.54	64.89	13.58	5.47
Lane Group LOS	E	D	E	E	E	A	A	E	B	A
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.33	0.58	0.52	2.32	3.26	3.65	0.53	1.25	15.41	0.10
50th-Percentile Queue Length [ft/ln]	58.34	14.54	13.12	58.05	81.47	91.26	13.17	31.33	385.22	2.40
95th-Percentile Queue Length [veh/ln]	4.20	1.05	0.94	4.18	5.87	6.57	0.95	2.26	21.85	0.17
95th-Percentile Queue Length [ft/ln]	105.02	26.18	23.61	104.49	146.65	164.28	23.71	56.40	546.16	4.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	70.01	52.21	52.21	65.46	67.71	67.71	64.92	5.98	4.54	64.89	13.58	5.47
Movement LOS	E	D	D	E	E	E	E	A	A	E	B	A
d_A, Approach Delay [s/veh]	65.92			67.31			9.41			14.16		
Approach LOS	E			E			A			B		
d_I, Intersection Delay [s/veh]	14.34											
Intersection LOS	B											
Intersection V/C	0.781											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	14.8
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	83	0	39	19	0	70	75	1262	86	97	2862	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	0	39	19	0	70	75	1262	86	97	2862	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	0	10	5	0	18	20	332	23	26	753	7
Total Analysis Volume [veh/h]	87	0	41	20	0	74	79	1328	91	102	3013	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	56	42	0	24	10	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	0	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	10	10	3	6	6	6	80	80	6	80	80
g / C, Green / Cycle	0.06	0.09	0.09	0.03	0.05	0.05	0.05	0.70	0.70	0.05	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.05	0.00	0.02	0.01	0.00	0.04	0.02	0.23	0.05	0.03	0.53	0.01
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	3400	5700	1900	3400	5700	1900
c, Capacity [veh/h]	114	172	172	46	100	100	166	3956	1319	173	3968	1323
d1, Uniform Delay [s]	53.06	0.00	48.66	55.24	0.00	53.72	53.30	7.02	5.66	53.43	11.27	5.39
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.13	0.00	0.71	6.30	0.00	10.04	2.11	0.23	0.10	3.17	1.41	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

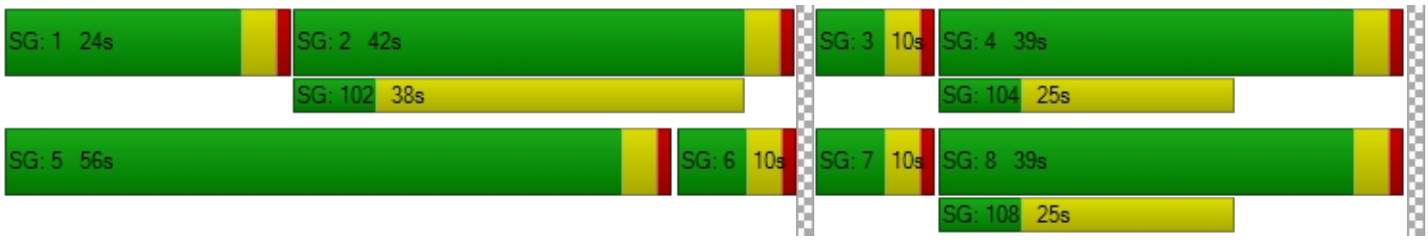
X, volume / capacity	0.76	0.00	0.24	0.43	0.00	0.74	0.48	0.34	0.07	0.59	0.76	0.02
d, Delay for Lane Group [s/veh]	63.19	0.00	49.37	61.54	0.00	63.76	55.41	7.25	5.76	56.60	12.68	5.41
Lane Group LOS	E	A	D	E	A	E	E	A	A	E	B	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.79	0.00	1.13	0.65	0.00	2.39	1.13	3.65	0.63	1.48	13.53	0.17
50th-Percentile Queue Length [ft/ln]	69.86	0.00	28.28	16.31	0.00	59.74	28.36	91.24	15.69	37.10	338.35	4.28
95th-Percentile Queue Length [veh/ln]	5.03	0.00	2.04	1.17	0.00	4.30	2.04	6.57	1.13	2.67	19.57	0.31
95th-Percentile Queue Length [ft/ln]	125.75	0.00	50.91	29.36	0.00	107.53	51.04	164.23	28.24	66.78	489.18	7.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.19	0.00	49.37	61.54	0.00	63.76	55.41	7.25	5.76	56.60	12.68	5.41
Movement LOS	E	A	D	E	A	E	E	A	A	E	B	A
d_A, Approach Delay [s/veh]	58.77			63.29			9.70			14.05		
Approach LOS	E			E			A			B		
d_I, Intersection Delay [s/veh]	14.84											
Intersection LOS	B											
Intersection V/C	0.742											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	45.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.934

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	349	323	324	148	726	51	345	709	219	581	2134	310
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	349	323	324	148	726	51	345	709	219	581	2134	310
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	92	85	85	39	191	13	91	187	58	153	562	82
Total Analysis Volume [veh/h]	367	340	341	156	764	54	363	746	231	612	2246	326
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	43	0	16	42	0	10	32	0	29	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	33	8	27	15	39	39	25	49	49
g / C, Green / Cycle	0.11	0.27	0.06	0.23	0.12	0.33	0.33	0.20	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.11	0.09	0.05	0.20	0.11	0.13	0.12	0.18	0.39	0.17
s, saturation flow rate [veh/h]	3400	3800	3400	3800	3400	5700	1900	3400	5700	1900
c, Capacity [veh/h]	372	1033	217	860	417	1860	620	696	2329	776
d1, Uniform Delay [s]	53.41	34.98	55.16	44.99	51.77	31.36	31.03	46.33	34.67	25.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.90	0.18	4.40	3.36	5.76	0.65	1.71	3.81	11.98	1.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

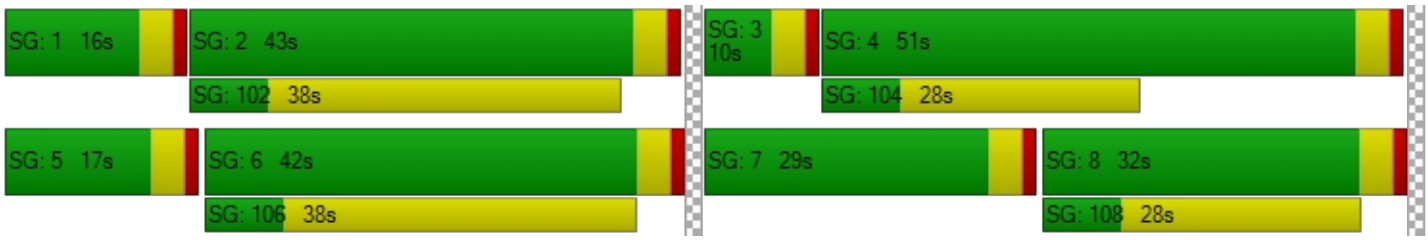
X, volume / capacity	0.99	0.33	0.72	0.89	0.87	0.40	0.37	0.88	0.96	0.42
d, Delay for Lane Group [s/veh]	72.31	35.16	59.56	48.35	57.53	32.00	32.74	50.14	46.66	27.03
Lane Group LOS	E	D	E	D	E	C	C	D	D	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.50	4.02	2.45	11.36	5.55	5.51	5.26	8.94	22.55	6.72
50th-Percentile Queue Length [ft/ln]	162.40	100.56	61.27	284.02	138.77	137.81	131.48	223.43	563.76	167.98
95th-Percentile Queue Length [veh/ln]	10.68	7.24	4.41	16.89	9.41	9.36	9.02	13.84	30.34	10.97
95th-Percentile Queue Length [ft/ln]	266.90	181.00	110.29	422.21	235.37	234.07	225.50	346.00	758.46	274.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.31	35.16	0.00	59.56	48.35	0.00	57.53	32.00	32.74	50.14	46.66	27.03
Movement LOS	E	D		E	D		E	C	C	D	D	C
d_A, Approach Delay [s/veh]	54.45			50.25			39.04			45.32		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.74											
Intersection LOS	D											
Intersection V/C	0.934											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	147.3
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.235

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	7	5	134	3	445	158	986	20	2	2519	115
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	7	5	134	3	445	158	986	20	2	2519	115
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	2	1	35	1	117	42	259	5	1	663	30
Total Analysis Volume [veh/h]	61	7	5	141	3	468	166	1038	21	2	2652	121
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	12	65	0	10	63	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	31	31	31	8	67	67	0	59	59
g / C, Green / Cycle	0.05	0.05	0.26	0.26	0.26	0.07	0.56	0.56	0.00	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.08	0.00	0.25	0.09	0.27	0.01	0.00	0.70	0.06
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	1800	3800	1900	1800	3800	1900
c, Capacity [veh/h]	82	87	467	493	493	127	2121	1060	6	1865	932
d1, Uniform Delay [s]	56.55	54.98	35.69	32.94	43.64	55.77	16.12	11.85	59.68	30.55	16.62
k, delay calibration	0.11	0.11	0.11	0.11	0.41	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.22	0.72	0.36	0.00	25.93	150.12	0.81	0.03	31.71	193.14	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

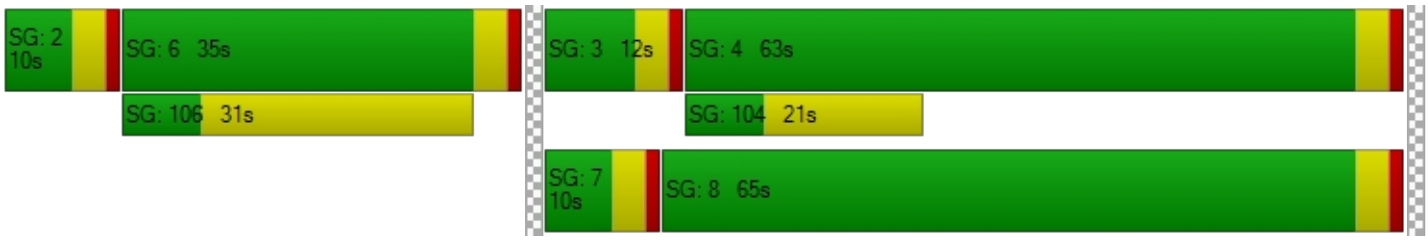
X, volume / capacity	0.74	0.14	0.30	0.01	0.95	1.31	0.49	0.02	0.34	1.42	0.13
d, Delay for Lane Group [s/veh]	68.77	55.70	36.05	32.95	69.57	205.88	16.93	11.88	91.39	223.69	16.91
Lane Group LOS	E	E	D	C	E	F	B	B	F	F	B
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.11	0.37	3.38	0.07	17.09	9.05	8.21	0.25	0.11	74.55	1.81
50th-Percentile Queue Length [ft/ln]	52.65	9.16	84.52	1.65	427.17	226.13	205.29	6.18	2.76	1863.77	45.14
95th-Percentile Queue Length [veh/ln]	3.79	0.66	6.09	0.12	23.87	15.14	12.91	0.44	0.20	111.42	3.25
95th-Percentile Queue Length [ft/ln]	94.76	16.50	152.14	2.98	596.65	378.59	322.78	11.12	4.98	2785.53	81.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.77	55.70	55.70	36.05	32.95	69.57	205.88	16.93	11.88	91.39	223.69	16.91
Movement LOS	E	E	E	D	C	E	F	B	B	F	F	B
d_A, Approach Delay [s/veh]	66.63			61.67			42.45			214.58		
Approach LOS	E			E			D			F		
d_I, Intersection Delay [s/veh]	147.29											
Intersection LOS	F											
Intersection V/C	1.235											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	53.3
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.027

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	22	13	4	55	7	386	280	795	17	5	2100	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	13	4	55	7	386	280	795	17	5	2100	153
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	1	14	2	102	74	209	4	1	553	40
Total Analysis Volume [veh/h]	23	14	4	58	7	406	295	837	18	5	2211	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	29	0	15	81	0	10	76	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	25	25	25	11	82	82	1	72	72
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.21	0.09	0.68	0.68	0.01	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.03	0.00	0.21	0.09	0.23	0.22	0.00	0.62	0.62
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	3400	1900	1900	1800	1900	1900
c, Capacity [veh/h]	401	396	393	396	396	310	1297	1297	15	1140	1140
d1, Uniform Delay [s]	38.04	37.92	38.81	37.70	47.46	54.24	7.80	7.78	59.10	23.97	23.97
k, delay calibration	0.11	0.11	0.11	0.11	0.34	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	0.05	0.17	0.02	43.82	14.79	0.68	0.68	11.55	37.63	37.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

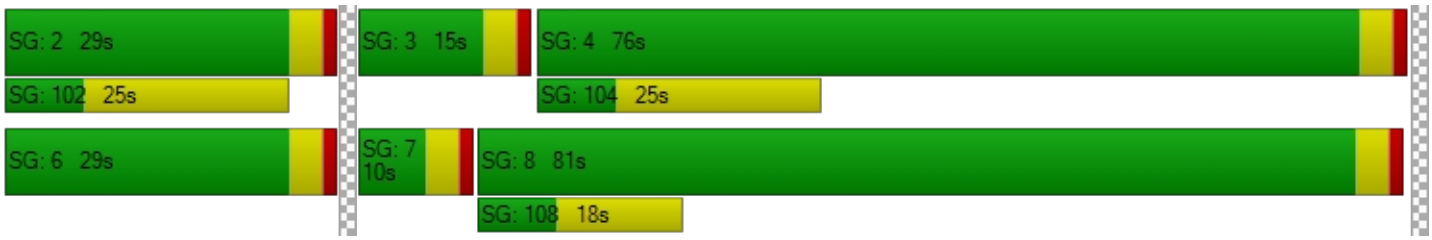
X, volume / capacity	0.06	0.05	0.15	0.02	1.02	0.95	0.33	0.33	0.32	1.04	1.04
d, Delay for Lane Group [s/veh]	38.10	37.96	38.98	37.71	91.28	69.03	8.48	8.46	70.66	61.60	61.60
Lane Group LOS	D	D	D	D	F	E	A	A	E	F	F
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.55	0.43	1.43	0.17	16.59	4.95	4.12	4.08	0.20	39.76	39.76
50th-Percentile Queue Length [ft/ln]	13.85	10.80	35.67	4.17	414.74	123.78	102.95	101.99	4.94	993.89	993.89
95th-Percentile Queue Length [veh/ln]	1.00	0.78	2.57	0.30	23.59	8.60	7.41	7.34	0.36	51.84	51.84
95th-Percentile Queue Length [ft/ln]	24.93	19.44	64.20	7.51	589.68	215.01	185.31	183.59	8.89	1296.02	1296.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.10	37.96	37.96	38.98	37.71	91.28	69.03	8.47	8.46	70.66	61.60	61.60
Movement LOS	D	D	D	D	D	F	E	A	A	E	E	E
d_A, Approach Delay [s/veh]	38.04			84.04			24.00			61.62		
Approach LOS	D			F			C			E		
d_I, Intersection Delay [s/veh]	53.29											
Intersection LOS	D											
Intersection V/C	1.027											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	2	0	3	10	19	254	61	759	15	25	2044	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	2	0	3	10	19	254	61	759	15	25	2044	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	0	1	3	5	67	16	200	4	7	538	4
Total Analysis Volume [veh/h]	2	0	3	11	20	267	64	799	16	26	2152	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	1.50	2.66	1.26	0.26	0.01	0.00	0.03	0.02	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	2558.60	2547.04	2085.40	25.01	0.00	0.00	9.60	0.00	0.00
Movement LOS	F	F	F	F	F	F	D	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.72	1.72	1.72	33.69	33.69	33.69	1.02	0.00	0.00	0.10	0.00	0.00
95th-Percentile Queue Length [ft/ln]	42.93	42.93	42.93	842.17	842.17	842.17	25.61	0.00	0.00	2.49	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00			2133.85			1.82			0.11		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	203.77											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	185.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	0	99	21	745	1967	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	99	21	745	1967	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	26	6	196	518	0
Total Analysis Volume [veh/h]	0	104	22	784	2071	0
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.45	0.08	0.01	0.02	0.00
d_M, Delay for Movement [s/veh]	185.10	33.24	19.79	0.00	0.00	0.00
Movement LOS	F	D	C	A	A	A
95th-Percentile Queue Length [veh/ln]	2.19	2.19	0.27	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	54.84	54.84	6.72	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	33.24		0.54		0.00	
Approach LOS	D		A		A	
d_I, Intersection Delay [s/veh]	1.31					
Intersection LOS	F					

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	56.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.033

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	1132	3	233	0	1858	533	887	937	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1132	3	233	0	1858	533	887	937	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	298	1	61	0	489	140	233	247	0
Total Analysis Volume [veh/h]	0	0	0	1192	3	245	0	1956	561	934	986	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	50	0	0	34	0	36	70	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		46	46	46	30	30	32	66
g / C, Green / Cycle		0.38	0.38	0.38	0.25	0.25	0.27	0.55
(v / s)_i Volume / Saturation Flow Rate		0.27	0.40	0.13	0.26	0.16	0.27	0.26
s, saturation flow rate [veh/h]		1800	1800	1900	7600	3600	3400	3800
c, Capacity [veh/h]		690	690	728	1891	896	911	2091
d1, Uniform Delay [s]		31.13	37.01	26.20	45.07	40.10	43.92	16.40
k, delay calibration		0.24	0.49	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.79	43.90	0.27	30.14	3.30	20.79	0.77
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

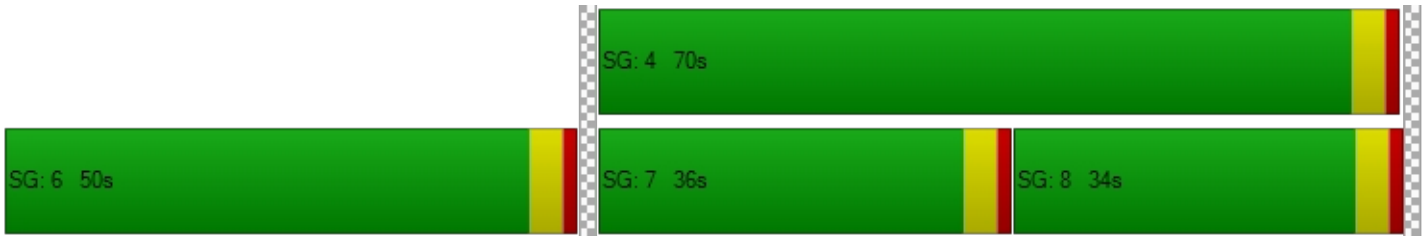
X, volume / capacity		0.70	1.04	0.34	1.03	0.63	1.03	0.47
d, Delay for Lane Group [s/veh]		33.92	80.90	26.47	75.20	43.40	64.71	17.16
Lane Group LOS		C	F	C	F	D	F	B
Critical Lane Group		No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		12.10	28.17	5.03	17.46	7.54	15.61	7.83
50th-Percentile Queue Length [ft/ln]		302.57	704.34	125.64	436.56	188.51	390.21	195.83
95th-Percentile Queue Length [veh/ln]		17.81	37.86	8.70	24.81	12.04	22.42	12.42
95th-Percentile Queue Length [ft/ln]		445.21	946.44	217.55	620.26	301.09	560.56	310.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	61.97	80.90	26.47	0.00	75.20	43.40	64.71	17.16	0.00
Movement LOS				E	F	C		F	D	F	B	
d_A, Approach Delay [s/veh]	0.00			55.98			68.12			40.29		
Approach LOS	A			E			E			D		
d_I, Intersection Delay [s/veh]	56.05											
Intersection LOS	E											
Intersection V/C	1.033											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	46.8
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.087

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	183	0	1180	0	0	0	341	2681	0	0	1650	784
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	0	1180	0	0	0	341	2681	0	0	1650	784
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	0	311	0	0	0	90	706	0	0	434	206
Total Analysis Volume [veh/h]	193	0	1242	0	0	0	359	2822	0	0	1737	825
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	42	0	0	0	0	26	78	0	0	52	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	11	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	120	120	120		120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	38	38	38		22	74	48	48
g / C, Green / Cycle	0.32	0.32	0.32		0.18	0.62	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.35		0.20	0.50	0.23	0.43
s, saturation flow rate [veh/h]	1800	1800	3600		1800	5700	7600	1900
c, Capacity [veh/h]	570	570	1140		332	3515	3030	757
d1, Uniform Delay [s]	29.60	29.60	40.99		48.90	17.45	28.12	36.07
k, delay calibration	0.11	0.11	0.12		0.30	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.14	0.14	44.59		61.69	2.04	0.79	59.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

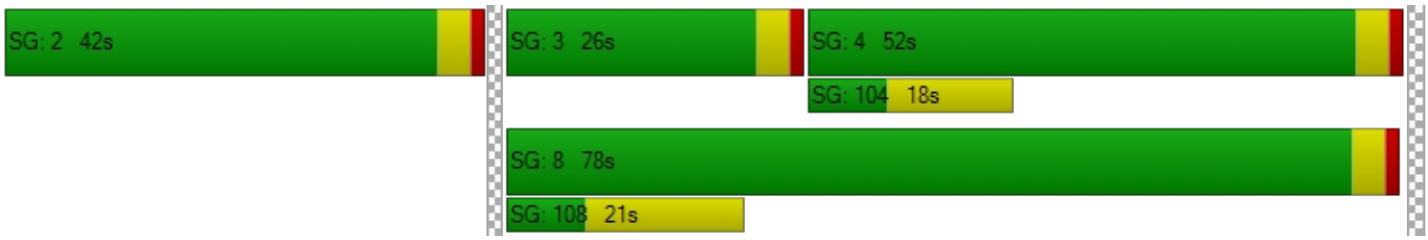
X, volume / capacity	0.17	0.17	1.09		1.08	0.80	0.57	1.09
d, Delay for Lane Group [s/veh]	29.74	29.74	85.58		110.59	19.49	28.91	95.72
Lane Group LOS	C	C	F		F	B	C	F
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.05	2.05	23.65		15.33	17.82	9.43	33.28
50th-Percentile Queue Length [ft/ln]	51.26	51.26	591.15		383.30	445.54	235.77	832.00
95th-Percentile Queue Length [veh/ln]	3.69	3.69	33.42		22.63	24.75	14.47	45.45
95th-Percentile Queue Length [ft/ln]	92.26	92.26	835.40		565.70	618.63	361.68	1136.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.74	29.74	85.58	0.00	0.00	0.00	110.59	19.49	0.00	0.00	28.91	95.72
Movement LOS	C	C	F				F	B			C	F
d_A, Approach Delay [s/veh]	78.07			0.00			29.77			50.42		
Approach LOS	E			A			C			D		
d_I, Intersection Delay [s/veh]	46.80											
Intersection LOS	D											
Intersection V/C	1.087											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	137	0	75	39	0	184	189	3299	145	45	2102	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	137	0	75	39	0	184	189	3299	145	45	2102	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	0	20	10	0	48	50	868	38	12	553	7
Total Analysis Volume [veh/h]	144	0	79	41	0	194	199	3473	153	47	2213	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	39	0	10	35	0	12	49	0	22	59	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	0	0	0	14	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	20	5	14	15	75	75	5	64	64
g / C, Green / Cycle	0.08	0.17	0.04	0.12	0.13	0.62	0.62	0.04	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.08	0.04	0.02	0.10	0.11	0.61	0.08	0.03	0.39	0.01
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1800	5700	1900	1800	5700	1900
c, Capacity [veh/h]	151	316	69	229	229	3545	1182	72	3051	1017
d1, Uniform Delay [s]	54.76	43.53	56.84	51.71	51.44	21.96	9.33	56.78	21.20	13.15
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.30	0.41	8.05	8.38	9.79	11.06	0.23	9.34	1.54	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.25	0.60	0.85	0.87	0.98	0.13	0.65	0.73	0.03
d, Delay for Lane Group [s/veh]	79.06	43.94	64.89	60.09	61.23	33.02	9.56	66.12	22.74	13.19
Lane Group LOS	E	D	E	E	E	C	A	E	C	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.35	2.09	1.38	6.25	6.33	30.34	1.57	1.56	14.81	0.33
50th-Percentile Queue Length [ft/ln]	133.77	52.24	34.47	156.17	158.37	758.39	39.35	39.02	370.30	8.19
95th-Percentile Queue Length [veh/ln]	9.14	3.76	2.48	10.35	10.46	39.37	2.83	2.81	21.12	0.59
95th-Percentile Queue Length [ft/ln]	228.61	94.02	62.04	258.64	261.56	984.20	70.83	70.24	528.10	14.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	79.06	43.94	43.94	64.89	60.09	60.09	61.23	33.02	9.56	66.12	22.74	13.19
Movement LOS	E	D	D	E	E	E	E	C	A	E	C	B
d_A, Approach Delay [s/veh]	66.62			60.93			33.55			23.52		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	32.16											
Intersection LOS	C											
Intersection V/C	0.943											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.949

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	183	0	140	52	0	196	154	3078	176	125	1795	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	0	140	52	0	196	154	3078	176	125	1795	50
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	0	37	14	0	52	41	810	46	33	472	13
Total Analysis Volume [veh/h]	193	0	147	55	0	206	162	3240	185	132	1889	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	42	0	10	35	0	10	58	0	10	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	0	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	23	23	5	15	15	8	69	69	7	68	68
g / C, Green / Cycle	0.11	0.19	0.19	0.04	0.13	0.13	0.07	0.57	0.57	0.06	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.11	0.00	0.08	0.03	0.00	0.11	0.05	0.57	0.10	0.04	0.33	0.03
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	3400	5700	1900	3400	5700	1900
c, Capacity [veh/h]	196	367	367	77	241	241	225	3273	1091	193	3219	1073
d1, Uniform Delay [s]	53.40	0.00	42.38	56.73	0.00	51.32	54.97	25.22	12.06	55.57	17.01	11.70
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.53	0.00	0.71	11.51	0.00	8.35	4.30	13.54	0.34	4.25	0.79	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

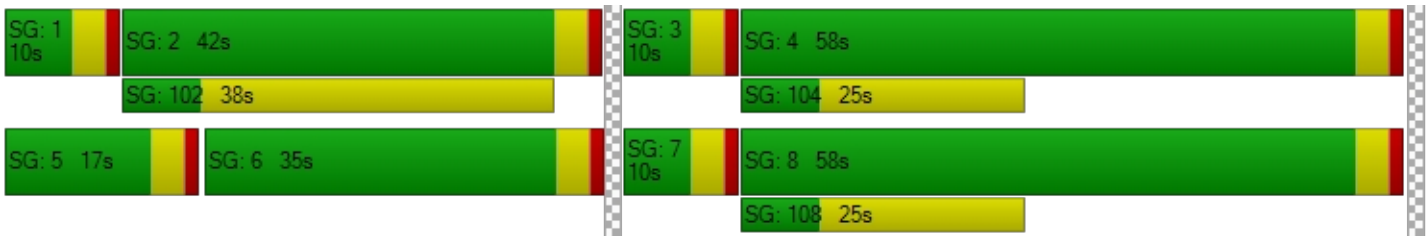
X, volume / capacity	0.99	0.00	0.40	0.71	0.00	0.85	0.72	0.99	0.17	0.68	0.59	0.05
d, Delay for Lane Group [s/veh]	79.93	0.00	43.08	68.24	0.00	59.67	59.27	38.76	12.39	59.83	17.80	11.79
Lane Group LOS	E	A	D	E	A	E	E	D	B	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.25	0.00	3.90	1.89	0.00	6.62	2.48	30.66	2.28	2.03	10.53	0.62
50th-Percentile Queue Length [ft/ln]	181.13	0.00	97.50	47.36	0.00	165.50	62.00	766.42	56.92	50.73	263.19	15.54
95th-Percentile Queue Length [veh/ln]	11.66	0.00	7.02	3.41	0.00	10.84	4.46	39.74	4.10	3.65	15.85	1.12
95th-Percentile Queue Length [ft/ln]	291.49	0.00	175.49	85.24	0.00	270.99	111.59	993.43	102.45	91.32	396.21	27.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	79.93	0.00	43.08	68.24	0.00	59.67	59.27	38.76	12.39	59.83	17.80	11.79
Movement LOS	E	A	D	E	A	E	E	D	B	E	B	B
d_A, Approach Delay [s/veh]	64.00			61.47			38.33			20.32		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	34.72											
Intersection LOS	C											
Intersection V/C	0.949											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	45.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.954

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	396	611	639	357	550	44	336	1943	792	349	1147	243
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	396	611	639	357	550	44	336	1943	792	349	1147	243
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	104	161	168	94	145	12	88	511	208	92	302	64
Total Analysis Volume [veh/h]	417	643	673	376	579	46	354	2045	834	367	1207	256
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	44	0	17	42	0	10	49	0	10	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	23	13	21	15	52	52	15	53	53
g / C, Green / Cycle	0.13	0.19	0.11	0.18	0.12	0.44	0.44	0.13	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.12	0.17	0.11	0.15	0.10	0.36	0.44	0.11	0.21	0.13
s, saturation flow rate [veh/h]	3400	3800	3400	3800	3400	5700	1900	3400	5700	1900
c, Capacity [veh/h]	428	737	372	674	421	2484	828	434	2506	835
d1, Uniform Delay [s]	52.31	46.97	53.50	47.95	51.45	29.81	33.88	51.23	23.93	21.80
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.05	3.41	24.57	3.33	4.55	3.24	33.03	4.59	0.67	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

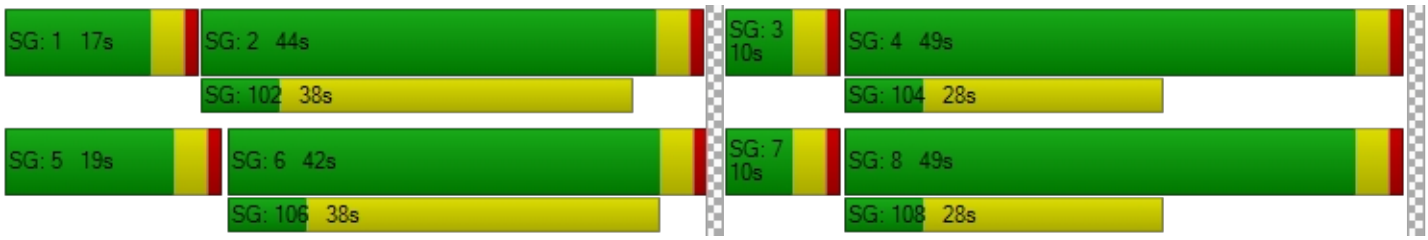
X, volume / capacity	0.97	0.87	1.01	0.86	0.84	0.82	1.01	0.85	0.48	0.31
d, Delay for Lane Group [s/veh]	67.36	50.38	78.07	51.28	56.00	33.05	66.92	55.82	24.60	22.75
Lane Group LOS	E	D	F	D	E	C	F	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.14	9.64	6.87	8.70	5.33	16.94	29.96	5.53	7.86	4.69
50th-Percentile Queue Length [ft/ln]	178.51	240.98	171.72	217.51	133.35	423.45	748.91	138.17	196.62	117.24
95th-Percentile Queue Length [veh/ln]	11.52	14.73	11.22	13.54	9.12	23.69	39.15	9.38	12.46	8.24
95th-Percentile Queue Length [ft/ln]	288.07	368.27	280.44	338.45	228.04	592.19	978.76	234.56	311.60	206.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.36	50.38	0.00	78.07	51.28	0.00	56.00	33.05	66.92	55.82	24.60	22.75
Movement LOS	E	D		F	D		E	C	F	E	C	C
d_A, Approach Delay [s/veh]	57.06			61.83			44.30			30.60		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	45.04											
Intersection LOS	D											
Intersection V/C	0.954											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	25.0
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.950

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	39	1	5	39	0	76	129	2732	66	3	1602	62
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1	5	39	0	76	129	2732	66	3	1602	62
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	0	1	10	0	20	34	719	17	1	422	16
Total Analysis Volume [veh/h]	41	1	5	41	0	80	136	2876	69	3	1686	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	10	65	0	10	65	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	7	7	7	11	92	92	1	81	81
g / C, Green / Cycle	0.04	0.04	0.06	0.06	0.06	0.09	0.76	0.76	0.01	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.02	0.00	0.04	0.08	0.76	0.04	0.00	0.44	0.03
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	1800	3800	1900	1800	3800	1900
c, Capacity [veh/h]	72	76	107	113	113	166	2896	1448	9	2566	1283
d1, Uniform Delay [s]	56.60	55.49	54.33	0.00	55.42	53.52	13.98	3.53	59.49	11.38	6.56
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.90	0.44	2.24	0.00	7.88	9.61	15.22	0.06	18.12	1.33	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

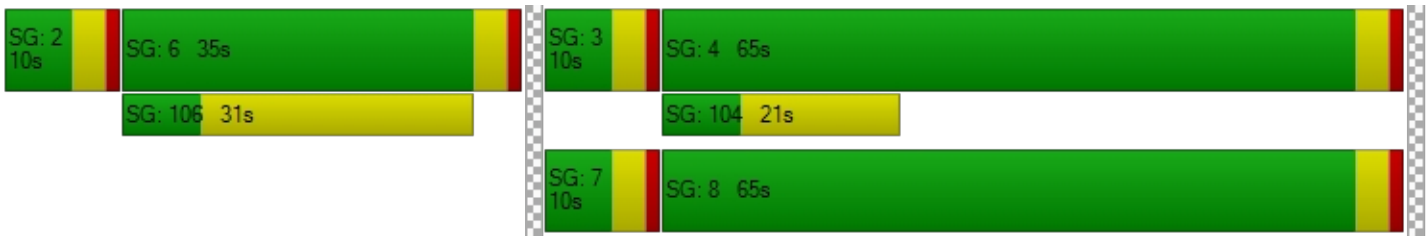
X, volume / capacity	0.57	0.08	0.38	0.00	0.71	0.82	0.99	0.05	0.32	0.66	0.05
d, Delay for Lane Group [s/veh]	63.50	55.92	56.57	0.00	63.30	63.13	29.20	3.59	77.60	12.71	6.63
Lane Group LOS	E	E	E	A	E	E	C	A	E	B	A
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.36	0.18	1.26	0.00	2.63	4.37	31.84	0.34	0.14	11.46	0.51
50th-Percentile Queue Length [ft/ln]	34.00	4.61	31.53	0.00	65.64	109.28	796.03	8.41	3.41	286.53	12.87
95th-Percentile Queue Length [veh/ln]	2.45	0.33	2.27	0.00	4.73	7.80	41.10	0.61	0.25	17.01	0.93
95th-Percentile Queue Length [ft/ln]	61.20	8.31	56.76	0.00	118.15	194.99	1027.38	15.14	6.14	425.33	23.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.50	55.92	55.92	56.57	0.00	63.30	63.13	29.20	3.59	77.60	12.71	6.63
Movement LOS	E	E	E	E	A	E	E	C	A	E	B	A
d_A, Approach Delay [s/veh]	62.53			61.02			30.12			12.60		
Approach LOS	E			E			C			B		
d_I, Intersection Delay [s/veh]	25.03											
Intersection LOS	C											
Intersection V/C	0.950											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.870

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	21	3	1	104	13	302	380	2171	18	3	1300	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	3	1	104	13	302	380	2171	18	3	1300	79
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	0	27	3	79	100	571	5	1	342	21
Total Analysis Volume [veh/h]	22	3	1	109	14	318	400	2285	19	3	1368	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	70	0	0	70	0	10	30	0	10	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	21	21	21	16	76	76	1	61	61
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.19	0.14	0.69	0.69	0.01	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.06	0.01	0.17	0.12	0.61	0.61	0.00	0.38	0.38
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	3400	1900	1900	1800	1900	1900
c, Capacity [veh/h]	365	362	372	362	362	486	1320	1320	10	1059	1059
d1, Uniform Delay [s]	36.47	36.10	38.35	36.29	43.27	45.78	13.03	13.03	54.44	17.50	17.34
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.01	0.43	0.04	6.89	3.57	8.20	8.20	14.28	3.69	3.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.06	0.01	0.29	0.04	0.88	0.82	0.87	0.87	0.29	0.69	0.68
d, Delay for Lane Group [s/veh]	36.54	36.11	38.78	36.34	50.16	49.35	21.23	21.23	68.72	21.19	20.86
Lane Group LOS	D	D	D	D	D	D	C	C	E	C	C
Critical Lane Group	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.49	0.09	2.58	0.31	9.04	5.37	19.84	19.84	0.12	12.92	12.58
50th-Percentile Queue Length [ft/ln]	12.34	2.22	64.48	7.81	225.88	134.21	496.08	496.08	3.05	322.91	314.47
95th-Percentile Queue Length [veh/ln]	0.89	0.16	4.64	0.56	13.96	9.17	27.15	27.15	0.22	18.81	18.40
95th-Percentile Queue Length [ft/ln]	22.20	3.99	116.06	14.06	349.12	229.21	678.72	678.72	5.50	470.26	459.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.54	36.11	36.11	38.78	36.34	50.16	49.35	21.23	21.23	68.72	21.04	20.86
Movement LOS	D	D	D	D	D	D	D	C	C	E	C	C
d_A, Approach Delay [s/veh]	36.48			46.91			25.39			21.12		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	26.17											
Intersection LOS	C											
Intersection V/C	0.870											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	2,269.1
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.000

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	0	0	68	4	0	109	227	2000	3	3	1230	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	68	4	0	109	227	2000	3	3	1230	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	18	1	0	29	60	526	1	1	324	1
Total Analysis Volume [veh/h]	0	0	72	4	0	115	239	2105	3	3	1295	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.32	1.15	0.00	0.28	0.45	0.02	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	2044.51	1987.21	28.77	1334.66	2269.08	304.73	17.29	0.00	0.00	19.20	0.00	0.00
Movement LOS	F	F	D	F	F	F	C	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	1.34	1.34	1.34	9.30	9.30	9.30	2.32	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	33.54	33.54	33.54	232.40	232.40	232.40	58.06	0.00	0.00	0.89	0.00	0.00
d_A, Approach Delay [s/veh]	28.77			339.35			1.76			0.04		
Approach LOS	D			F			A			A		
d_I, Intersection Delay [s/veh]	12.15											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	153.6
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.041

Intersection Setup

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Gold Buckle Road		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	1	50	56	1964	1188	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1	50	56	1964	1188	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	13	15	517	313	1
Total Analysis Volume [veh/h]	1	53	59	2067	1251	5
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane	No		
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.12	0.11	0.02	0.01	0.00
d_M, Delay for Movement [s/veh]	153.57	15.62	12.34	0.00	0.00	0.00
Movement LOS	F	C	B	A	A	A
95th-Percentile Queue Length [veh/ln]	0.58	0.58	0.36	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	14.59	14.59	8.97	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	18.18		0.34		0.00	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.50					
Intersection LOS	F					

APPENDIX H-II

YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	399	0	213	0	628	399	1402	1557	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	399	0	213	0	628	399	1402	1557	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	105	0	56	0	165	105	369	410	0
Total Analysis Volume [veh/h]	0	0	0	420	0	224	0	661	420	1476	1639	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	21	0	0	10	0	59	69	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		14	14	14	21	21	43	68
g / C, Green / Cycle		0.15	0.15	0.15	0.23	0.23	0.48	0.76
(v / s)_i Volume / Saturation Flow Rate		0.12	0.12	0.11	0.09	0.12	0.43	0.43
s, saturation flow rate [veh/h]		1800	1800	1900	7600	3600	3400	3800
c, Capacity [veh/h]		273	273	288	1782	844	1635	2887
d1, Uniform Delay [s]		36.99	36.94	36.25	28.90	29.87	21.45	4.57
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		5.94	5.63	3.06	0.59	2.09	2.11	0.82
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.81	0.70	0.37	0.50	0.90	0.57
d, Delay for Lane Group [s/veh]		42.93	42.56	39.31	29.49	31.96	23.56	5.39
Lane Group LOS		D	D	D	C	C	C	A
Critical Lane Group		Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		5.11	5.03	4.37	2.89	3.95	12.77	3.84
50th-Percentile Queue Length [ft/ln]		127.81	125.73	109.17	72.29	98.67	319.15	96.03
95th-Percentile Queue Length [veh/ln]		8.82	8.71	7.79	5.20	7.10	18.63	6.91
95th-Percentile Queue Length [ft/ln]		220.51	217.68	194.84	130.12	177.61	465.65	172.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	42.75	42.56	39.46	0.00	29.49	31.96	23.56	5.39	0.00
Movement LOS				D	D	D		C	C	C	A	
d_A, Approach Delay [s/veh]	0.00			41.68			30.45			14.00		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	21.36											
Intersection LOS	C											
Intersection V/C	0.778											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	19.4
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.802

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	407	0	669	0	0	0	108	952	0	0	2387	797
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	407	0	669	0	0	0	108	952	0	0	2387	797
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	0	176	0	0	0	28	251	0	0	628	210
Total Analysis Volume [veh/h]	428	0	704	0	0	0	114	1002	0	0	2513	839
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	63	0	0	0	0	10	32	0	0	22	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	11	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	95	95	95		95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	23		8	64	52	52
g / C, Green / Cycle	0.24	0.24	0.24		0.08	0.67	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.12	0.12	0.20		0.06	0.18	0.33	0.44
s, saturation flow rate [veh/h]	1800	1800	3600		1800	5700	7600	1900
c, Capacity [veh/h]	437	437	873		148	3838	4173	1043
d1, Uniform Delay [s]	30.94	30.94	33.89		42.74	6.15	14.43	17.30
k, delay calibration	0.11	0.11	0.11		0.11	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.85	0.85	1.82		8.24	0.17	0.65	6.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

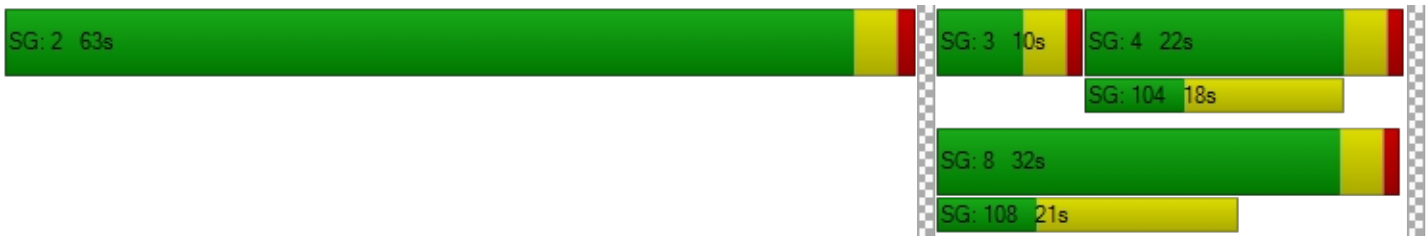
X, volume / capacity	0.49	0.49	0.81		0.77	0.26	0.60	0.80
d, Delay for Lane Group [s/veh]	31.80	31.80	35.71		50.98	6.32	15.08	23.89
Lane Group LOS	C	C	D		D	A	B	C
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.26	4.26	7.71		2.85	2.11	8.00	14.42
50th-Percentile Queue Length [ft/ln]	106.48	106.48	192.68		71.34	52.69	200.03	360.39
95th-Percentile Queue Length [veh/ln]	7.64	7.64	12.26		5.14	3.79	12.64	20.64
95th-Percentile Queue Length [ft/ln]	191.09	191.09	306.50		128.42	94.84	316.00	516.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.80	31.80	35.71	0.00	0.00	0.00	50.98	6.32	0.00	0.00	15.08	23.89
Movement LOS	C	C	D				D	A			B	C
d_A, Approach Delay [s/veh]	34.23			0.00			10.88			17.28		
Approach LOS	C			A			B			B		
d_I, Intersection Delay [s/veh]	19.43											
Intersection LOS	B											
Intersection V/C	0.802											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	64	0	19	14	0	65	95	1445	85	36	3050	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	0	19	14	0	65	95	1445	85	36	3050	13
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	0	5	4	0	17	25	380	22	9	803	3
Total Analysis Volume [veh/h]	67	0	20	15	0	68	100	1521	89	38	3211	14
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	39	0	10	37	0	11	61	0	10	60	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	0	0	0	14	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	9	2	6	8	88	88	4	84	84
g / C, Green / Cycle	0.05	0.08	0.02	0.05	0.07	0.73	0.73	0.04	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.04	0.01	0.01	0.04	0.06	0.27	0.05	0.02	0.56	0.01
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1800	5700	1900	1800	5700	1900
c, Capacity [veh/h]	87	145	36	91	127	4185	1395	65	3989	1330
d1, Uniform Delay [s]	56.47	51.77	58.11	56.40	54.90	5.79	4.45	56.94	12.38	5.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.42	0.43	7.36	11.31	10.25	0.25	0.09	7.95	1.82	0.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.14	0.41	0.74	0.79	0.36	0.06	0.58	0.80	0.01
d, Delay for Lane Group [s/veh]	69.89	52.20	65.46	67.71	65.15	6.03	4.54	64.89	14.20	5.46
Lane Group LOS	E	D	E	E	E	A	A	E	B	A
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.33	0.58	0.52	2.32	3.27	3.75	0.53	1.25	16.42	0.10
50th-Percentile Queue Length [ft/ln]	58.28	14.54	13.12	58.05	81.63	93.66	13.18	31.33	410.55	2.40
95th-Percentile Queue Length [veh/ln]	4.20	1.05	0.94	4.18	5.88	6.74	0.95	2.26	23.07	0.17
95th-Percentile Queue Length [ft/ln]	104.91	26.17	23.61	104.49	146.94	168.59	23.72	56.40	576.70	4.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.89	52.20	52.20	65.46	67.71	67.71	65.15	6.03	4.54	64.89	14.20	5.46
Movement LOS	E	D	D	E	E	E	E	A	A	E	B	A
d_A, Approach Delay [s/veh]	65.82			67.31			9.41			14.76		
Approach LOS	E			E			A			B		
d_I, Intersection Delay [s/veh]	14.69											
Intersection LOS	B											
Intersection V/C	0.798											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	83	0	39	19	0	70	75	1289	86	97	2944	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	0	39	19	0	70	75	1289	86	97	2944	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	0	10	5	0	18	20	339	23	26	775	7
Total Analysis Volume [veh/h]	87	0	41	20	0	74	79	1357	91	102	3099	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	36	42	0	10	16	0	10	57	0	11	58	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	0	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	11	11	3	6	6	6	84	84	6	85	85
g / C, Green / Cycle	0.06	0.09	0.09	0.02	0.05	0.05	0.05	0.70	0.70	0.05	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.05	0.00	0.02	0.01	0.00	0.04	0.02	0.24	0.05	0.03	0.54	0.01
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	3400	5700	1900	3400	5700	1900
c, Capacity [veh/h]	113	171	171	45	100	100	160	4006	1335	166	4017	1339
d1, Uniform Delay [s]	55.42	0.00	50.84	57.68	0.00	56.09	55.81	6.96	5.57	55.98	11.47	5.31
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.56	0.00	0.72	6.55	0.00	10.40	2.35	0.23	0.10	3.63	1.49	0.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.00	0.24	0.44	0.00	0.74	0.49	0.34	0.07	0.61	0.77	0.02
d, Delay for Lane Group [s/veh]	65.98	0.00	51.56	64.22	0.00	66.50	58.16	7.19	5.67	59.61	12.96	5.33
Lane Group LOS	E	A	D	E	A	E	E	A	A	E	B	A
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.93	0.00	1.19	0.68	0.00	2.50	1.19	3.83	0.64	1.56	14.70	0.17
50th-Percentile Queue Length [ft/ln]	73.13	0.00	29.63	17.05	0.00	62.48	29.83	95.83	16.00	39.11	367.55	4.37
95th-Percentile Queue Length [veh/ln]	5.27	0.00	2.13	1.23	0.00	4.50	2.15	6.90	1.15	2.82	20.99	0.31
95th-Percentile Queue Length [ft/ln]	131.64	0.00	53.34	30.69	0.00	112.47	53.70	172.49	28.80	70.39	524.76	7.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.98	0.00	51.56	64.22	0.00	66.50	58.16	7.19	5.67	59.61	12.96	5.33
Movement LOS	E	A	D	E	A	E	E	A	A	E	B	A
d_A, Approach Delay [s/veh]	61.36			66.01			9.74			14.38		
Approach LOS	E			E			A			B		
d_I, Intersection Delay [s/veh]	15.14											
Intersection LOS	B											
Intersection V/C	0.755											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	48.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.952

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	349	323	328	152	726	51	345	736	219	593	2216	322
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	349	323	328	152	726	51	345	736	219	593	2216	322
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	92	85	86	40	191	13	91	194	58	156	583	85
Total Analysis Volume [veh/h]	367	340	345	160	764	54	363	775	231	624	2333	339
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	42	0	17	42	0	10	32	0	29	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	32	8	27	15	39	39	25	49	49
g / C, Green / Cycle	0.11	0.27	0.06	0.23	0.12	0.32	0.32	0.21	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.11	0.09	0.05	0.20	0.11	0.14	0.12	0.18	0.41	0.18
s, saturation flow rate [veh/h]	3400	3800	3400	3800	3400	5700	1900	3400	5700	1900
c, Capacity [veh/h]	372	1027	222	860	417	1840	613	708	2329	776
d1, Uniform Delay [s]	53.41	35.11	55.06	44.99	51.77	31.87	31.35	46.12	35.52	25.57
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.90	0.19	4.36	3.36	5.76	0.71	1.76	3.82	19.07	1.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

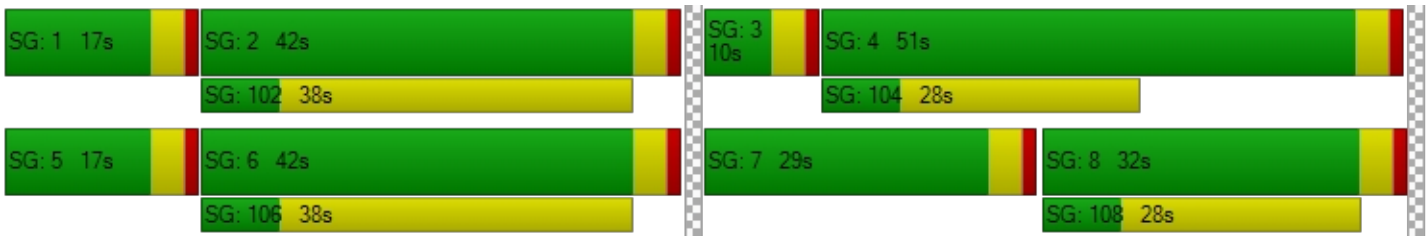
X, volume / capacity	0.99	0.33	0.72	0.89	0.87	0.42	0.38	0.88	1.00	0.44
d, Delay for Lane Group [s/veh]	72.31	35.30	59.42	48.35	57.53	32.58	33.11	49.94	54.60	27.36
Lane Group LOS	E	D	E	D	E	C	C	D	F	C
Critical Lane Group	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.50	4.03	2.51	11.36	5.55	5.80	5.30	9.11	25.32	7.05
50th-Percentile Queue Length [ft/ln]	162.40	100.78	62.78	284.02	138.77	145.00	132.38	227.63	633.11	176.33
95th-Percentile Queue Length [veh/ln]	10.68	7.26	4.52	16.89	9.41	9.75	9.07	14.05	33.62	11.41
95th-Percentile Queue Length [ft/ln]	266.90	181.41	113.00	422.21	235.37	243.74	226.73	351.34	840.57	285.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.31	35.30	0.00	59.42	48.35	0.00	57.53	32.58	33.11	49.94	54.60	27.36
Movement LOS	E	D		E	D		E	C	C	D	F	C
d_A, Approach Delay [s/veh]	54.51			50.27			39.29			50.91		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	48.69											
Intersection LOS	D											
Intersection V/C	0.952											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	163.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.269

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	7	5	136	3	445	158	1021	20	2	2625	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	7	5	136	3	445	158	1021	20	2	2625	121
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	2	1	36	1	117	42	269	5	1	691	32
Total Analysis Volume [veh/h]	61	7	5	143	3	468	166	1075	21	2	2763	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	12	65	0	10	63	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	31	31	31	8	67	67	0	59	59
g / C, Green / Cycle	0.05	0.05	0.26	0.26	0.26	0.07	0.56	0.56	0.00	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.08	0.00	0.25	0.09	0.28	0.01	0.00	0.73	0.07
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	1800	3800	1900	1800	3800	1900
c, Capacity [veh/h]	82	87	467	493	493	127	2121	1060	6	1865	932
d1, Uniform Delay [s]	56.55	54.98	35.73	32.94	43.64	55.77	16.34	11.85	59.68	30.55	16.67
k, delay calibration	0.11	0.11	0.11	0.11	0.41	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.22	0.72	0.37	0.00	25.93	150.16	0.87	0.03	31.71	219.65	0.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

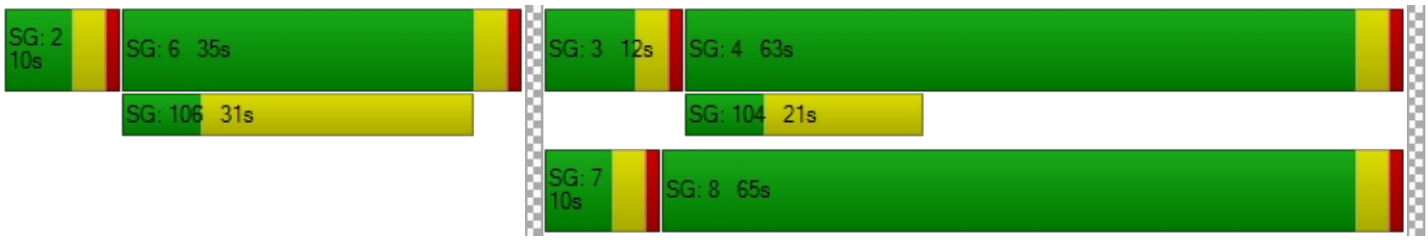
X, volume / capacity	0.74	0.14	0.31	0.01	0.95	1.31	0.51	0.02	0.34	1.48	0.14
d, Delay for Lane Group [s/veh]	68.77	55.70	36.10	32.95	69.57	205.93	17.21	11.88	91.39	250.20	16.98
Lane Group LOS	E	E	D	C	E	F	B	B	F	F	B
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.11	0.37	3.43	0.07	17.09	9.05	8.63	0.25	0.11	81.42	1.90
50th-Percentile Queue Length [ft/ln]	52.65	9.16	85.83	1.65	427.16	226.15	215.63	6.18	2.76	2035.46	47.55
95th-Percentile Queue Length [veh/ln]	3.79	0.66	6.18	0.12	23.87	15.15	13.44	0.44	0.20	123.12	3.42
95th-Percentile Queue Length [ft/ln]	94.76	16.50	154.49	2.98	596.64	378.63	336.05	11.12	4.98	3077.94	85.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	68.77	55.70	55.70	36.10	32.95	69.57	205.93	17.21	11.88	91.39	250.20	16.98
Movement LOS	E	E	E	D	C	E	F	B	B	F	F	B
d_A, Approach Delay [s/veh]	66.63			61.60			41.94			239.85		
Approach LOS	E			E			D			F		
d_I, Intersection Delay [s/veh]	163.04											
Intersection LOS	F											
Intersection V/C	1.269											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	62.3
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.064

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	22	13	4	57	7	386	280	832	17	5	2213	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	13	4	57	7	386	280	832	17	5	2213	159
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	1	15	2	102	74	219	4	1	582	42
Total Analysis Volume [veh/h]	23	14	4	60	7	406	295	876	18	5	2329	167
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	29	0	14	81	0	10	77	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	25	25	25	10	82	82	1	73	73
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.21	0.08	0.68	0.68	0.01	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.03	0.00	0.21	0.09	0.24	0.23	0.00	0.66	0.66
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	3400	1900	1900	1800	1900	1900
c, Capacity [veh/h]	401	396	393	396	396	282	1297	1297	15	1156	1156
d1, Uniform Delay [s]	38.04	37.92	38.85	37.70	47.46	55.00	7.90	7.88	59.10	23.48	23.48
k, delay calibration	0.11	0.11	0.11	0.11	0.34	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.06	0.05	0.18	0.02	43.82	38.35	0.73	0.72	11.55	50.67	50.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

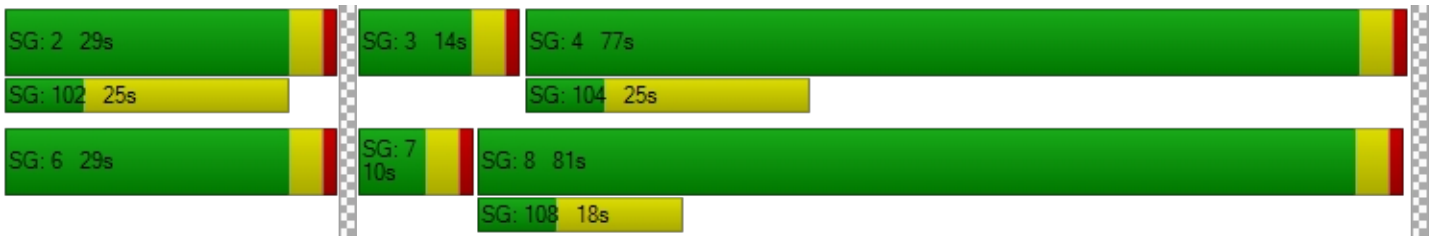
X, volume / capacity	0.06	0.05	0.15	0.02	1.02	1.05	0.35	0.34	0.32	1.08	1.08
d, Delay for Lane Group [s/veh]	38.10	37.96	39.03	37.71	91.28	93.35	8.63	8.61	70.66	74.14	74.14
Lane Group LOS	D	D	D	D	F	F	A	A	E	F	F
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.55	0.43	1.48	0.17	16.59	5.64	4.37	4.33	0.20	44.27	44.27
50th-Percentile Queue Length [ft/ln]	13.85	10.80	36.94	4.17	414.74	141.10	109.13	108.16	4.94	1106.82	1106.82
95th-Percentile Queue Length [veh/ln]	1.00	0.78	2.66	0.30	23.59	9.69	7.79	7.74	0.36	58.91	58.91
95th-Percentile Queue Length [ft/ln]	24.93	19.44	66.49	7.51	589.68	242.31	194.79	193.44	8.89	1472.86	1472.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	38.10	37.96	37.96	39.03	37.71	91.28	93.35	8.62	8.61	70.66	74.14	74.14
Movement LOS	D	D	D	D	D	F	F	A	A	E	F	E
d_A, Approach Delay [s/veh]	38.04			83.86			29.64			74.14		
Approach LOS	D			F			C			E		
d_I, Intersection Delay [s/veh]	62.29											
Intersection LOS	E											
Intersection V/C	1.064											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.005

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	32	0	3	10	19	254	61	788	25	25	2132	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	0	3	10	19	254	61	788	25	25	2132	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	0	1	3	5	67	16	207	7	7	561	4
Total Analysis Volume [veh/h]	34	0	3	11	20	267	64	829	26	26	2244	15
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	1.86	3.37	1.35	0.29	0.01	0.00	0.03	0.02	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	10000.0	3213.60	3210.60	2622.93	27.42	0.00	0.00	9.77	0.00	0.00
Movement LOS	F	F	F	F	F	F	D	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	6.70	6.70	6.70	34.80	34.80	34.80	1.14	0.00	0.00	0.10	0.00	0.00
95th-Percentile Queue Length [ft/ln]	167.42	167.42	167.42	869.93	869.93	869.93	28.44	0.00	0.00	2.58	0.00	0.00
d_A, Approach Delay [s/veh]	10000.00			2684.17			1.91			0.11		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	331.14											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	1,788.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.186

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	99	21	750	24	0	1967	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	99	21	750	24	0	1967	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	26	6	197	6	0	518	0
Total Analysis Volume [veh/h]	93	0	0	0	0	104	22	789	25	0	2071	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	4.19	0.00	0.00	0.00	0.00	0.45	0.08	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	1788.91	1885.69	1632.94	285.90	281.28	33.24	19.79	0.00	0.00	9.45	0.00	0.00
Movement LOS	F	F	F	F	F	D	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	11.80	11.80	11.80	2.19	2.19	2.19	0.27	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	295.07	295.07	295.07	54.84	54.84	54.84	6.72	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1788.91			33.24			0.52			0.00		
Approach LOS	F			D			A			A		
d_I, Intersection Delay [s/veh]	54.85											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	60.0
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.056

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	1159	3	233	0	1872	533	917	945	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1159	3	233	0	1872	533	917	945	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	305	1	61	0	493	140	241	249	0
Total Analysis Volume [veh/h]	0	0	0	1220	3	245	0	1971	561	965	995	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	50	0	0	34	0	36	70	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		46	46	46	30	30	32	66
g / C, Green / Cycle		0.38	0.38	0.38	0.25	0.25	0.27	0.55
(v / s)_i Volume / Saturation Flow Rate		0.27	0.41	0.13	0.26	0.16	0.28	0.26
s, saturation flow rate [veh/h]		1800	1800	1900	7600	3600	3400	3800
c, Capacity [veh/h]		690	690	728	1891	896	911	2090
d1, Uniform Delay [s]		31.35	37.01	26.20	45.07	40.11	43.92	16.45
k, delay calibration		0.25	0.50	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.10	52.46	0.27	32.73	3.30	32.78	0.78
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

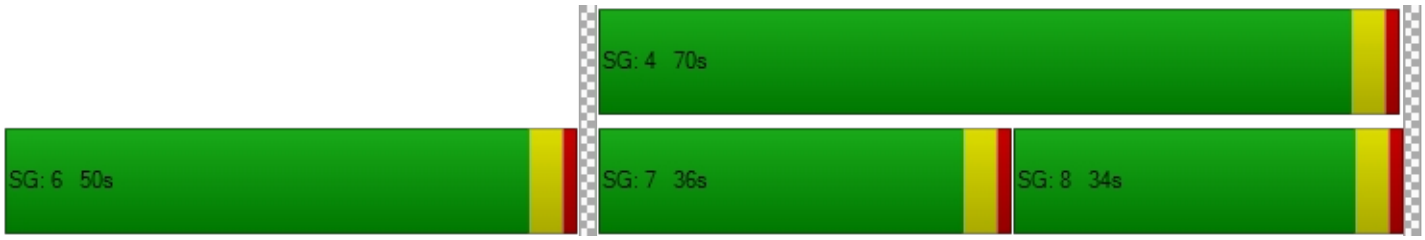
X, volume / capacity		0.71	1.06	0.34	1.04	0.63	1.06	0.48
d, Delay for Lane Group [s/veh]		34.44	89.46	26.47	77.80	43.41	76.70	17.23
Lane Group LOS		C	F	C	F	D	F	B
Critical Lane Group		No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		12.47	29.81	5.03	17.80	7.54	17.13	7.93
50th-Percentile Queue Length [ft/ln]		311.75	745.35	125.64	444.98	188.52	428.21	198.28
95th-Percentile Queue Length [veh/ln]		18.26	40.52	8.70	25.34	12.04	24.75	12.55
95th-Percentile Queue Length [ft/ln]		456.53	1013.08	217.55	633.41	301.10	618.75	313.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	67.38	89.46	26.47	0.00	77.80	43.41	76.70	17.23	0.00
Movement LOS				E	F	C		F	D	F	B	
d_A, Approach Delay [s/veh]	0.00			60.61			70.18			46.51		
Approach LOS	A			E			E			D		
d_I, Intersection Delay [s/veh]	60.04											
Intersection LOS	E											
Intersection V/C	1.056											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: SR-210 WB Ramps at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	50.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.114

Intersection Setup

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-210 WB Ramps			SR-210 WB Ramps			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	183	0	1231	0	0	0	341	2722	0	0	1688	800
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	0	1231	0	0	0	341	2722	0	0	1688	800
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	0	324	0	0	0	90	716	0	0	444	211
Total Analysis Volume [veh/h]	193	0	1296	0	0	0	359	2865	0	0	1777	842
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	0	0	3	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	0	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	43	0	0	0	0	25	77	0	0	52	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	14	0	0	11	0
Rest In Walk		No						No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No					No	No			No	
Maximum Recall		No					No	No			No	
Pedestrian Recall		No					No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R		L	C	C	R
C, Cycle Length [s]	120	120	120		120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	39	39		21	73	48	48
g / C, Green / Cycle	0.32	0.32	0.32		0.18	0.61	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.36		0.20	0.50	0.23	0.44
s, saturation flow rate [veh/h]	1800	1800	3600		1800	5700	7600	1900
c, Capacity [veh/h]	585	585	1170		318	3468	3028	757
d1, Uniform Delay [s]	28.89	28.89	40.49		49.39	18.49	28.33	36.08
k, delay calibration	0.11	0.11	0.13		0.30	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.13	0.13	52.38		79.97	2.39	0.84	67.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

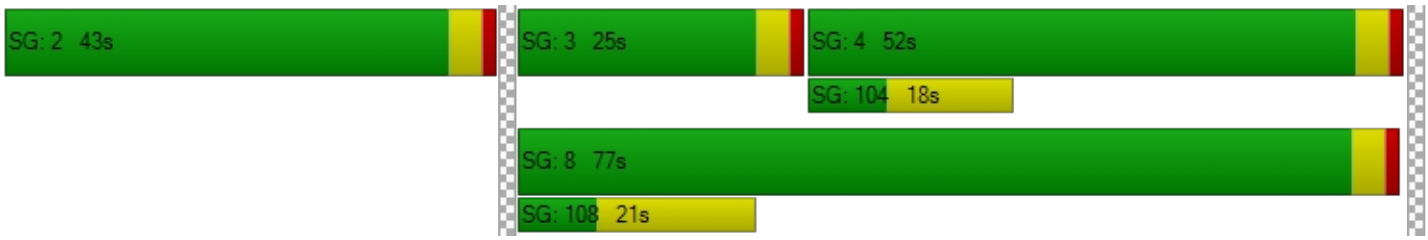
X, volume / capacity	0.17	0.17	1.11		1.13	0.83	0.59	1.11
d, Delay for Lane Group [s/veh]	29.02	29.02	92.87		129.36	20.89	29.17	104.06
Lane Group LOS	C	C	F		F	C	C	F
Critical Lane Group	No	No	Yes		Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.02	2.02	25.50		16.29	18.99	9.72	35.01
50th-Percentile Queue Length [ft/ln]	50.53	50.53	637.52		407.21	474.63	243.02	875.32
95th-Percentile Queue Length [veh/ln]	3.64	3.64	36.09		24.32	26.13	14.83	48.23
95th-Percentile Queue Length [ft/ln]	90.96	90.96	902.31		608.03	653.28	370.86	1205.69

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.02	29.02	92.87	0.00	0.00	0.00	129.36	20.89	0.00	0.00	29.17	104.06
Movement LOS	C	C	F				F	C			C	F
d_A, Approach Delay [s/veh]	84.59			0.00			32.97			53.25		
Approach LOS	F			A			C			D		
d_I, Intersection Delay [s/veh]	50.69											
Intersection LOS	D											
Intersection V/C	1.114											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 3: Lowes Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.963

Intersection Setup

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Lowes Center			Lowes Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	137	0	75	39	0	184	189	3391	145	45	2156	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	137	0	75	39	0	184	189	3391	145	45	2156	25
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	0	20	10	0	48	50	892	38	12	567	7
Total Analysis Volume [veh/h]	144	0	79	41	0	194	199	3569	153	47	2269	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	39	0	10	35	0	12	50	0	21	59	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	0	0	0	14	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	20	5	14	15	75	75	5	64	64
g / C, Green / Cycle	0.08	0.17	0.04	0.12	0.13	0.62	0.62	0.04	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.08	0.04	0.02	0.10	0.11	0.63	0.08	0.03	0.40	0.01
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1800	5700	1900	1800	5700	1900
c, Capacity [veh/h]	151	316	69	229	229	3545	1182	72	3051	1017
d1, Uniform Delay [s]	54.76	43.53	56.84	51.71	51.44	22.69	9.33	56.78	21.54	13.15
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	24.30	0.41	8.05	8.38	9.79	16.75	0.23	9.34	1.69	0.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.25	0.60	0.85	0.87	1.01	0.13	0.65	0.74	0.03
d, Delay for Lane Group [s/veh]	79.06	43.94	64.89	60.09	61.23	39.44	9.56	66.12	23.23	13.19
Lane Group LOS	E	D	E	E	E	F	A	E	C	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.35	2.09	1.38	6.25	6.33	33.67	1.57	1.56	15.46	0.33
50th-Percentile Queue Length [ft/ln]	133.77	52.24	34.47	156.17	158.37	841.79	39.35	39.02	386.46	8.19
95th-Percentile Queue Length [veh/ln]	9.14	3.76	2.48	10.35	10.46	43.45	2.83	2.81	21.91	0.59
95th-Percentile Queue Length [ft/ln]	228.61	94.02	62.04	258.64	261.56	1086.17	70.83	70.24	547.66	14.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	79.06	43.94	43.94	64.89	60.09	60.09	61.23	39.44	9.56	66.12	23.23	13.19
Movement LOS	E	D	D	E	E	E	E	F	A	E	C	B
d_A, Approach Delay [s/veh]	66.62			60.93			39.38			23.98		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	35.67											
Intersection LOS	D											
Intersection V/C	0.963											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 4: Shopping Center at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	39.2
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.976

Intersection Setup

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Shopping Center			Shopping Center			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	183	0	140	52	0	196	154	3170	176	125	1849	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	183	0	140	52	0	196	154	3170	176	125	1849	50
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	0	37	14	0	52	41	834	46	33	487	13
Total Analysis Volume [veh/h]	193	0	147	55	0	206	162	3337	185	132	1946	53
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	42	0	10	36	0	10	53	0	10	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	0	0	0	18	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	22	22	5	15	15	8	66	66	7	65	65
g / C, Green / Cycle	0.10	0.19	0.19	0.04	0.13	0.13	0.07	0.57	0.57	0.06	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.11	0.00	0.08	0.03	0.00	0.11	0.05	0.59	0.10	0.04	0.34	0.03
s, saturation flow rate [veh/h]	1800	1900	1900	1800	1900	1900	3400	5700	1900	3400	5700	1900
c, Capacity [veh/h]	189	359	359	79	243	243	228	3252	1084	196	3198	1066
d1, Uniform Delay [s]	51.51	0.00	41.04	54.24	0.00	49.08	52.58	24.71	11.75	53.18	16.84	11.41
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	36.20	0.00	0.75	10.32	0.00	7.95	4.04	22.88	0.34	4.02	0.87	0.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.02	0.00	0.41	0.69	0.00	0.85	0.71	1.03	0.17	0.67	0.61	0.05
d, Delay for Lane Group [s/veh]	87.71	0.00	41.79	64.56	0.00	57.03	56.62	47.59	12.10	57.20	17.71	11.50
Lane Group LOS	F	A	D	E	A	E	E	F	B	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.33	0.00	3.75	1.80	0.00	6.31	2.36	32.48	2.18	1.93	10.54	0.60
50th-Percentile Queue Length [ft/ln]	183.13	0.00	93.64	44.94	0.00	157.77	59.02	811.89	54.50	48.32	263.59	14.89
95th-Percentile Queue Length [veh/ln]	11.87	0.00	6.74	3.24	0.00	10.43	4.25	42.75	3.92	3.48	15.87	1.07
95th-Percentile Queue Length [ft/ln]	296.66	0.00	168.56	80.89	0.00	260.77	106.24	1068.67	98.09	86.98	396.72	26.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	87.71	0.00	41.79	64.56	0.00	57.03	56.62	47.59	12.10	57.20	17.71	11.50
Movement LOS	F	A	D	E	A	E	E	F	B	E	B	B
d_A, Approach Delay [s/veh]	67.86			58.61			46.20			20.00		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	39.15											
Intersection LOS	D											
Intersection V/C	0.976											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 5: Boulder Avenue at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.968

Intersection Setup

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Boulder Avenue			Boulder Avenue			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	396	611	653	371	550	44	336	2035	792	357	1201	251
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	396	611	653	371	550	44	336	2035	792	357	1201	251
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	104	161	172	98	145	12	88	536	208	94	316	66
Total Analysis Volume [veh/h]	417	643	687	391	579	46	354	2142	834	376	1264	264
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Unsigna	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	5	2	0	1	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	42	0	18	43	0	10	45	0	10	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	0	0	21	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	22	14	23	14	48	48	15	48	48
g / C, Green / Cycle	0.11	0.19	0.12	0.20	0.12	0.41	0.41	0.13	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.12	0.17	0.12	0.15	0.10	0.38	0.44	0.11	0.22	0.14
s, saturation flow rate [veh/h]	3400	3800	3400	3800	3400	5700	1900	3400	5700	1900
c, Capacity [veh/h]	388	741	417	774	424	2351	784	445	2386	795
d1, Uniform Delay [s]	51.02	44.91	50.08	43.08	49.25	31.85	33.84	48.90	25.00	22.60
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.81	3.25	10.26	1.47	4.39	6.73	50.68	4.46	0.85	1.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

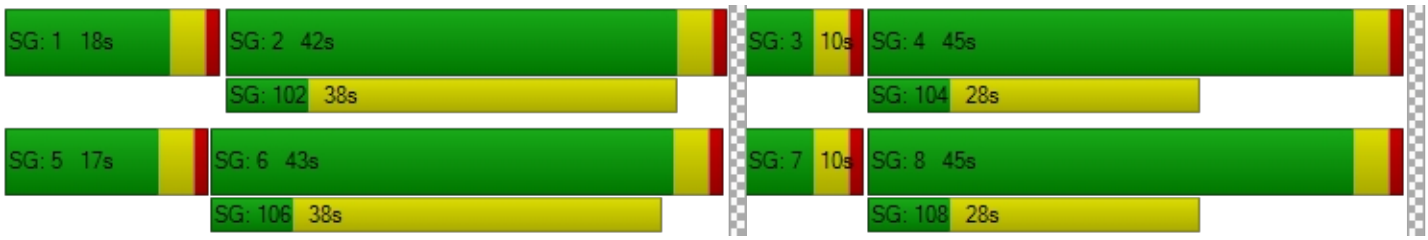
X, volume / capacity	1.08	0.87	0.94	0.75	0.84	0.91	1.06	0.84	0.53	0.33
d, Delay for Lane Group [s/veh]	95.83	48.16	60.35	44.55	53.64	38.58	84.52	53.36	25.85	23.72
Lane Group LOS	F	D	E	D	D	D	F	D	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.98	9.18	6.16	7.87	5.08	18.85	31.30	5.39	8.31	4.85
50th-Percentile Queue Length [ft/ln]	199.57	229.52	153.90	196.77	127.05	471.30	782.54	134.84	207.67	121.15
95th-Percentile Queue Length [veh/ln]	12.99	14.15	10.23	12.47	8.78	25.97	42.39	9.20	13.03	8.46
95th-Percentile Queue Length [ft/ln]	324.63	353.75	255.63	311.79	219.48	649.32	1059.63	230.06	325.84	211.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	95.83	48.16	0.00	60.35	44.55	0.00	53.64	38.58	84.52	53.36	25.85	23.72
Movement LOS	F	D		E	D		D	D	F	D	C	C
d_A, Approach Delay [s/veh]	66.91			50.92			51.68			30.99		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	48.38											
Intersection LOS	D											
Intersection V/C	0.968											

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.988

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	39	1	5	46	0	76	129	2851	66	3	1672	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1	5	46	0	76	129	2851	66	3	1672	66
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	0	1	12	0	20	34	750	17	1	440	17
Total Analysis Volume [veh/h]	41	1	5	48	0	80	136	3001	69	3	1760	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	10	65	0	10	65	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	7	7	7	11	91	91	1	81	81
g / C, Green / Cycle	0.04	0.04	0.06	0.06	0.06	0.09	0.76	0.76	0.01	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.03	0.00	0.04	0.08	0.79	0.04	0.00	0.46	0.04
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	1800	3800	1900	1800	3800	1900
c, Capacity [veh/h]	72	76	108	114	114	166	2894	1447	9	2564	1282
d1, Uniform Delay [s]	56.60	55.49	54.51	0.00	55.38	53.52	14.30	3.54	59.49	11.82	6.58
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.90	0.44	2.87	0.00	7.70	9.61	27.24	0.06	18.12	1.52	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

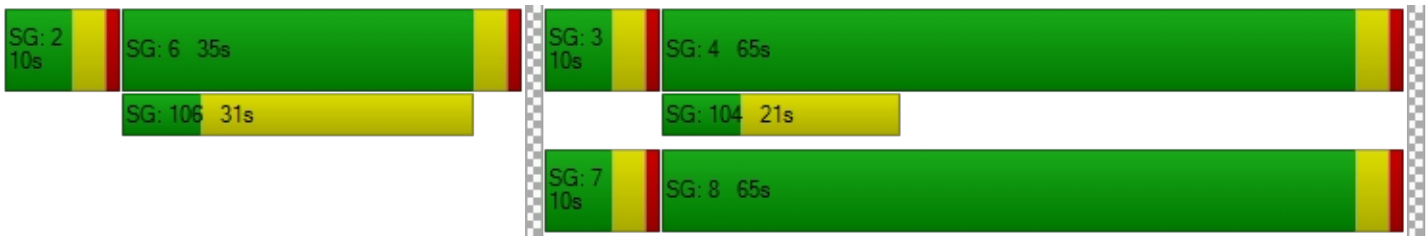
X, volume / capacity	0.57	0.08	0.45	0.00	0.70	0.82	1.04	0.05	0.32	0.69	0.05
d, Delay for Lane Group [s/veh]	63.50	55.92	57.38	0.00	63.08	63.13	41.55	3.60	77.60	13.34	6.66
Lane Group LOS	E	E	E	A	E	E	F	A	E	B	A
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.36	0.18	1.49	0.00	2.62	4.37	37.43	0.34	0.14	12.44	0.55
50th-Percentile Queue Length [ft/ln]	34.00	4.61	37.24	0.00	65.51	109.28	935.72	8.43	3.41	311.10	13.71
95th-Percentile Queue Length [veh/ln]	2.45	0.33	2.68	0.00	4.72	7.80	49.11	0.61	0.25	18.23	0.99
95th-Percentile Queue Length [ft/ln]	61.20	8.31	67.04	0.00	117.91	195.00	1227.64	15.18	6.14	455.73	24.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.50	55.92	55.92	57.38	0.00	63.08	63.13	41.55	3.60	77.60	13.34	6.66
Movement LOS	E	E	E	E	A	E	E	F	A	E	B	A
d_A, Approach Delay [s/veh]	62.53			60.94			41.65			13.19		
Approach LOS	E			E			D			B		
d_I, Intersection Delay [s/veh]	32.31											
Intersection LOS	C											
Intersection V/C	0.988											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.900

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	21	3	1	111	13	302	380	2297	18	3	1374	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	3	1	111	13	302	380	2297	18	3	1374	83
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	0	29	3	79	100	604	5	1	362	22
Total Analysis Volume [veh/h]	22	3	1	117	14	318	400	2418	19	3	1446	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	31	0	0	31	0	23	78	0	11	66	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	22	22	22	17	85	85	1	69	69
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.19	0.14	0.71	0.71	0.01	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.07	0.01	0.17	0.12	0.64	0.64	0.00	0.41	0.40
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	3400	1900	1900	1800	1900	1900
c, Capacity [veh/h]	352	352	360	352	352	469	1347	1347	10	1096	1096
d1, Uniform Delay [s]	40.31	39.90	42.59	40.12	47.82	50.51	14.14	14.14	59.38	18.07	17.91
k, delay calibration	0.11	0.11	0.11	0.11	0.21	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.07	0.01	0.52	0.05	14.91	4.52	10.21	10.21	14.96	3.79	3.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

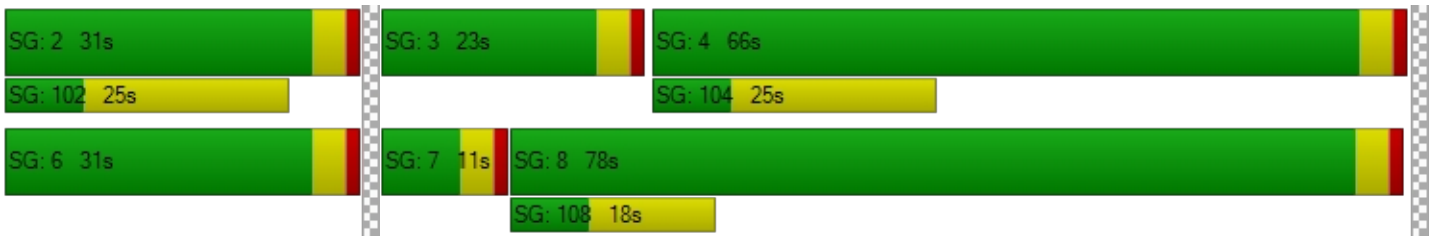
X, volume / capacity	0.06	0.01	0.32	0.04	0.90	0.85	0.90	0.90	0.29	0.70	0.69
d, Delay for Lane Group [s/veh]	40.39	39.92	43.11	40.16	62.74	55.04	24.35	24.35	74.34	21.86	21.54
Lane Group LOS	D	D	D	D	E	E	C	C	E	C	C
Critical Lane Group	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.55	0.10	3.09	0.35	10.73	6.00	24.59	24.59	0.13	14.84	14.49
50th-Percentile Queue Length [ft/ln]	13.69	2.46	77.21	8.67	268.13	149.95	614.87	614.87	3.29	371.08	362.33
95th-Percentile Queue Length [veh/ln]	0.99	0.18	5.56	0.62	16.10	10.01	32.73	32.73	0.24	21.16	20.74
95th-Percentile Queue Length [ft/ln]	24.65	4.43	138.98	15.60	402.40	250.37	818.20	818.20	5.92	529.04	518.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	40.39	39.92	39.92	43.11	40.16	62.74	55.04	24.35	24.35	74.34	21.71	21.54
Movement LOS	D	D	D	D	D	E	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	40.31			56.92			28.68			21.81		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	29.18											
Intersection LOS	C											
Intersection V/C	0.900											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	10,000.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	16.507

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	20	0	68	4	0	109	227	2099	37	3	1288	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	0	68	4	0	109	227	2099	37	3	1288	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	18	1	0	29	60	552	10	1	339	1
Total Analysis Volume [veh/h]	21	0	72	4	0	115	239	2209	39	3	1356	4
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	16.51	0.00	0.36	1.55	0.00	0.29	0.48	0.02	0.00	0.01	0.01	0.00
d_M, Delay for Movement [s/veh]	10000.0	10000.0	7800.87	1874.06	3324.59	489.54	18.55	0.00	0.00	21.15	0.00	0.00
Movement LOS	F	F	F	F	F	F	C	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	13.52	13.52	13.52	10.89	10.89	10.89	2.54	0.00	0.00	0.04	0.00	0.00
95th-Percentile Queue Length [ft/ln]	337.90	337.90	337.90	272.29	272.29	272.29	63.41	0.00	0.00	1.01	0.00	0.00
d_A, Approach Delay [s/veh]	8297.44			536.08			1.78			0.05		
Approach LOS	F			F			A			A		
d_I, Intersection Delay [s/veh]	206.78											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	5,317.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	10.175

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	50	56	1982	81	0	1188	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	50	56	1982	81	0	1188	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	13	15	522	21	0	313	1
Total Analysis Volume [veh/h]	61	0	0	1	0	53	59	2086	85	0	1251	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	10.17	0.00	0.00	0.06	0.00	0.12	0.11	0.02	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	5317.53	5371.43	4734.06	239.08	704.27	16.36	12.34	0.00	0.00	19.86	0.00	0.00
Movement LOS	F	F	F	F	F	C	B	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	9.33	9.33	9.33	0.68	0.68	0.68	0.36	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	233.20	233.20	233.20	17.05	17.05	17.05	8.97	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	5317.53			20.48			0.33			0.00		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	90.59											
Intersection LOS	F											

APPENDIX H-III

YEAR 2040 WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	20.4
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.747

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	399	0	213	0	628	399	1402	1557	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	399	0	213	0	628	399	1402	1557	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	105	0	56	0	165	105	369	410	0
Total Analysis Volume [veh/h]	0	0	0	420	0	224	0	661	420	1476	1639	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	16	0	0	10	0	64	74	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		11	11	11	24	24	43	71
g / C, Green / Cycle		0.12	0.12	0.12	0.26	0.26	0.48	0.79
(v / s)_i Volume / Saturation Flow Rate		0.10	0.09	0.08	0.09	0.12	0.43	0.43
s, saturation flow rate [veh/h]		3400	1800	1900	7600	3600	3400	3800
c, Capacity [veh/h]		412	218	230	2004	949	1638	3002
d1, Uniform Delay [s]		38.49	38.20	37.81	26.74	27.64	21.36	3.50
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.60	4.90	3.26	0.44	1.50	2.06	0.72
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.80	0.74	0.66	0.33	0.44	0.90	0.55
d, Delay for Lane Group [s/veh]		42.09	43.10	41.07	27.18	29.13	23.43	4.21
Lane Group LOS		D	D	D	C	C	C	A
Critical Lane Group		Yes	No	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.69	3.69	3.39	2.75	3.72	12.72	2.72
50th-Percentile Queue Length [ft/ln]		92.17	92.33	84.64	68.68	93.12	318.07	68.07
95th-Percentile Queue Length [veh/ln]		6.64	6.65	6.09	4.94	6.70	18.57	4.90
95th-Percentile Queue Length [ft/ln]		165.90	166.19	152.35	123.62	167.62	464.31	122.53

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	42.32	43.10	41.67	0.00	27.18	29.13	23.43	4.21	0.00
Movement LOS				D	D	D		C	C	C	A	
d_A, Approach Delay [s/veh]	0.00			42.10			27.94			13.32		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	20.41											
Intersection LOS	C											
Intersection V/C	0.747											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	31.6
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	7	5	136	3	445	158	1021	20	2	2625	121
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	7	5	136	3	445	158	1021	20	2	2625	121
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	2	1	36	1	117	42	269	5	1	691	32
Total Analysis Volume [veh/h]	61	7	5	143	3	468	166	1075	21	2	2763	127
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	10	23	0	52	65	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	18	18	18	13	80	80	0	68	68
g / C, Green / Cycle	0.05	0.05	0.15	0.15	0.15	0.11	0.67	0.67	0.00	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.03	0.01	0.08	0.12	0.12	0.09	0.28	0.01	0.00	0.50	0.52
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	1800	3800	1900	1800	3800	1900
c, Capacity [veh/h]	84	88	270	285	285	195	2532	1266	8	2136	1068
d1, Uniform Delay [s]	56.49	54.92	47.14	49.54	49.53	52.59	9.33	6.76	59.59	22.95	24.14
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.41	0.69	1.62	6.10	6.05	10.01	0.52	0.02	17.59	5.93	15.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

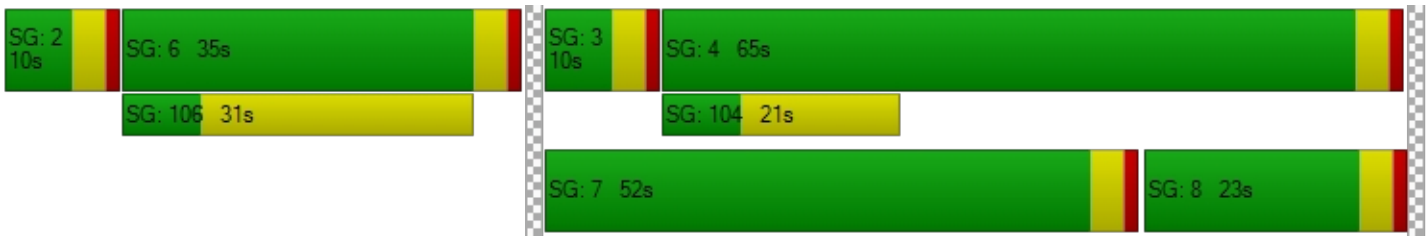
X, volume / capacity	0.73	0.14	0.53	0.83	0.83	0.85	0.42	0.02	0.26	0.89	0.93
d, Delay for Lane Group [s/veh]	67.90	55.61	48.75	55.64	55.57	62.60	9.85	6.79	77.19	28.89	39.41
Lane Group LOS	E	E	D	E	E	E	A	A	E	C	D
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.09	0.37	4.08	7.34	7.32	5.33	5.83	0.17	0.10	22.60	27.53
50th-Percentile Queue Length [ft/ln]	52.28	9.15	101.92	183.38	182.92	133.17	145.77	4.21	2.41	564.89	688.29
95th-Percentile Queue Length [veh/ln]	3.76	0.66	7.34	11.78	11.75	9.11	9.79	0.30	0.17	30.39	36.14
95th-Percentile Queue Length [ft/ln]	94.11	16.48	183.46	294.42	293.82	227.79	244.78	7.58	4.33	759.78	903.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.90	55.61	55.61	48.75	55.64	55.61	62.60	9.85	6.79	77.19	32.19	39.41
Movement LOS	E	E	E	D	E	E	E	A	A	E	C	D
d_A, Approach Delay [s/veh]	65.88			54.01			16.74			32.54		
Approach LOS	E			D			B			C		
d_I, Intersection Delay [s/veh]	31.65											
Intersection LOS	C											
Intersection V/C	0.893											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	37.0
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.947

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	22	13	4	57	7	386	280	832	17	5	2213	159
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	13	4	57	7	386	280	832	17	5	2213	159
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	3	1	15	2	102	74	219	4	1	582	42
Total Analysis Volume [veh/h]	23	14	4	60	7	406	295	876	18	5	2329	167
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	29	0	10	81	0	10	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16	16	16	12	91	91	1	80	80
g / C, Green / Cycle	0.13	0.13	0.13	0.13	0.13	0.10	0.76	0.76	0.01	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.03	0.11	0.11	0.09	0.24	0.23	0.00	0.66	0.66
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	3400	1900	1900	1800	1900	1900
c, Capacity [veh/h]	76	249	252	249	249	353	1445	1445	15	1264	1264
d1, Uniform Delay [s]	45.89	45.74	46.87	50.84	50.81	52.75	4.50	4.49	59.10	19.56	19.56
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.17	0.12	0.48	7.13	6.95	5.27	0.56	0.55	11.55	22.41	22.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

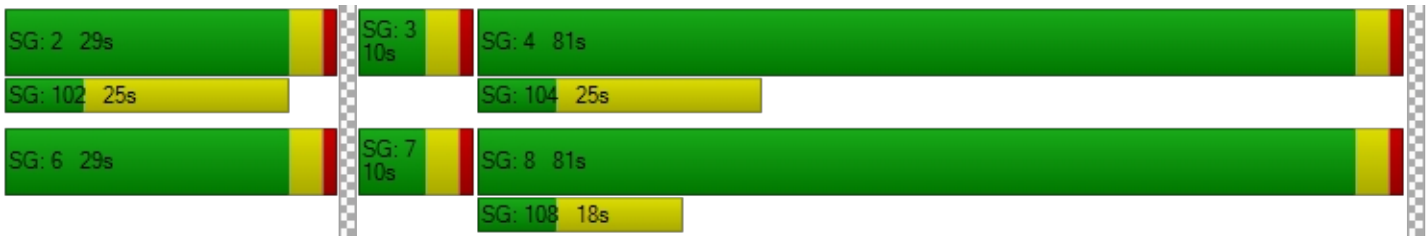
X, volume / capacity	0.30	0.07	0.24	0.83	0.83	0.84	0.31	0.31	0.32	0.99	0.99
d, Delay for Lane Group [s/veh]	48.06	45.86	47.35	57.98	57.76	58.02	5.06	5.05	70.66	41.97	41.97
Lane Group LOS	D	D	D	E	E	E	A	A	E	D	D
Critical Lane Group	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.65	0.48	1.65	6.55	6.50	4.51	2.81	2.78	0.20	35.47	35.47
50th-Percentile Queue Length [ft/ln]	16.34	12.06	41.31	163.79	162.62	112.64	70.18	69.55	4.94	886.63	886.63
95th-Percentile Queue Length [veh/ln]	1.18	0.87	2.97	10.75	10.69	7.99	5.05	5.01	0.36	45.23	45.23
95th-Percentile Queue Length [ft/ln]	29.42	21.71	74.36	268.74	267.19	199.67	126.32	125.20	8.89	1130.79	1130.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.06	45.86	45.86	47.35	57.98	57.87	58.02	5.05	5.05	70.66	41.97	41.97
Movement LOS	D	D	D	D	E	E	E	A	A	E	D	D
d_A, Approach Delay [s/veh]	47.10			56.53			18.19			42.03		
Approach LOS	D			E			B			D		
d_I, Intersection Delay [s/veh]	36.97											
Intersection LOS	D											
Intersection V/C	0.947											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	32	0	3	10	19	254	61	788	25	25	2132	14
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	0	3	10	19	254	61	788	25	25	2132	14
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	0	1	3	5	67	16	207	7	7	561	4
Total Analysis Volume [veh/h]	34	0	3	11	20	267	64	829	26	26	2244	15
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	29	0	10	81	0	10	81	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	6	83	83	4	81	81
g / C, Green / Cycle	0.18	0.18	0.05	0.69	0.69	0.03	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.02	0.17	0.04	0.23	0.22	0.01	0.59	0.59
s, saturation flow rate [veh/h]	1800	1800	1800	1900	1900	1800	1900	1900
c, Capacity [veh/h]	384	357	83	1309	1309	53	1278	1278
d1, Uniform Delay [s]	41.05	48.18	56.56	7.49	7.47	57.28	15.86	15.86
k, delay calibration	0.11	0.20	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	9.15	13.70	0.67	0.66	6.69	9.13	9.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.10	0.83	0.77	0.33	0.32	0.49	0.88	0.88
d, Delay for Lane Group [s/veh]	41.16	57.33	70.26	8.16	8.13	63.97	24.99	24.99
Lane Group LOS	D	E	E	A	A	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.93	9.62	2.19	4.01	3.96	0.86	23.70	23.70
50th-Percentile Queue Length [ft/ln]	23.33	240.52	54.75	100.34	98.95	21.47	592.41	592.41
95th-Percentile Queue Length [veh/ln]	1.68	14.71	3.94	7.22	7.12	1.55	31.68	31.68
95th-Percentile Queue Length [ft/ln]	41.99	367.69	98.54	180.61	178.11	38.64	791.99	791.99

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.16	41.16	41.16	57.33	57.33	57.33	70.26	8.15	8.13	63.97	24.99	24.99
Movement LOS	D	D	D	E	E	E	E	A	A	E	C	C
d_A, Approach Delay [s/veh]	41.16			57.33			12.47			25.44		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	24.92											
Intersection LOS	C											
Intersection V/C	0.884											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	7.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	99	21	750	24	0	1967	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	99	21	750	24	0	1967	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	26	6	197	6	0	518	0
Total Analysis Volume [veh/h]	93	0	0	0	0	104	22	789	25	0	2071	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	86	0	0	86	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	99	99	99	99	99	99
g / C, Green / Cycle	0.07	0.07	0.86	0.86	0.86	0.86	0.86	0.86
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.01	0.22	0.21	0.00	0.55	0.55
s, saturation flow rate [veh/h]	1800	1800	1800	1900	1900	1800	1900	1900
c, Capacity [veh/h]	194	163	1248	1629	1629	1491	1629	1629
d1, Uniform Delay [s]	52.01	52.35	1.18	1.49	1.49	0.00	2.57	2.57
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.82	4.11	0.03	0.37	0.37	0.00	1.91	1.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.64	0.02	0.25	0.25	0.00	0.64	0.64
d, Delay for Lane Group [s/veh]	53.83	56.45	1.21	1.86	1.85	0.00	4.48	4.48
Lane Group LOS	D	E	A	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.72	3.13	0.03	0.68	0.67	0.00	3.12	3.12
50th-Percentile Queue Length [ft/ln]	67.93	78.33	0.78	17.09	16.86	0.00	77.89	77.89
95th-Percentile Queue Length [veh/ln]	4.89	5.64	0.06	1.23	1.21	0.00	5.61	5.61
95th-Percentile Queue Length [ft/ln]	122.27	141.00	1.40	30.77	30.35	0.00	140.20	140.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.83	53.83	53.83	56.45	56.45	56.45	1.21	1.86	1.85	0.00	4.48	4.48
Movement LOS	D	D	D	E	E	E	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	53.83			56.45			1.84			4.48		
Approach LOS	D			E			A			A		
d_I, Intersection Delay [s/veh]	6.99											
Intersection LOS	A											
Intersection V/C	0.648											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 1: SR-210 EB Ramps at 5th Street

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

Intersection Setup

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]		30.00			30.00			45.00			45.00	
Grade [%]		0.00			0.00			0.00			0.00	
Crosswalk		No			No			No			No	

Volumes

Name	SR-210 EB Ramps			SR-210 EB Ramps			5th Street			5th Street		
Base Volume Input [veh/h]	0	0	0	1159	3	233	0	1872	533	917	945	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1159	3	233	0	1872	533	917	945	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	305	1	61	0	493	140	241	249	0
Total Analysis Volume [veh/h]	0	0	0	1220	3	245	0	1971	561	965	995	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]		0			0			0			0	
Bicycle Volume [bicycles/h]		0			0			0			0	

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Split	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	0	0	0	6	0	0	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	0	6	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	0	30	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	44	0	0	29	0	47	76	0
Vehicle Extension [s]	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	0	0
Rest In Walk					No			No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall					No			No		No	No	
Maximum Recall					No			No		No	No	
Pedestrian Recall					No			No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		37	37	37	34	34	37	75
g / C, Green / Cycle		0.31	0.31	0.31	0.28	0.28	0.31	0.63
(v / s)_i Volume / Saturation Flow Rate		0.21	0.28	0.13	0.26	0.16	0.28	0.26
s, saturation flow rate [veh/h]		3400	1800	1900	7600	3600	3400	3800
c, Capacity [veh/h]		1037	549	579	2159	1023	1057	2388
d1, Uniform Delay [s]		36.80	40.11	33.26	41.50	36.41	39.75	11.22
k, delay calibration		0.11	0.34	0.11	0.50	0.50	0.11	0.50
I, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.86	16.11	0.49	7.36	2.12	3.53	0.54
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

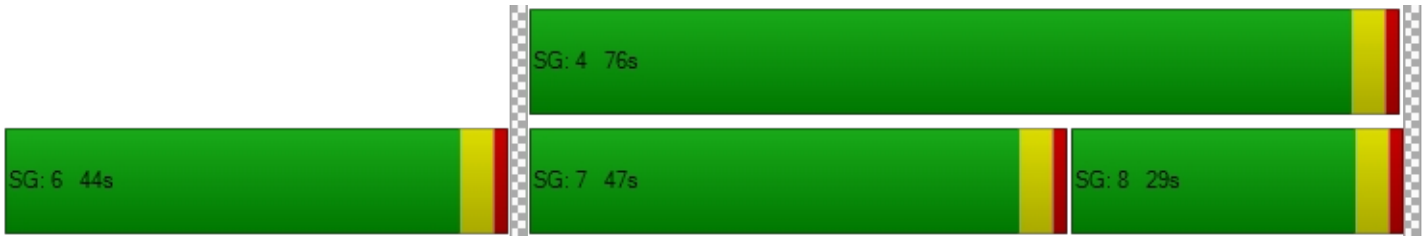
X, volume / capacity		0.70	0.91	0.42	0.91	0.55	0.91	0.42
d, Delay for Lane Group [s/veh]		37.66	56.22	33.75	48.86	38.53	43.28	11.76
Lane Group LOS		D	E	C	D	D	D	B
Critical Lane Group		No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		9.43	16.48	5.78	14.61	7.05	13.58	6.13
50th-Percentile Queue Length [ft/ln]		235.87	412.07	144.52	365.26	176.17	339.58	153.14
95th-Percentile Queue Length [veh/ln]		14.47	23.14	9.72	20.88	11.40	19.63	10.18
95th-Percentile Queue Length [ft/ln]		361.81	578.53	243.10	521.97	285.00	490.68	254.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	45.21	56.22	33.75	0.00	48.86	38.53	43.28	11.76	0.00
Movement LOS				D	E	C		D	D	D	B	
d_A, Approach Delay [s/veh]	0.00			43.32			46.57			27.28		
Approach LOS	A			D			D			C		
d_I, Intersection Delay [s/veh]	39.43											
Intersection LOS	D											
Intersection V/C	0.912											

Sequence

Ring 1	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 6: Orange Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.970

Intersection Setup

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			Yes			No		

Volumes

Name	Orange Street			Orange Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	39	1	5	46	0	76	129	2851	66	3	1672	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	39	1	5	46	0	76	129	2851	66	3	1672	66
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	0	1	12	0	20	34	750	17	1	440	17
Total Analysis Volume [veh/h]	41	1	5	48	0	80	136	3001	69	3	1760	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	35	0	10	65	0	10	65	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	24	0	0	0	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	6	6	6	11	93	93	1	82	82
g / C, Green / Cycle	0.04	0.04	0.05	0.05	0.05	0.09	0.77	0.77	0.01	0.69	0.69
(v / s)_i Volume / Saturation Flow Rate	0.02	0.00	0.03	0.02	0.02	0.08	0.79	0.04	0.00	0.32	0.33
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	1800	3800	1900	1800	3800	1900
c, Capacity [veh/h]	72	76	89	94	94	166	2933	1466	9	2603	1301
d1, Uniform Delay [s]	56.60	55.49	55.69	55.37	55.37	53.51	13.70	3.24	59.49	8.73	8.86
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.90	0.44	4.92	2.99	2.99	9.59	22.84	0.06	18.12	0.60	1.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

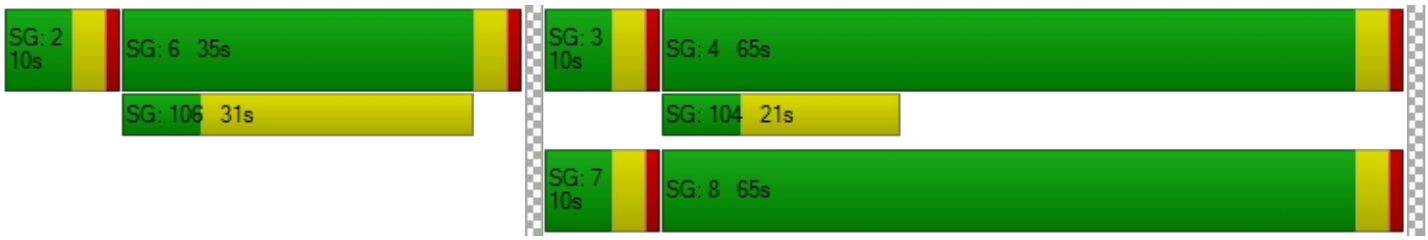
X, volume / capacity	0.57	0.08	0.54	0.42	0.42	0.82	1.02	0.05	0.32	0.46	0.48
d, Delay for Lane Group [s/veh]	63.50	55.92	60.61	58.36	58.36	63.10	36.54	3.30	77.60	9.33	10.12
Lane Group LOS	E	E	E	E	E	E	F	A	E	A	B
Critical Lane Group	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.36	0.18	1.54	1.26	1.26	4.37	35.15	0.31	0.14	6.34	6.86
50th-Percentile Queue Length [ft/ln]	34.00	4.61	38.57	31.39	31.39	109.25	878.72	7.82	3.41	158.42	171.61
95th-Percentile Queue Length [veh/ln]	2.45	0.33	2.78	2.26	2.26	7.80	45.86	0.56	0.25	10.47	11.16
95th-Percentile Queue Length [ft/ln]	61.20	8.31	69.42	56.50	56.50	194.96	1146.59	14.07	6.14	261.63	279.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.50	55.92	55.92	60.61	58.36	58.36	63.10	36.54	3.30	77.60	9.58	10.12
Movement LOS	E	E	E	E	E	E	E	F	A	E	A	B
d_A, Approach Delay [s/veh]	62.53			59.20			36.95			9.71		
Approach LOS	E			E			D			A		
d_I, Intersection Delay [s/veh]	28.15											
Intersection LOS	C											
Intersection V/C	0.970											

Sequence

Ring 1	2	6	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	-	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Church Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.816

Intersection Setup

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Church Street			Church Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	21	3	1	111	13	302	380	2297	18	3	1374	83
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	3	1	111	13	302	380	2297	18	3	1374	83
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	1	0	29	3	79	100	604	5	1	362	22
Total Analysis Volume [veh/h]	22	3	1	117	14	318	400	2418	19	3	1446	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	29	0	56	76	0	10	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	0	0	0	11	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	13	13	16	90	90	1	74	74
g / C, Green / Cycle	0.11	0.11	0.11	0.11	0.11	0.14	0.78	0.78	0.01	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.07	0.09	0.09	0.12	0.64	0.64	0.00	0.41	0.40
s, saturation flow rate [veh/h]	1800	1900	1800	1900	1900	3400	1900	1900	1800	1900	1900
c, Capacity [veh/h]	80	211	230	211	211	482	1480	1480	10	1221	1221
d1, Uniform Delay [s]	45.98	45.51	48.57	49.79	49.73	47.98	7.84	7.84	56.91	12.35	12.24
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.81	0.04	1.73	6.53	6.20	3.75	5.32	5.32	14.62	2.49	2.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.27	0.02	0.51	0.79	0.78	0.83	0.82	0.82	0.29	0.63	0.62
d, Delay for Lane Group [s/veh]	47.79	45.55	50.30	56.33	55.93	51.73	13.16	13.16	71.53	14.84	14.65
Lane Group LOS	D	D	D	E	E	D	B	B	E	B	B
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.61	0.10	3.30	5.05	4.97	5.66	14.02	14.02	0.13	11.03	10.78
50th-Percentile Queue Length [ft/ln]	15.21	2.61	82.56	126.37	124.28	141.39	350.39	350.39	3.17	275.87	269.52
95th-Percentile Queue Length [veh/ln]	1.10	0.19	5.94	8.74	8.63	9.56	20.16	20.16	0.23	16.48	16.17
95th-Percentile Queue Length [ft/ln]	27.39	4.69	148.62	218.55	215.69	238.90	503.88	503.88	5.71	412.06	404.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.79	45.55	45.55	50.30	56.33	56.12	51.73	13.16	13.16	71.53	14.75	14.65
Movement LOS	D	D	D	D	E	E	D	B	B	E	B	B
d_A, Approach Delay [s/veh]	47.44			54.61			18.60			14.86		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	20.90											
Intersection LOS	C											
Intersection V/C	0.816											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 8: Club View Drive/Merris Street at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Club View Drive			Merris Street			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	20	0	68	4	0	109	227	2099	37	3	1288	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	0	68	4	0	109	227	2099	37	3	1288	4
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	0	18	1	0	29	60	552	10	1	339	1
Total Analysis Volume [veh/h]	21	0	72	4	0	115	239	2209	39	3	1356	4
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal group	0	2	0	0	6	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	29	0	43	51	0	10	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	14	70	70	0	56	56
g / C, Green / Cycle	0.09	0.09	0.16	0.78	0.78	0.01	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.13	0.59	0.59	0.00	0.36	0.36
s, saturation flow rate [veh/h]	1800	1800	1800	1900	1900	1800	1900	1900
c, Capacity [veh/h]	203	196	283	1472	1472	11	1185	1185
d1, Uniform Delay [s]	39.68	40.30	36.86	5.59	5.59	44.55	9.94	9.93
k, delay calibration	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.60	3.03	6.76	3.81	3.81	12.75	2.03	2.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

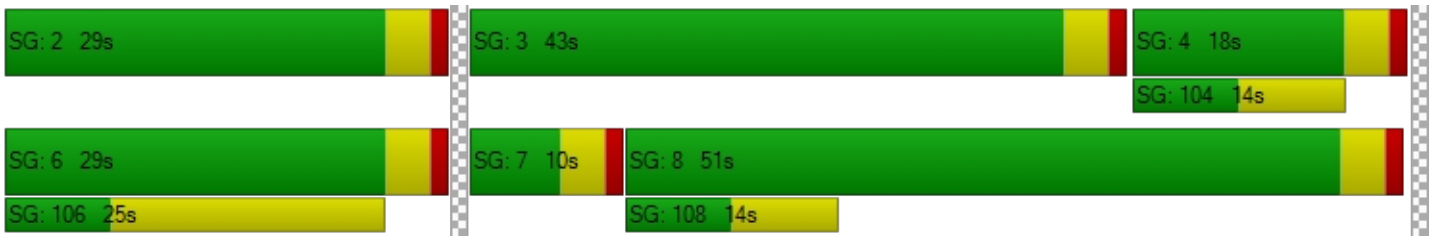
X, volume / capacity	0.46	0.61	0.84	0.76	0.76	0.27	0.57	0.57
d, Delay for Lane Group [s/veh]	41.28	43.33	43.63	9.40	9.40	57.30	11.96	11.95
Lane Group LOS	D	D	D	A	A	E	B	B
Critical Lane Group	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.05	2.71	5.36	7.17	7.17	0.10	6.85	6.84
50th-Percentile Queue Length [ft/ln]	51.26	67.79	133.96	179.30	179.30	2.57	171.21	170.97
95th-Percentile Queue Length [veh/ln]	3.69	4.88	9.15	11.56	11.56	0.19	11.14	11.13
95th-Percentile Queue Length [ft/ln]	92.27	122.03	228.86	289.10	289.10	4.63	278.50	278.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.28	41.28	41.28	43.33	43.33	43.33	43.63	9.40	9.40	57.30	11.96	11.95
Movement LOS	D	D	D	D	D	D	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	41.28			43.33			12.69			12.06		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	14.03											
Intersection LOS	B											
Intersection V/C	0.761											

Sequence

Ring 1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	4.7
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	50	56	1982	81	0	1188	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	50	56	1982	81	0	1188	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	13	15	522	21	0	313	1
Total Analysis Volume [veh/h]	61	0	0	1	0	53	59	2086	85	0	1251	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	91	0	0	91	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	107	107	107	107	107	107
g / C, Green / Cycle	0.04	0.04	0.89	0.89	0.89	0.89	0.89	0.89
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.03	0.57	0.57	0.00	0.33	0.33
s, saturation flow rate [veh/h]	1800	1800	1800	1900	1900	1800	1900	1900
c, Capacity [veh/h]	140	110	1521	1689	1689	1349	1689	1689
d1, Uniform Delay [s]	56.69	56.46	0.76	1.72	1.72	0.00	1.10	1.10
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.14	3.35	0.05	1.89	1.89	0.00	0.63	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.49	0.04	0.64	0.64	0.00	0.37	0.37
d, Delay for Lane Group [s/veh]	58.83	59.81	0.81	3.61	3.61	0.00	1.73	1.73
Lane Group LOS	E	E	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.91	1.71	0.03	1.21	1.21	0.00	0.41	0.41
50th-Percentile Queue Length [ft/ln]	47.80	42.87	0.70	30.22	30.22	0.00	10.36	10.34
95th-Percentile Queue Length [veh/ln]	3.44	3.09	0.05	2.18	2.18	0.00	0.75	0.74
95th-Percentile Queue Length [ft/ln]	86.04	77.17	1.26	54.40	54.40	0.00	18.64	18.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.83	58.83	58.83	59.81	59.81	59.81	0.81	3.61	3.61	0.00	1.73	1.73
Movement LOS	E	E	E	E	E	E	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	58.83			59.81			3.54			1.73		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	4.69											
Intersection LOS	A											
Intersection V/C	0.648											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX I

INTERSECTION TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

APPENDIX I-I

EXISTING TRAFFIC CONDITIONS

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1011	352	5	244
2	971	338	5	234
3	950	331	5	229
4	809	282	4	195
5	768	268	4	185
6	687	239	3	166
7	637	222	3	154
8	607	211	3	146
9	485	169	2	117
10	455	158	2	110
11	455	158	2	110
12	435	151	2	105
13	394	137	2	95
14	364	127	2	88
15	364	127	2	88
16	354	123	2	85
17	202	70	1	49
18	111	39	1	27
19	101	35	1	24
20	40	14	0	10
21	30	11	0	7
22	30	11	0	7
23	20	7	0	5
24	20	7	0	5

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1363	2	249	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	1309	2	239	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1281	2	234	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1091	2	199	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	1036	2	189	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	926	2	169	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	6	859	2	157	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
8	6	818	2	149	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
9	6	654	2	119	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No
10	6	613	2	112	No	No	Yes	Yes	No	No	No	Yes	No	No
11	6	613	2	112	No	No	Yes	Yes	No	No	No	Yes	No	No
12	6	586	2	107	No	No	Yes	Yes	No	No	No	Yes	No	No
13	6	531	2	97	No	No	No	Yes	No	No	No	Yes	No	No
14	6	491	2	90	No	No	No	Yes	No	No	No	No	No	No
15	6	491	2	90	No	No	No	Yes	No	No	No	No	No	No
16	6	477	2	87	No	No	No	Yes	No	No	No	No	No	No
17	6	272	2	50	No	No	No	No	No	No	No	No	No	No
18	6	150	2	28	No	No	No	No	No	No	No	No	No	No
19	6	136	2	25	No	No	No	No	No	No	No	No	No	No
20	6	54	2	10	No	No	No	No	No	No	No	No	No	No
21	6	41	2	7	No	No	No	No	No	No	No	No	No	No
22	6	41	2	7	No	No	No	No	No	No	No	No	No	No
23	6	27	2	5	No	No	No	No	No	No	No	No	No	No
24	6	27	2	5	No	No	No	No	No	No	No	No	No	No
Hours Met					7	8	12	16	6	8	9	13	9	7

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	22.1	24.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:01	1:41
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	5	244
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1612	1612
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	924	307	93
2	887	295	89
3	869	289	87
4	739	246	74
5	702	233	71
6	628	209	63
7	582	193	59
8	554	184	56
9	444	147	45
10	416	138	42
11	416	138	42
12	397	132	40
13	360	120	36
14	333	111	33
15	333	111	33
16	323	107	33
17	185	61	19
18	102	34	10
19	92	31	9
20	37	12	4
21	28	9	3
22	28	9	3
23	18	6	2
24	18	6	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1231	1	93	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	1182	1	89	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1158	1	87	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
4	6	985	1	74	No	No	No	No	No	Yes	Yes	Yes	Yes	No
5	6	935	1	71	No	No	No	No	No	Yes	Yes	Yes	Yes	No
6	6	837	1	63	No	No	No	No	No	Yes	Yes	Yes	No	No
7	6	775	1	59	No	No	No	No	No	No	Yes	Yes	No	No
8	6	738	1	56	No	No	No	No	No	No	Yes	Yes	No	No
9	6	591	1	45	No	No	No	No	No	No	No	Yes	No	No
10	6	554	1	42	No	No	No	No	No	No	No	Yes	No	No
11	6	554	1	42	No	No	No	No	No	No	No	Yes	No	No
12	6	529	1	40	No	No	No	No	No	No	No	No	No	No
13	6	480	1	36	No	No	No	No	No	No	No	No	No	No
14	6	444	1	33	No	No	No	No	No	No	No	No	No	No
15	6	444	1	33	No	No	No	No	No	No	No	No	No	No
16	6	430	1	33	No	No	No	No	No	No	No	No	No	No
17	6	246	1	19	No	No	No	No	No	No	No	No	No	No
18	6	136	1	10	No	No	No	No	No	No	No	No	No	No
19	6	123	1	9	No	No	No	No	No	No	No	No	No	No
20	6	49	1	4	No	No	No	No	No	No	No	No	No	No
21	6	37	1	3	No	No	No	No	No	No	No	No	No	No
22	6	37	1	3	No	No	No	No	No	No	No	No	No	No
23	6	24	1	2	No	No	No	No	No	No	No	No	No	No
24	6	24	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	3	6	8	11	5	2

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:20
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	93
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1324
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	414	922	3	103
2	397	885	3	99
3	389	867	3	97
4	331	738	2	82
5	315	701	2	78
6	282	627	2	70
7	261	581	2	65
8	248	553	2	62
9	199	443	1	49
10	186	415	1	46
11	186	415	1	46
12	178	396	1	44
13	161	360	1	40
14	149	332	1	37
15	149	332	1	37
16	145	323	1	36
17	83	184	1	21
18	46	101	0	11
19	41	92	0	10
20	17	37	0	4
21	12	28	0	3
22	12	28	0	3
23	8	18	0	2
24	8	18	0	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1336	2	106	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	1282	2	102	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1256	2	100	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1069	2	84	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
5	6	1016	2	80	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
6	6	909	2	72	No	No	No	No	No	Yes	Yes	Yes	Yes	No
7	6	842	2	67	No	No	No	No	No	Yes	Yes	Yes	No	No
8	6	801	2	64	No	No	No	No	No	Yes	Yes	Yes	No	No
9	6	642	2	50	No	No	No	No	No	No	No	Yes	No	No
10	6	601	2	47	No	No	No	No	No	No	No	Yes	No	No
11	6	601	2	47	No	No	No	No	No	No	No	Yes	No	No
12	6	574	2	45	No	No	No	No	No	No	No	Yes	No	No
13	6	521	2	41	No	No	No	No	No	No	No	No	No	No
14	6	481	2	38	No	No	No	No	No	No	No	No	No	No
15	6	481	2	38	No	No	No	No	No	No	No	No	No	No
16	6	468	2	37	No	No	No	No	No	No	No	No	No	No
17	6	267	2	22	No	No	No	No	No	No	No	No	No	No
18	6	147	2	11	No	No	No	No	No	No	No	No	No	No
19	6	133	2	10	No	No	No	No	No	No	No	No	No	No
20	6	54	2	4	No	No	No	No	No	No	No	No	No	No
21	6	40	2	3	No	No	No	No	No	No	No	No	No	No
22	6	40	2	3	No	No	No	No	No	No	No	No	No	No
23	6	26	2	2	No	No	No	No	No	No	No	No	No	No
24	6	26	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	5	8	8	12	6	3

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	10.8	11.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00	0:20
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	3	103
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1442	1442
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	372	722	48
2	357	693	46
3	350	679	45
4	298	578	38
5	283	549	36
6	253	491	33
7	234	455	30
8	223	433	29
9	179	347	23
10	167	325	22
11	167	325	22
12	160	310	21
13	145	282	19
14	134	260	17
15	134	260	17
16	130	253	17
17	74	144	10
18	41	79	5
19	37	72	5
20	15	29	2
21	11	22	1
22	11	22	1
23	7	14	1
24	7	14	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1094	1	48	No	No	No	No	No	No	No	Yes	No	No
2	6	1050	1	46	No	No	No	No	No	No	No	Yes	No	No
3	6	1029	1	45	No	No	No	No	No	No	No	Yes	No	No
4	6	876	1	38	No	No	No	No	No	No	No	No	No	No
5	6	832	1	36	No	No	No	No	No	No	No	No	No	No
6	6	744	1	33	No	No	No	No	No	No	No	No	No	No
7	6	689	1	30	No	No	No	No	No	No	No	No	No	No
8	6	656	1	29	No	No	No	No	No	No	No	No	No	No
9	6	526	1	23	No	No	No	No	No	No	No	No	No	No
10	6	492	1	22	No	No	No	No	No	No	No	No	No	No
11	6	492	1	22	No	No	No	No	No	No	No	No	No	No
12	6	470	1	21	No	No	No	No	No	No	No	No	No	No
13	6	427	1	19	No	No	No	No	No	No	No	No	No	No
14	6	394	1	17	No	No	No	No	No	No	No	No	No	No
15	6	394	1	17	No	No	No	No	No	No	No	No	No	No
16	6	383	1	17	No	No	No	No	No	No	No	No	No	No
17	6	218	1	10	No	No	No	No	No	No	No	No	No	No
18	6	120	1	5	No	No	No	No	No	No	No	No	No	No
19	6	109	1	5	No	No	No	No	No	No	No	No	No	No
20	6	44	1	2	No	No	No	No	No	No	No	No	No	No
21	6	33	1	1	No	No	No	No	No	No	No	No	No	No
22	6	33	1	1	No	No	No	No	No	No	No	No	No	No
23	6	21	1	1	No	No	No	No	No	No	No	No	No	No
24	6	21	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	9.8
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:07
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	48
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1142
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

APPENDIX I-II

EXISTING WITH PROJECT TRAFFIC CONDITIONS

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1099	391	35	244
2	1055	375	34	234
3	1033	368	33	229
4	879	313	28	195
5	835	297	27	185
6	747	266	24	166
7	692	246	22	154
8	659	235	21	146
9	528	188	17	117
10	495	176	16	110
11	495	176	16	110
12	473	168	15	105
13	429	152	14	95
14	396	141	13	88
15	396	141	13	88
16	385	137	12	85
17	220	78	7	49
18	121	43	4	27
19	110	39	4	24
20	44	16	1	10
21	33	12	1	7
22	33	12	1	7
23	22	8	1	5
24	22	8	1	5

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1490	2	279	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	1430	2	268	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1401	2	262	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1192	2	223	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	1132	2	212	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	1013	2	190	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	6	938	2	176	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	6	894	2	167	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
9	6	716	2	134	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No
10	6	671	2	126	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No
11	6	671	2	126	No	No	Yes	Yes	No	No	Yes	Yes	Yes	No
12	6	641	2	120	No	No	Yes	Yes	No	No	Yes	Yes	No	No
13	6	581	2	109	No	No	No	Yes	No	No	No	Yes	No	No
14	6	537	2	101	No	No	No	Yes	No	No	No	Yes	No	No
15	6	537	2	101	No	No	No	Yes	No	No	No	Yes	No	No
16	6	522	2	97	No	No	No	Yes	No	No	No	Yes	No	No
17	6	298	2	56	No	No	No	No	No	No	No	No	No	No
18	6	164	2	31	No	No	No	No	No	No	No	No	No	No
19	6	149	2	28	No	No	No	No	No	No	No	No	No	No
20	6	60	2	11	No	No	No	No	No	No	No	No	No	No
21	6	45	2	8	No	No	No	No	No	No	No	No	No	No
22	6	45	2	8	No	No	No	No	No	No	No	No	No	No
23	6	30	2	6	No	No	No	No	No	No	No	No	No	No
24	6	30	2	6	No	No	No	No	No	No	No	No	No	No
Hours Met					7	8	12	16	7	8	12	16	11	8

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	71.6	29.6
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:41	2:00
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	35	244
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1769	1769
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	924	336	88	93
2	887	323	84	89
3	869	316	83	87
4	739	269	70	74
5	702	255	67	71
6	628	228	60	63
7	582	212	55	59
8	554	202	53	56
9	444	161	42	45
10	416	151	40	42
11	416	151	40	42
12	397	144	38	40
13	360	131	34	36
14	333	121	32	33
15	333	121	32	33
16	323	118	31	33
17	185	67	18	19
18	102	37	10	10
19	92	34	9	9
20	37	13	4	4
21	28	10	3	3
22	28	10	3	3
23	18	7	2	2
24	18	7	2	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1260	2	181	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	1210	2	173	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1185	2	170	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1008	2	144	No	No	No	No	No	Yes	Yes	Yes	Yes	No
5	6	957	2	138	No	No	No	No	No	Yes	Yes	Yes	Yes	No
6	6	856	2	123	No	No	No	No	No	Yes	Yes	Yes	No	No
7	6	794	2	114	No	No	No	No	No	No	Yes	Yes	No	No
8	6	756	2	109	No	No	No	No	No	No	Yes	Yes	No	No
9	6	605	2	87	No	No	No	No	No	No	No	Yes	No	No
10	6	567	2	82	No	No	No	No	No	No	No	Yes	No	No
11	6	567	2	82	No	No	No	No	No	No	No	Yes	No	No
12	6	541	2	78	No	No	No	No	No	No	No	No	No	No
13	6	491	2	70	No	No	No	No	No	No	No	No	No	No
14	6	454	2	65	No	No	No	No	No	No	No	No	No	No
15	6	454	2	65	No	No	No	No	No	No	No	No	No	No
16	6	441	2	64	No	No	No	No	No	No	No	No	No	No
17	6	252	2	37	No	No	No	No	No	No	No	No	No	No
18	6	139	2	20	No	No	No	No	No	No	No	No	No	No
19	6	126	2	18	No	No	No	No	No	No	No	No	No	No
20	6	50	2	8	No	No	No	No	No	No	No	No	No	No
21	6	38	2	6	No	No	No	No	No	No	No	No	No	No
22	6	38	2	6	No	No	No	No	No	No	No	No	No	No
23	6	25	2	4	No	No	No	No	No	No	No	No	No	No
24	6	25	2	4	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	3	6	8	11	5	3

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	34.5	13.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:50	0:20
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	88	93
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1441	1441
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	472	1055	23	103
2	453	1013	22	99
3	444	992	22	97
4	378	844	18	82
5	359	802	17	78
6	321	717	16	70
7	297	665	14	65
8	283	633	14	62
9	227	506	11	49
10	212	475	10	46
11	212	475	10	46
12	203	454	10	44
13	184	411	9	40
14	170	380	8	37
15	170	380	8	37
16	165	369	8	36
17	94	211	5	21
18	52	116	3	11
19	47	106	2	10
20	19	42	1	4
21	14	32	1	3
22	14	32	1	3
23	9	21	0	2
24	9	21	0	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1527	2	126	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	1466	2	121	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1436	2	119	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1222	2	100	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
5	6	1161	2	95	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
6	6	1038	2	86	No	No	No	No	No	Yes	Yes	Yes	Yes	No
7	6	962	2	79	No	No	No	No	No	Yes	Yes	Yes	Yes	No
8	6	916	2	76	No	No	No	No	No	Yes	Yes	Yes	No	No
9	6	733	2	60	No	No	No	No	No	No	No	Yes	No	No
10	6	687	2	56	No	No	No	No	No	No	No	Yes	No	No
11	6	687	2	56	No	No	No	No	No	No	No	Yes	No	No
12	6	657	2	54	No	No	No	No	No	No	No	Yes	No	No
13	6	595	2	49	No	No	No	No	No	No	No	No	No	No
14	6	550	2	45	No	No	No	No	No	No	No	No	No	No
15	6	550	2	45	No	No	No	No	No	No	No	No	No	No
16	6	534	2	44	No	No	No	No	No	No	No	No	No	No
17	6	305	2	26	No	No	No	No	No	No	No	No	No	No
18	6	168	2	14	No	No	No	No	No	No	No	No	No	No
19	6	153	2	12	No	No	No	No	No	No	No	No	No	No
20	6	61	2	5	No	No	No	No	No	No	No	No	No	No
21	6	46	2	4	No	No	No	No	No	No	No	No	No	No
22	6	46	2	4	No	No	No	No	No	No	No	No	No	No
23	6	30	2	2	No	No	No	No	No	No	No	No	No	No
24	6	30	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	5	8	8	12	7	4

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	94.4	12.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:36	0:21
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	23	103
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	1653	1653
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	372	821	58	48
2	357	788	56	46
3	350	772	55	45
4	298	657	46	38
5	283	624	44	36
6	253	558	39	33
7	234	517	37	30
8	223	493	35	29
9	179	394	28	23
10	167	369	26	22
11	167	369	26	22
12	160	353	25	21
13	145	320	23	19
14	134	296	21	17
15	134	296	21	17
16	130	287	20	17
17	74	164	12	10
18	41	90	6	5
19	37	82	6	5
20	15	33	2	2
21	11	25	2	1
22	11	25	2	1
23	7	16	1	1
24	7	16	1	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1193	2	106	No	No	No	No	No	No	Yes	Yes	No	No
2	6	1145	2	102	No	No	No	No	No	No	Yes	Yes	No	No
3	6	1122	2	100	No	No	No	No	No	No	Yes	Yes	No	No
4	6	955	2	84	No	No	No	No	No	No	No	Yes	No	No
5	6	907	2	80	No	No	No	No	No	No	No	Yes	No	No
6	6	811	2	72	No	No	No	No	No	No	No	No	No	No
7	6	751	2	67	No	No	No	No	No	No	No	No	No	No
8	6	716	2	64	No	No	No	No	No	No	No	No	No	No
9	6	573	2	51	No	No	No	No	No	No	No	No	No	No
10	6	536	2	48	No	No	No	No	No	No	No	No	No	No
11	6	536	2	48	No	No	No	No	No	No	No	No	No	No
12	6	513	2	46	No	No	No	No	No	No	No	No	No	No
13	6	465	2	42	No	No	No	No	No	No	No	No	No	No
14	6	430	2	38	No	No	No	No	No	No	No	No	No	No
15	6	430	2	38	No	No	No	No	No	No	No	No	No	No
16	6	417	2	37	No	No	No	No	No	No	No	No	No	No
17	6	238	2	22	No	No	No	No	No	No	No	No	No	No
18	6	131	2	11	No	No	No	No	No	No	No	No	No	No
19	6	119	2	11	No	No	No	No	No	No	No	No	No	No
20	6	48	2	4	No	No	No	No	No	No	No	No	No	No
21	6	36	2	3	No	No	No	No	No	No	No	No	No	No
22	6	36	2	3	No	No	No	No	No	No	No	No	No	No
23	6	23	2	2	No	No	No	No	No	No	No	No	No	No
24	6	23	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	3	5	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	37.1	9.9
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:35	0:07
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	58	48
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	1299	1299
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

APPENDIX I-III

YEAR 2019 WITHOUT PROJECT TRAFFIC CONDITIONS

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1408	522	5	266
2	1352	501	5	255
3	1324	491	5	250
4	1126	418	4	213
5	1070	397	4	202
6	957	355	3	181
7	887	329	3	168
8	845	313	3	160
9	676	251	2	128
10	634	235	2	120
11	634	235	2	120
12	605	224	2	114
13	549	204	2	104
14	507	188	2	96
15	507	188	2	96
16	493	183	2	93
17	282	104	1	53
18	155	57	1	29
19	141	52	1	27
20	56	21	0	11
21	42	16	0	8
22	42	16	0	8
23	28	10	0	5
24	28	10	0	5

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1930	2	271	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	1853	2	260	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1815	2	255	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1544	2	217	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	1467	2	206	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	1312	2	184	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	6	1216	2	171	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	6	1158	2	163	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	6	927	2	130	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
10	6	869	2	122	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
11	6	869	2	122	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	No
12	6	829	2	116	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	6	753	2	106	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
14	6	695	2	98	No	No	No	Yes	No	No	Yes	Yes	No	No
15	6	695	2	98	No	No	No	Yes	No	No	Yes	Yes	No	No
16	6	676	2	95	No	No	No	Yes	No	No	Yes	Yes	No	No
17	6	386	2	54	No	No	No	No	No	No	No	No	No	No
18	6	212	2	30	No	No	No	No	No	No	No	No	No	No
19	6	193	2	28	No	No	No	No	No	No	No	No	No	No
20	6	77	2	11	No	No	No	No	No	No	No	No	No	No
21	6	58	2	8	No	No	No	No	No	No	No	No	No	No
22	6	58	2	8	No	No	No	No	No	No	No	No	No	No
23	6	38	2	5	No	No	No	No	No	No	No	No	No	No
24	6	38	2	5	No	No	No	No	No	No	No	No	No	No
Hours Met					8	11	12	16	9	13	16	16	13	8

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	73.6	112.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:06	8:19
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	5	266
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	2201	2201
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	1315	469	99
2	1262	450	95
3	1236	441	93
4	1052	375	79
5	999	356	75
6	894	319	67
7	828	295	62
8	789	281	59
9	631	225	48
10	592	211	45
11	592	211	45
12	565	202	43
13	513	183	39
14	473	169	36
15	473	169	36
16	460	164	35
17	263	94	20
18	145	52	11
19	132	47	10
20	53	19	4
21	39	14	3
22	39	14	3
23	26	9	2
24	26	9	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	5	1784	1	99	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	5	1712	1	95	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	5	1677	1	93	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	5	1427	1	79	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
5	5	1355	1	75	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
6	5	1213	1	67	No	No	No	No	No	Yes	Yes	Yes	Yes	No
7	5	1123	1	62	No	No	No	No	No	Yes	Yes	Yes	Yes	No
8	5	1070	1	59	No	No	No	No	No	No	Yes	Yes	No	No
9	5	856	1	48	No	No	No	No	No	No	No	Yes	No	No
10	5	803	1	45	No	No	No	No	No	No	No	Yes	No	No
11	5	803	1	45	No	No	No	No	No	No	No	Yes	No	No
12	5	767	1	43	No	No	No	No	No	No	No	Yes	No	No
13	5	696	1	39	No	No	No	No	No	No	No	No	No	No
14	5	642	1	36	No	No	No	No	No	No	No	No	No	No
15	5	642	1	36	No	No	No	No	No	No	No	No	No	No
16	5	624	1	35	No	No	No	No	No	No	No	No	No	No
17	5	357	1	20	No	No	No	No	No	No	No	No	No	No
18	5	197	1	11	No	No	No	No	No	No	No	No	No	No
19	5	179	1	10	No	No	No	No	No	No	No	No	No	No
20	5	72	1	4	No	No	No	No	No	No	No	No	No	No
21	5	53	1	3	No	No	No	No	No	No	No	No	No	No
22	5	53	1	3	No	No	No	No	No	No	No	No	No	No
23	5	35	1	2	No	No	No	No	No	No	No	No	No	No
24	5	35	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	5	7	8	12	7	4

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	17.7
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:29
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	99
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1883
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	703	1384	3	113
2	675	1329	3	108
3	661	1301	3	106
4	562	1107	2	90
5	534	1052	2	86
6	478	941	2	77
7	443	872	2	71
8	422	830	2	68
9	337	664	1	54
10	316	623	1	51
11	316	623	1	51
12	302	595	1	49
13	274	540	1	44
14	253	498	1	41
15	253	498	1	41
16	246	484	1	40
17	141	277	1	23
18	77	152	0	12
19	70	138	0	11
20	28	55	0	5
21	21	42	0	3
22	21	42	0	3
23	14	28	0	2
24	14	28	0	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	2087	2	116	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	2004	2	111	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1962	2	109	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1669	2	92	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	1586	2	88	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	1419	2	79	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
7	6	1315	2	73	No	No	No	No	No	Yes	Yes	Yes	Yes	No
8	6	1252	2	70	No	No	No	No	No	Yes	Yes	Yes	Yes	No
9	6	1001	2	55	No	No	No	No	No	No	Yes	Yes	No	No
10	6	939	2	52	No	No	No	No	No	No	No	Yes	No	No
11	6	939	2	52	No	No	No	No	No	No	No	Yes	No	No
12	6	897	2	50	No	No	No	No	No	No	No	Yes	No	No
13	6	814	2	45	No	No	No	No	No	No	No	Yes	No	No
14	6	751	2	42	No	No	No	No	No	No	No	No	No	No
15	6	751	2	42	No	No	No	No	No	No	No	No	No	No
16	6	730	2	41	No	No	No	No	No	No	No	No	No	No
17	6	418	2	24	No	No	No	No	No	No	No	No	No	No
18	6	229	2	12	No	No	No	No	No	No	No	No	No	No
19	6	208	2	11	No	No	No	No	No	No	No	No	No	No
20	6	83	2	5	No	No	No	No	No	No	No	No	No	No
21	6	63	2	3	No	No	No	No	No	No	No	No	No	No
22	6	63	2	3	No	No	No	No	No	No	No	No	No	No
23	6	42	2	2	No	No	No	No	No	No	No	No	No	No
24	6	42	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	5	6	8	9	13	8	6

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	13.3	17.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:00	0:32
Delay Condition Met	No	No
Volume on Minor Street Approach During Same Hour	3	113
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	2203	2203
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	659	1168	51
2	633	1121	49
3	619	1098	48
4	527	934	41
5	501	888	39
6	448	794	35
7	415	736	32
8	395	701	31
9	316	561	24
10	297	526	23
11	297	526	23
12	283	502	22
13	257	456	20
14	237	420	18
15	237	420	18
16	231	409	18
17	132	234	10
18	72	128	6
19	66	117	5
20	26	47	2
21	20	35	2
22	20	35	2
23	13	23	1
24	13	23	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	5	1827	1	51	No	No	No	No	No	No	No	Yes	No	No
2	5	1754	1	49	No	No	No	No	No	No	No	Yes	No	No
3	5	1717	1	48	No	No	No	No	No	No	No	Yes	No	No
4	5	1461	1	41	No	No	No	No	No	No	No	No	No	No
5	5	1389	1	39	No	No	No	No	No	No	No	No	No	No
6	5	1242	1	35	No	No	No	No	No	No	No	No	No	No
7	5	1151	1	32	No	No	No	No	No	No	No	No	No	No
8	5	1096	1	31	No	No	No	No	No	No	No	No	No	No
9	5	877	1	24	No	No	No	No	No	No	No	No	No	No
10	5	823	1	23	No	No	No	No	No	No	No	No	No	No
11	5	823	1	23	No	No	No	No	No	No	No	No	No	No
12	5	785	1	22	No	No	No	No	No	No	No	No	No	No
13	5	713	1	20	No	No	No	No	No	No	No	No	No	No
14	5	657	1	18	No	No	No	No	No	No	No	No	No	No
15	5	657	1	18	No	No	No	No	No	No	No	No	No	No
16	5	640	1	18	No	No	No	No	No	No	No	No	No	No
17	5	366	1	10	No	No	No	No	No	No	No	No	No	No
18	5	200	1	6	No	No	No	No	No	No	No	No	No	No
19	5	183	1	5	No	No	No	No	No	No	No	No	No	No
20	5	73	1	2	No	No	No	No	No	No	No	No	No	No
21	5	55	1	2	No	No	No	No	No	No	No	No	No	No
22	5	55	1	2	No	No	No	No	No	No	No	No	No	No
23	5	36	1	1	No	No	No	No	No	No	No	No	No	No
24	5	36	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	11.6
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:09
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	51
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	1878
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

APPENDIX I-IV

YEAR 2019 WITH PROJECT TRAFFIC CONDITIONS

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1496	561	35	266
2	1436	539	34	255
3	1406	527	33	250
4	1197	449	28	213
5	1137	426	27	202
6	1017	381	24	181
7	942	353	22	168
8	898	337	21	160
9	718	269	17	128
10	673	252	16	120
11	673	252	16	120
12	643	241	15	114
13	583	219	14	104
14	539	202	13	96
15	539	202	13	96
16	524	196	12	93
17	299	112	7	53
18	165	62	4	29
19	150	56	4	27
20	60	22	1	11
21	45	17	1	8
22	45	17	1	8
23	30	11	1	5
24	30	11	1	5

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	2057	2	301	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	1975	2	289	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1933	2	283	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1646	2	241	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	1563	2	229	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	1398	2	205	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	6	1295	2	190	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	6	1235	2	181	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	6	987	2	145	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	6	925	2	136	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
11	6	925	2	136	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
12	6	884	2	129	No	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No
13	6	802	2	118	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
14	6	741	2	109	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
15	6	741	2	109	No	No	No	Yes	No	Yes	Yes	Yes	Yes	No
16	6	720	2	105	No	No	No	Yes	No	Yes	Yes	Yes	No	No
17	6	411	2	60	No	No	No	No	No	No	No	No	No	No
18	6	227	2	33	No	No	No	No	No	No	No	No	No	No
19	6	206	2	31	No	No	No	No	No	No	No	No	No	No
20	6	82	2	12	No	No	No	No	No	No	No	No	No	No
21	6	62	2	9	No	No	No	No	No	No	No	No	No	No
22	6	62	2	9	No	No	No	No	No	No	No	No	No	No
23	6	41	2	6	No	No	No	No	No	No	No	No	No	No
24	6	41	2	6	No	No	No	No	No	No	No	No	No	No
Hours Met					8	11	12	16	11	16	16	16	15	9

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	967.1	159.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	9:24	11:47
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	35	266
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	2358	2358
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1315	498	88	99
2	1262	478	84	95
3	1236	468	83	93
4	1052	398	70	79
5	999	378	67	75
6	894	339	60	67
7	828	314	55	62
8	789	299	53	59
9	631	239	42	48
10	592	224	40	45
11	592	224	40	45
12	565	214	38	43
13	513	194	34	39
14	473	179	32	36
15	473	179	32	36
16	460	174	31	35
17	263	100	18	20
18	145	55	10	11
19	132	50	9	10
20	53	20	4	4
21	39	15	3	3
22	39	15	3	3
23	26	10	2	2
24	26	10	2	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1813	2	187	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	1740	2	179	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	1704	2	176	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1450	2	149	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
5	6	1377	2	142	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
6	6	1233	2	127	No	No	No	No	No	Yes	Yes	Yes	Yes	No
7	6	1142	2	117	No	No	No	No	No	Yes	Yes	Yes	Yes	No
8	6	1088	2	112	No	No	No	No	No	No	Yes	Yes	No	No
9	6	870	2	90	No	No	No	No	No	No	No	Yes	No	No
10	6	816	2	85	No	No	No	No	No	No	No	Yes	No	No
11	6	816	2	85	No	No	No	No	No	No	No	Yes	No	No
12	6	779	2	81	No	No	No	No	No	No	No	Yes	No	No
13	6	707	2	73	No	No	No	No	No	No	No	No	No	No
14	6	652	2	68	No	No	No	No	No	No	No	No	No	No
15	6	652	2	68	No	No	No	No	No	No	No	No	No	No
16	6	634	2	66	No	No	No	No	No	No	No	No	No	No
17	6	363	2	38	No	No	No	No	No	No	No	No	No	No
18	6	200	2	21	No	No	No	No	No	No	No	No	No	No
19	6	182	2	19	No	No	No	No	No	No	No	No	No	No
20	6	73	2	8	No	No	No	No	No	No	No	No	No	No
21	6	54	2	6	No	No	No	No	No	No	No	No	No	No
22	6	54	2	6	No	No	No	No	No	No	No	No	No	No
23	6	36	2	4	No	No	No	No	No	No	No	No	No	No
24	6	36	2	4	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	5	7	8	12	7	4

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	167	17.7
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	4:04	0:29
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	88	99
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	2000	2000
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	761	1517	23	113
2	731	1456	22	108
3	715	1426	22	106
4	609	1214	18	90
5	578	1153	17	86
6	517	1032	16	77
7	479	956	14	71
8	457	910	14	68
9	365	728	11	54
10	342	683	10	51
11	342	683	10	51
12	327	652	10	49
13	297	592	9	44
14	274	546	8	41
15	274	546	8	41
16	266	531	8	40
17	152	303	5	23
18	84	167	3	12
19	76	152	2	11
20	30	61	1	5
21	23	46	1	3
22	23	46	1	3
23	15	30	0	2
24	15	30	0	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	2278	2	136	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	2187	2	130	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	2141	2	128	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	1823	2	108	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	1731	2	103	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	1549	2	93	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
7	6	1435	2	85	No	No	No	No	No	Yes	Yes	Yes	Yes	No
8	6	1367	2	82	No	No	No	No	No	Yes	Yes	Yes	Yes	No
9	6	1093	2	65	No	No	No	No	No	No	Yes	Yes	No	No
10	6	1025	2	61	No	No	No	No	No	No	No	Yes	No	No
11	6	1025	2	61	No	No	No	No	No	No	No	Yes	No	No
12	6	979	2	59	No	No	No	No	No	No	No	Yes	No	No
13	6	889	2	53	No	No	No	No	No	No	No	Yes	No	No
14	6	820	2	49	No	No	No	No	No	No	No	No	No	No
15	6	820	2	49	No	No	No	No	No	No	No	No	No	No
16	6	797	2	48	No	No	No	No	No	No	No	No	No	No
17	6	455	2	28	No	No	No	No	No	No	No	No	No	No
18	6	251	2	15	No	No	No	No	No	No	No	No	No	No
19	6	228	2	13	No	No	No	No	No	No	No	No	No	No
20	6	91	2	6	No	No	No	No	No	No	No	No	No	No
21	6	69	2	4	No	No	No	No	No	No	No	No	No	No
22	6	69	2	4	No	No	No	No	No	No	No	No	No	No
23	6	45	2	2	No	No	No	No	No	No	No	No	No	No
24	6	45	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	5	6	8	9	13	8	6

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	664.9	19.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	4:14	0:36
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	23	113
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	2414	2414
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	659	1267	58	51
2	633	1216	56	49
3	619	1191	55	48
4	527	1014	46	41
5	501	963	44	39
6	448	862	39	35
7	415	798	37	32
8	395	760	35	31
9	316	608	28	24
10	297	570	26	23
11	297	570	26	23
12	283	545	25	22
13	257	494	23	20
14	237	456	21	18
15	237	456	21	18
16	231	443	20	18
17	132	253	12	10
18	72	139	6	6
19	66	127	6	5
20	26	51	2	2
21	20	38	2	2
22	20	38	2	2
23	13	25	1	1
24	13	25	1	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	1926	2	109	No	No	No	No	No	No	Yes	Yes	No	No
2	6	1849	2	105	No	No	No	No	No	No	Yes	Yes	No	No
3	6	1810	2	103	No	No	No	No	No	No	Yes	Yes	No	No
4	6	1541	2	87	No	No	No	No	No	No	No	Yes	No	No
5	6	1464	2	83	No	No	No	No	No	No	No	Yes	No	No
6	6	1310	2	74	No	No	No	No	No	No	No	No	No	No
7	6	1213	2	69	No	No	No	No	No	No	No	No	No	No
8	6	1155	2	66	No	No	No	No	No	No	No	No	No	No
9	6	924	2	52	No	No	No	No	No	No	No	No	No	No
10	6	867	2	49	No	No	No	No	No	No	No	No	No	No
11	6	867	2	49	No	No	No	No	No	No	No	No	No	No
12	6	828	2	47	No	No	No	No	No	No	No	No	No	No
13	6	751	2	43	No	No	No	No	No	No	No	No	No	No
14	6	693	2	39	No	No	No	No	No	No	No	No	No	No
15	6	693	2	39	No	No	No	No	No	No	No	No	No	No
16	6	674	2	38	No	No	No	No	No	No	No	No	No	No
17	6	385	2	22	No	No	No	No	No	No	No	No	No	No
18	6	211	2	12	No	No	No	No	No	No	No	No	No	No
19	6	193	2	11	No	No	No	No	No	No	No	No	No	No
20	6	77	2	4	No	No	No	No	No	No	No	No	No	No
21	6	58	2	4	No	No	No	No	No	No	No	No	No	No
22	6	58	2	4	No	No	No	No	No	No	No	No	No	No
23	6	38	2	2	No	No	No	No	No	No	No	No	No	No
24	6	38	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	3	5	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	301.7	11.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	4:51	0:10
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	58	51
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	2035	2035
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

APPENDIX I-V

YEAR 2040 WITHOUT PROJECT TRAFFIC CONDITIONS

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	2083	835	5	283
2	2000	802	5	272
3	1958	785	5	266
4	1666	668	4	226
5	1583	635	4	215
6	1416	568	3	192
7	1312	526	3	178
8	1250	501	3	170
9	1000	401	2	136
10	937	376	2	127
11	937	376	2	127
12	896	359	2	122
13	812	326	2	110
14	750	301	2	102
15	750	301	2	102
16	729	292	2	99
17	417	167	1	57
18	229	92	1	31
19	208	84	1	28
20	83	33	0	11
21	62	25	0	8
22	62	25	0	8
23	42	17	0	6
24	42	17	0	6

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	2918	2	288	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	2802	2	277	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	2743	2	271	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	2334	2	230	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	2218	2	219	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	1984	2	195	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	6	1838	2	181	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	6	1751	2	173	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	6	1401	2	138	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	6	1313	2	129	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	6	1313	2	129	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	6	1255	2	124	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	6	1138	2	112	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	6	1051	2	104	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
15	6	1051	2	104	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
16	6	1021	2	101	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
17	6	584	2	58	No	No	No	No	No	No	No	Yes	No	No
18	6	321	2	32	No	No	No	No	No	No	No	No	No	No
19	6	292	2	29	No	No	No	No	No	No	No	No	No	No
20	6	116	2	11	No	No	No	No	No	No	No	No	No	No
21	6	87	2	8	No	No	No	No	No	No	No	No	No	No
22	6	87	2	8	No	No	No	No	No	No	No	No	No	No
23	6	59	2	6	No	No	No	No	No	No	No	No	No	No
24	6	59	2	6	No	No	No	No	No	No	No	No	No	No
Hours Met					8	12	13	16	16	16	16	17	16	13

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000	2133.8
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	13:53	167:44
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	5	283
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	3206	3206
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	1967	766	99
2	1888	735	95
3	1849	720	93
4	1574	613	79
5	1495	582	75
6	1338	521	67
7	1239	483	62
8	1180	460	59
9	944	368	48
10	885	345	45
11	885	345	45
12	846	329	43
13	767	299	39
14	708	276	36
15	708	276	36
16	688	268	35
17	393	153	20
18	216	84	11
19	197	77	10
20	79	31	4
21	59	23	3
22	59	23	3
23	39	15	2
24	39	15	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	5	2733	1	99	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	5	2623	1	95	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	5	2569	1	93	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	5	2187	1	79	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
5	5	2077	1	75	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
6	5	1859	1	67	No	No	No	No	No	Yes	Yes	Yes	Yes	No
7	5	1722	1	62	No	No	No	No	No	Yes	Yes	Yes	Yes	No
8	5	1640	1	59	No	No	No	No	No	No	Yes	Yes	No	No
9	5	1312	1	48	No	No	No	No	No	No	No	Yes	No	No
10	5	1230	1	45	No	No	No	No	No	No	No	Yes	No	No
11	5	1230	1	45	No	No	No	No	No	No	No	Yes	No	No
12	5	1175	1	43	No	No	No	No	No	No	No	Yes	No	No
13	5	1066	1	39	No	No	No	No	No	No	No	No	No	No
14	5	984	1	36	No	No	No	No	No	No	No	No	No	No
15	5	984	1	36	No	No	No	No	No	No	No	No	No	No
16	5	956	1	35	No	No	No	No	No	No	No	No	No	No
17	5	546	1	20	No	No	No	No	No	No	No	No	No	No
18	5	300	1	11	No	No	No	No	No	No	No	No	No	No
19	5	274	1	10	No	No	No	No	No	No	No	No	No	No
20	5	110	1	4	No	No	No	No	No	No	No	No	No	No
21	5	82	1	3	No	No	No	No	No	No	No	No	No	No
22	5	82	1	3	No	No	No	No	No	No	No	No	No	No
23	5	54	1	2	No	No	No	No	No	No	No	No	No	No
24	5	54	1	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	5	7	8	12	7	4

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	33.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:54
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	99
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	2832
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1237	2230	68	113
2	1188	2141	65	108
3	1163	2096	64	106
4	990	1784	54	90
5	940	1695	52	86
6	841	1516	46	77
7	779	1405	43	71
8	742	1338	41	68
9	594	1070	33	54
10	557	1004	31	51
11	557	1004	31	51
12	532	959	29	49
13	482	870	27	44
14	445	803	24	41
15	445	803	24	41
16	433	781	24	40
17	247	446	14	23
18	136	245	7	12
19	124	223	7	11
20	49	89	3	5
21	37	67	2	3
22	37	67	2	3
23	25	45	1	2
24	25	45	1	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	3467	2	181	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	3329	2	173	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	3259	2	170	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	2774	2	144	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	2635	2	138	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	2357	2	123	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
7	6	2184	2	114	No	No	No	No	No	Yes	Yes	Yes	Yes	No
8	6	2080	2	109	No	No	No	No	No	Yes	Yes	Yes	Yes	No
9	6	1664	2	87	No	No	No	No	No	No	Yes	Yes	No	No
10	6	1561	2	82	No	No	No	No	No	No	No	Yes	No	No
11	6	1561	2	82	No	No	No	No	No	No	No	Yes	No	No
12	6	1491	2	78	No	No	No	No	No	No	No	Yes	No	No
13	6	1352	2	71	No	No	No	No	No	No	No	Yes	No	No
14	6	1248	2	65	No	No	No	No	No	No	No	No	No	No
15	6	1248	2	65	No	No	No	No	No	No	No	No	No	No
16	6	1214	2	64	No	No	No	No	No	No	No	No	No	No
17	6	693	2	37	No	No	No	No	No	No	No	No	No	No
18	6	381	2	19	No	No	No	No	No	No	No	No	No	No
19	6	347	2	18	No	No	No	No	No	No	No	No	No	No
20	6	138	2	8	No	No	No	No	No	No	No	No	No	No
21	6	104	2	5	No	No	No	No	No	No	No	No	No	No
22	6	104	2	5	No	No	No	No	No	No	No	No	No	No
23	6	70	2	3	No	No	No	No	No	No	No	No	No	No
24	6	70	2	3	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	5	6	8	9	13	8	6

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	28.8	339.4
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:32	10:39
Delay Condition Met	No	Yes
Volume on Minor Street Approach During Same Hour	68	113
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	3648	3648
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets
	E	W	N
1	1193	2020	51
2	1145	1939	49
3	1121	1899	48
4	954	1616	41
5	907	1535	39
6	811	1374	35
7	752	1273	32
8	716	1212	31
9	573	970	24
10	537	909	23
11	537	909	23
12	513	869	22
13	465	788	20
14	429	727	18
15	429	727	18
16	418	707	18
17	239	404	10
18	131	222	6
19	119	202	5
20	48	81	2
21	36	61	2
22	36	61	2
23	24	40	1
24	24	40	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	5	3213	1	51	No	No	No	No	No	No	No	Yes	No	No
2	5	3084	1	49	No	No	No	No	No	No	No	Yes	No	No
3	5	3020	1	48	No	No	No	No	No	No	No	Yes	No	No
4	5	2570	1	41	No	No	No	No	No	No	No	No	No	No
5	5	2442	1	39	No	No	No	No	No	No	No	No	No	No
6	5	2185	1	35	No	No	No	No	No	No	No	No	No	No
7	5	2025	1	32	No	No	No	No	No	No	No	No	No	No
8	5	1928	1	31	No	No	No	No	No	No	No	No	No	No
9	5	1543	1	24	No	No	No	No	No	No	No	No	No	No
10	5	1446	1	23	No	No	No	No	No	No	No	No	No	No
11	5	1446	1	23	No	No	No	No	No	No	No	No	No	No
12	5	1382	1	22	No	No	No	No	No	No	No	No	No	No
13	5	1253	1	20	No	No	No	No	No	No	No	No	No	No
14	5	1156	1	18	No	No	No	No	No	No	No	No	No	No
15	5	1156	1	18	No	No	No	No	No	No	No	No	No	No
16	5	1125	1	18	No	No	No	No	No	No	No	No	No	No
17	5	643	1	10	No	No	No	No	No	No	No	No	No	No
18	5	353	1	6	No	No	No	No	No	No	No	No	No	No
19	5	321	1	5	No	No	No	No	No	No	No	No	No	No
20	5	129	1	2	No	No	No	No	No	No	No	No	No	No
21	5	97	1	2	No	No	No	No	No	No	No	No	No	No
22	5	97	1	2	No	No	No	No	No	No	No	No	No	No
23	5	64	1	1	No	No	No	No	No	No	No	No	No	No
24	5	64	1	1	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	0	3	0	0

Warrant 3 Condition A

Orientation	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	18.2
Number of Lanes on Minor Street Approach	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	0:15
Delay Condition Met	No
Volume on Minor Street Approach During Same Hour	51
High Minor Volume Condition Met	No
Total Entering Volume on All Approaches During Same Hour	3264
Number of Approaches on Intersection	3
Total Volume Condition Met	Yes
Warrant Met for Approach	No
Warrant Met for Intersection	**No**

APPENDIX I-VI

YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	2171	874	35	283
2	2084	839	34	272
3	2041	822	33	266
4	1737	699	28	226
5	1650	664	27	215
6	1476	594	24	192
7	1368	551	22	178
8	1303	524	21	170
9	1042	420	17	136
10	977	393	16	127
11	977	393	16	127
12	934	376	15	122
13	847	341	14	110
14	782	315	13	102
15	782	315	13	102
16	760	306	12	99
17	434	175	7	57
18	239	96	4	31
19	217	87	4	28
20	87	35	1	11
21	65	26	1	8
22	65	26	1	8
23	43	17	1	6
24	43	17	1	6

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	3045	2	318	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	2923	2	306	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	2863	2	299	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	2436	2	254	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	2314	2	242	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	2070	2	216	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	6	1919	2	200	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	6	1827	2	191	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	6	1462	2	153	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	6	1370	2	143	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	6	1370	2	143	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	6	1310	2	137	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	6	1188	2	124	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	6	1097	2	115	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	6	1097	2	115	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	6	1066	2	111	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	No
17	6	609	2	64	No	No	No	No	No	No	No	Yes	No	No
18	6	335	2	35	No	No	No	No	No	No	No	No	No	No
19	6	304	2	32	No	No	No	No	No	No	No	No	No	No
20	6	122	2	12	No	No	No	No	No	No	No	No	No	No
21	6	91	2	9	No	No	No	No	No	No	No	No	No	No
22	6	91	2	9	No	No	No	No	No	No	No	No	No	No
23	6	60	2	7	No	No	No	No	No	No	No	No	No	No
24	6	60	2	7	No	No	No	No	No	No	No	No	No	No
Hours Met					8	12	13	16	16	16	16	17	16	15

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	10000	2684.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	97:13	211:00
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	35	283
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	3363	3363
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1967	795	88	99
2	1888	763	84	95
3	1849	747	83	93
4	1574	636	70	79
5	1495	604	67	75
6	1338	541	60	67
7	1239	501	55	62
8	1180	477	53	59
9	944	382	42	48
10	885	358	40	45
11	885	358	40	45
12	846	342	38	43
13	767	310	34	39
14	708	286	32	36
15	708	286	32	36
16	688	278	31	35
17	393	159	18	20
18	216	87	10	11
19	197	80	9	10
20	79	32	4	4
21	59	24	3	3
22	59	24	3	3
23	39	16	2	2
24	39	16	2	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	2762	2	187	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	2651	2	179	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	2596	2	176	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	2210	2	149	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
5	6	2099	2	142	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
6	6	1879	2	127	No	No	No	No	No	Yes	Yes	Yes	Yes	No
7	6	1740	2	117	No	No	No	No	No	Yes	Yes	Yes	Yes	No
8	6	1657	2	112	No	No	No	No	No	No	Yes	Yes	No	No
9	6	1326	2	90	No	No	No	No	No	No	No	Yes	No	No
10	6	1243	2	85	No	No	No	No	No	No	No	Yes	No	No
11	6	1243	2	85	No	No	No	No	No	No	No	Yes	No	No
12	6	1188	2	81	No	No	No	No	No	No	No	Yes	No	No
13	6	1077	2	73	No	No	No	No	No	No	No	No	No	No
14	6	994	2	68	No	No	No	No	No	No	No	No	No	No
15	6	994	2	68	No	No	No	No	No	No	No	No	No	No
16	6	966	2	66	No	No	No	No	No	No	No	No	No	No
17	6	552	2	38	No	No	No	No	No	No	No	No	No	No
18	6	303	2	21	No	No	No	No	No	No	No	No	No	No
19	6	277	2	19	No	No	No	No	No	No	No	No	No	No
20	6	111	2	8	No	No	No	No	No	No	No	No	No	No
21	6	83	2	6	No	No	No	No	No	No	No	No	No	No
22	6	83	2	6	No	No	No	No	No	No	No	No	No	No
23	6	55	2	4	No	No	No	No	No	No	No	No	No	No
24	6	55	2	4	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	3	5	7	8	12	7	4

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	1788.9	33.2
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	43:43	0:54
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	88	99
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	2949	2949
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

Signal Warrants Report For Intersection 8: Club View Drive/Merris Street at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	Yes
#2	Four Hour Vehicular Volume	Yes
#3	Peak Hour	Yes

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1295	2363	88	113
2	1243	2268	84	108
3	1217	2221	83	106
4	1036	1890	70	90
5	984	1796	67	86
6	881	1607	60	77
7	816	1489	55	71
8	777	1418	53	68
9	622	1134	42	54
10	583	1063	40	51
11	583	1063	40	51
12	557	1016	38	49
13	505	922	34	44
14	466	851	32	41
15	466	851	32	41
16	453	827	31	40
17	259	473	18	23
18	142	260	10	12
19	130	236	9	11
20	52	95	4	5
21	39	71	3	3
22	39	71	3	3
23	26	47	2	2
24	26	47	2	2

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	3658	2	201	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	6	3511	2	192	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	6	3438	2	189	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	6	2926	2	160	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	6	2780	2	153	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	6	2488	2	137	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
7	6	2305	2	126	No	No	No	No	No	Yes	Yes	Yes	Yes	No
8	6	2195	2	121	No	No	No	No	No	Yes	Yes	Yes	Yes	No
9	6	1756	2	96	No	No	No	No	No	No	Yes	Yes	No	No
10	6	1646	2	91	No	No	No	No	No	No	No	Yes	No	No
11	6	1646	2	91	No	No	No	No	No	No	No	Yes	No	No
12	6	1573	2	87	No	No	No	No	No	No	No	Yes	No	No
13	6	1427	2	78	No	No	No	No	No	No	No	Yes	No	No
14	6	1317	2	73	No	No	No	No	No	No	No	No	No	No
15	6	1317	2	73	No	No	No	No	No	No	No	No	No	No
16	6	1280	2	71	No	No	No	No	No	No	No	No	No	No
17	6	732	2	41	No	No	No	No	No	No	No	No	No	No
18	6	402	2	22	No	No	No	No	No	No	No	No	No	No
19	6	366	2	20	No	No	No	No	No	No	No	No	No	No
20	6	147	2	9	No	No	No	No	No	No	No	No	No	No
21	6	110	2	6	No	No	No	No	No	No	No	No	No	No
22	6	110	2	6	No	No	No	No	No	No	No	No	No	No
23	6	73	2	4	No	No	No	No	No	No	No	No	No	No
24	6	73	2	4	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	3	5	6	8	9	13	8	6

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	8297.4	536.1
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	202:49	16:49
Delay Condition Met	Yes	Yes
Volume on Minor Street Approach During Same Hour	88	113
High Minor Volume Condition Met	No	Yes
Total Entering Volume on All Approaches During Same Hour	3859	3859
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	Yes
Warrant Met for Intersection	**Yes**	

Signal Warrants Report For Intersection 9: Gold Buckle Road at Greenspot Road

Warrants Summary

Warrant	Name	Met?
#1	Eight Hour Vehicular Volume	No
#2	Four Hour Vehicular Volume	No
#3	Peak Hour	No

Intersection Warrants Parameters

Major Approaches	E, W
Minor Approaches	S, N
Speed > 40mph	Yes
Population < 10,000	No
Warrant Factor	70%

Warrant Analysis Traffic Volumes

Hour	Major Streets		Minor Streets	
	E	W	S	N
1	1193	2119	58	51
2	1145	2034	56	49
3	1121	1992	55	48
4	954	1695	46	41
5	907	1610	44	39
6	811	1441	39	35
7	752	1335	37	32
8	716	1271	35	31
9	573	1017	28	24
10	537	954	26	23
11	537	954	26	23
12	513	911	25	22
13	465	826	23	20
14	429	763	21	18
15	429	763	21	18
16	418	742	20	18
17	239	424	12	10
18	131	233	6	6
19	119	212	6	5
20	48	85	2	2
21	36	64	2	2
22	36	64	2	2
23	24	42	1	1
24	24	42	1	1

Warrant Analysis by Hour

Hour	Major Lanes		Minor Lanes		Warrant 1 Condition A				Warrant 1 Condition B				Warrant 2	Warrant 3
	Number	Volume	Number	Volume	100%	80%	70%	56%	100%	80%	70%	56%		Condition B
1	6	3312	2	109	No	No	No	No	No	No	Yes	Yes	No	No
2	6	3179	2	105	No	No	No	No	No	No	Yes	Yes	No	No
3	6	3113	2	103	No	No	No	No	No	No	Yes	Yes	No	No
4	6	2649	2	87	No	No	No	No	No	No	No	Yes	No	No
5	6	2517	2	83	No	No	No	No	No	No	No	Yes	No	No
6	6	2252	2	74	No	No	No	No	No	No	No	No	No	No
7	6	2087	2	69	No	No	No	No	No	No	No	No	No	No
8	6	1987	2	66	No	No	No	No	No	No	No	No	No	No
9	6	1590	2	52	No	No	No	No	No	No	No	No	No	No
10	6	1491	2	49	No	No	No	No	No	No	No	No	No	No
11	6	1491	2	49	No	No	No	No	No	No	No	No	No	No
12	6	1424	2	47	No	No	No	No	No	No	No	No	No	No
13	6	1291	2	43	No	No	No	No	No	No	No	No	No	No
14	6	1192	2	39	No	No	No	No	No	No	No	No	No	No
15	6	1192	2	39	No	No	No	No	No	No	No	No	No	No
16	6	1160	2	38	No	No	No	No	No	No	No	No	No	No
17	6	663	2	22	No	No	No	No	No	No	No	No	No	No
18	6	364	2	12	No	No	No	No	No	No	No	No	No	No
19	6	331	2	11	No	No	No	No	No	No	No	No	No	No
20	6	133	2	4	No	No	No	No	No	No	No	No	No	No
21	6	100	2	4	No	No	No	No	No	No	No	No	No	No
22	6	100	2	4	No	No	No	No	No	No	No	No	No	No
23	6	66	2	2	No	No	No	No	No	No	No	No	No	No
24	6	66	2	2	No	No	No	No	No	No	No	No	No	No
Hours Met					0	0	0	0	0	0	3	5	0	0

Warrant 3 Condition A

Orientation	S	N
Total Stopped Delay Per Vehicle on Minor Approach (s)	5317.5	20.5
Number of Lanes on Minor Street Approach	1	1
VehicleHours of Stopped Delay on Minor Approach ([h]h:mm)	85:40	0:17
Delay Condition Met	Yes	No
Volume on Minor Street Approach During Same Hour	58	51
High Minor Volume Condition Met	No	No
Total Entering Volume on All Approaches During Same Hour	3421	3421
Number of Approaches on Intersection	4	4
Total Volume Condition Met	Yes	Yes
Warrant Met for Approach	No	No
Warrant Met for Intersection	**No**	

APPENDIX J

PROJECT DRIVEWAY LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX J-I

EXISTING WITH PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	34.5
Analysis Method:	HCM 2010	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.432

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	93	20	292	24	0	924	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	93	20	292	24	0	924	0
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	24	5	75	6	0	238	0
Total Analysis Volume [veh/h]	91	0	0	0	0	96	21	300	25	0	951	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.43	0.00	0.00	0.00	0.00	0.18	0.03	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	34.49	40.75	21.61	30.22	30.23	13.18	10.16	0.00	0.00	7.92	0.00	0.00
Movement LOS	D	E	C	D	D	B	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	2.01	2.01	2.01	0.65	0.65	0.65	0.09	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	50.28	50.28	50.28	16.19	16.19	16.19	2.26	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	34.49			13.18			0.62			0.00		
Approach LOS	D			B			A			A		
d_I, Intersection Delay [s/veh]	3.11											
Intersection LOS	D											

Intersection Level Of Service Report
Intersection 10: Project Dwy 2 at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.002

Intersection Setup

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	0	2	287	5	1	924
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2	287	5	1	924
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	76	1	0	243
Total Analysis Volume [veh/h]	0	2	302	5	1	973
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	9.17	0.00	0.00	7.88	0.00
Movement LOS		A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.01	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.17	0.00	0.00	0.06	0.00
d_A, Approach Delay [s/veh]	9.17		0.00		0.01	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.02					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	37.1
Analysis Method:	HCM 2010	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.347

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	47	53	687	81	0	367	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	47	53	687	81	0	367	5
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	12	13	174	21	0	93	1
Total Analysis Volume [veh/h]	59	0	0	1	0	48	54	697	82	0	372	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.35	0.00	0.00	0.00	0.00	0.06	0.05	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	37.05	37.06	21.78	19.54	27.66	9.69	8.20	0.00	0.00	9.32	0.00	0.00
Movement LOS	E	E	C	C	D	A	A	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	1.45	1.45	1.45	0.20	0.20	0.20	0.14	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	36.13	36.13	36.13	4.98	4.98	4.98	3.60	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	37.05			9.89			0.53			0.00		
Approach LOS	E			A			A			A		
d_I, Intersection Delay [s/veh]	2.36											
Intersection LOS	E											

Intersection Level Of Service Report
Intersection 10: Project Dwy 2 at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	10.7
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	0	2	670	18	3	372
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2	670	18	3	372
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	176	5	1	98
Total Analysis Volume [veh/h]	0	2	705	19	3	392
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	10.69	0.00	0.00	9.13	0.00
Movement LOS		B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.01	0.00	0.00	0.01	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.24	0.00	0.00	0.26	0.00
d_A, Approach Delay [s/veh]	10.69		0.00		0.07	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.04					
Intersection LOS	B					

APPENDIX J-II

EXISTING WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	7.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.352

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	93	20	292	24	0	924	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	93	20	292	24	0	924	0
Peak Hour Factor	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720	0.9720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	24	5	75	6	0	238	0
Total Analysis Volume [veh/h]	91	0	0	0	0	96	21	300	25	0	951	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	72	0	0	72	0	0	18	0	0	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	75	75	75	75	75	75
g / C, Green / Cycle	0.07	0.07	0.84	0.84	0.84	0.84	0.84	0.84
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.01	0.09	0.09	0.00	0.26	0.26
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	205	165	1350	1507	1507	1424	1507	1507
d1, Uniform Delay [s]	40.77	40.90	1.20	1.31	1.30	0.00	1.61	1.61
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.50	3.22	0.02	0.15	0.14	0.00	0.55	0.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.58	0.02	0.11	0.11	0.00	0.32	0.32
d, Delay for Lane Group [s/veh]	42.28	44.12	1.22	1.45	1.45	0.00	2.16	2.16
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.03	2.21	0.02	0.15	0.15	0.00	0.55	0.55
50th-Percentile Queue Length [ft/ln]	50.87	55.26	0.46	3.73	3.66	0.00	13.66	13.66
95th-Percentile Queue Length [veh/ln]	3.66	3.98	0.03	0.27	0.26	0.00	0.98	0.98
95th-Percentile Queue Length [ft/ln]	91.56	99.46	0.82	6.71	6.59	0.00	24.58	24.58

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.28	42.28	42.28	44.12	44.12	44.12	1.22	1.45	1.45	0.00	2.16	2.16
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	42.28			44.12			1.44			2.16		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	7.17											
Intersection LOS	A											
Intersection V/C	0.352											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	4.8
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.280

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	47	53	687	81	0	367	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	47	53	687	81	0	367	5
Peak Hour Factor	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860	0.9860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	12	13	174	21	0	93	1
Total Analysis Volume [veh/h]	59	0	0	1	0	48	54	697	82	0	372	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	61	0	0	61	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	77	77	77	77	77	77
g / C, Green / Cycle	0.05	0.05	0.86	0.86	0.86	0.86	0.86	0.86
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.03	0.22	0.21	0.00	0.10	0.10
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	169	130	1460	1546	1546	1418	1546	1546
d1, Uniform Delay [s]	41.82	41.57	0.93	1.15	1.14	0.00	1.00	1.00
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.23	1.80	0.05	0.40	0.38	0.00	0.16	0.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

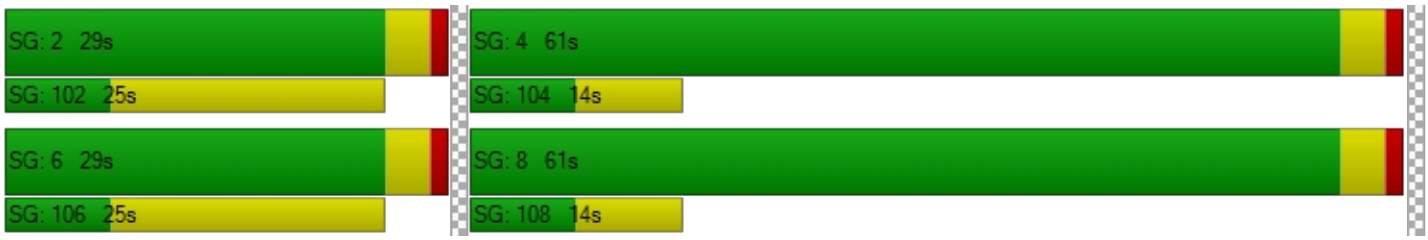
X, volume / capacity	0.35	0.38	0.04	0.26	0.25	0.00	0.12	0.12
d, Delay for Lane Group [s/veh]	43.05	43.37	0.98	1.55	1.52	0.00	1.17	1.17
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.33	1.11	0.02	0.17	0.16	0.00	0.07	0.07
50th-Percentile Queue Length [ft/ln]	33.23	27.87	0.48	4.31	4.11	0.00	1.74	1.73
95th-Percentile Queue Length [veh/ln]	2.39	2.01	0.03	0.31	0.30	0.00	0.13	0.12
95th-Percentile Queue Length [ft/ln]	59.82	50.16	0.86	7.76	7.39	0.00	3.13	3.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.05	43.05	43.05	43.37	43.37	43.37	0.98	1.54	1.52	0.00	1.17	1.17
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	43.05			43.37			1.50			1.17		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	4.82											
Intersection LOS	A											
Intersection V/C	0.280											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX J-III

YEAR 2019 WITH PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	167.0
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.978

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	99	21	453	24	0	1315	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	99	21	453	24	0	1315	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	26	6	119	6	0	346	0
Total Analysis Volume [veh/h]	93	0	0	0	0	104	22	477	25	0	1384	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.98	0.00	0.00	0.00	0.00	0.27	0.04	0.00	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	166.98	185.63	133.94	67.38	65.92	17.71	12.68	0.00	0.00	8.40	0.00	0.00
Movement LOS	F	F	F	F	F	C	B	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	5.77	5.77	5.77	1.07	1.07	1.07	0.14	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	144.37	144.37	144.37	26.81	26.81	26.81	3.51	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	166.98			17.71			0.53			0.00		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	8.38											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 10: Project Dwy 2 at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	9.7
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	0	2	448	5	1	1315
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2	448	5	1	1315
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	118	1	0	346
Total Analysis Volume [veh/h]	0	2	472	5	1	1384
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.00	0.01
d_M, Delay for Movement [s/veh]	0.00	9.73	0.00	0.00	8.33	0.00
Movement LOS		A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.01	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.20	0.00	0.00	0.07	0.00
d_A, Approach Delay [s/veh]	9.73		0.00		0.01	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.01					
Intersection LOS	A					

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	301.7
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.160

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	50	56	1130	81	0	654	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	50	56	1130	81	0	654	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	13	15	297	21	0	172	1
Total Analysis Volume [veh/h]	61	0	0	1	0	53	59	1189	85	0	688	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	1.16	0.00	0.00	0.01	0.00	0.08	0.07	0.01	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	301.68	302.48	241.82	43.71	79.00	11.17	9.29	0.00	0.00	11.66	0.00	0.00
Movement LOS	F	F	F	E	F	B	A	A	A	B	A	A
95th-Percentile Queue Length [veh/ln]	5.34	5.34	5.34	0.30	0.30	0.30	0.21	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	133.40	133.40	133.40	7.58	7.58	7.58	5.26	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	301.68			11.77			0.41			0.00		
Approach LOS	F			B			A			A		
d_I, Intersection Delay [s/veh]	9.15											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 10: Project Dwy 2 at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	13.1
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.004

Intersection Setup

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	0	2	1113	18	3	659
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2	1113	18	3	659
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	293	5	1	173
Total Analysis Volume [veh/h]	0	2	1172	19	3	694
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	0.00	13.09	0.00	0.00	11.22	0.00
Movement LOS		B	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.01	0.00	0.00	0.02	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.34	0.00	0.00	0.39	0.00
d_A, Approach Delay [s/veh]	13.09		0.00		0.05	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.03					
Intersection LOS	B					

APPENDIX J-IV

YEAR 2019 WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	6.5
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.489

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	99	21	453	24	0	1315	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	99	21	453	24	0	1315	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	26	6	119	6	0	346	0
Total Analysis Volume [veh/h]	93	0	0	0	0	104	22	477	25	0	1384	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	72	0	0	72	0	0	18	0	0	18	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	75	75	75	75	75	75
g / C, Green / Cycle	0.08	0.08	0.83	0.83	0.83	0.83	0.83	0.83
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.01	0.14	0.14	0.00	0.38	0.38
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	215	175	1260	1497	1497	1394	1497	1497
d1, Uniform Delay [s]	40.32	40.60	1.29	1.48	1.48	0.00	2.07	2.07
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.38	3.22	0.03	0.24	0.24	0.00	1.03	1.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.60	0.02	0.17	0.17	0.00	0.46	0.46
d, Delay for Lane Group [s/veh]	41.70	43.82	1.31	1.72	1.72	0.00	3.09	3.09
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.06	2.39	0.02	0.29	0.28	0.00	1.14	1.14
50th-Percentile Queue Length [ft/ln]	51.56	59.65	0.57	7.19	7.07	0.00	28.47	28.47
95th-Percentile Queue Length [veh/ln]	3.71	4.29	0.04	0.52	0.51	0.00	2.05	2.05
95th-Percentile Queue Length [ft/ln]	92.81	107.37	1.03	12.94	12.73	0.00	51.25	51.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	41.70	41.70	41.70	43.82	43.82	43.82	1.31	1.72	1.72	0.00	3.09	3.09
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	41.70			43.82			1.70			3.09		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	6.47											
Intersection LOS	A											
Intersection V/C	0.489											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	4.2
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.432

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	50	56	1130	81	0	654	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	50	56	1130	81	0	654	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	13	15	297	21	0	172	1
Total Analysis Volume [veh/h]	61	0	0	1	0	53	59	1189	85	0	688	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	61	0	0	61	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	77	77	77	77	77	77
g / C, Green / Cycle	0.05	0.05	0.86	0.86	0.86	0.86	0.86	0.86
(v / s)_i Volume / Saturation Flow Rate	0.04	0.03	0.03	0.36	0.35	0.00	0.19	0.19
s, saturation flow rate [veh/h]	1700	1700	1700	1800	1800	1700	1800	1800
c, Capacity [veh/h]	170	131	1428	1544	1544	1347	1544	1544
d1, Uniform Delay [s]	41.80	41.63	0.94	1.41	1.40	0.00	1.12	1.12
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.27	2.06	0.05	0.83	0.80	0.00	0.34	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

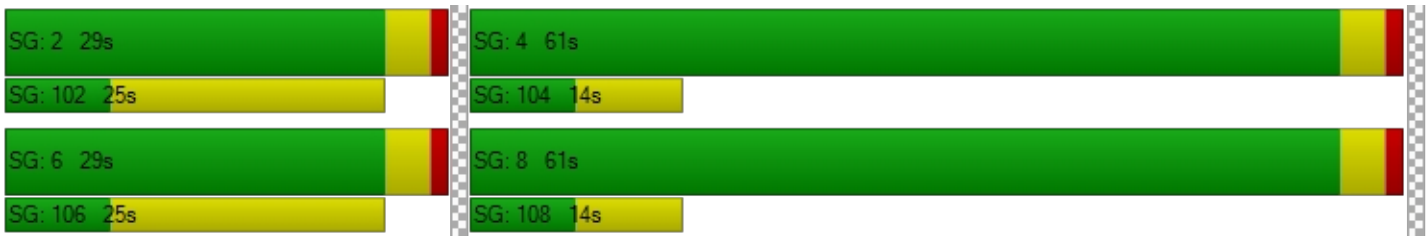
X, volume / capacity	0.36	0.41	0.04	0.42	0.41	0.00	0.22	0.22
d, Delay for Lane Group [s/veh]	43.07	43.69	1.00	2.24	2.20	0.00	1.46	1.46
Lane Group LOS	D	D	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.38	1.23	0.02	0.36	0.34	0.00	0.14	0.14
50th-Percentile Queue Length [ft/ln]	34.38	30.86	0.54	8.90	8.60	0.00	3.62	3.61
95th-Percentile Queue Length [veh/ln]	2.48	2.22	0.04	0.64	0.62	0.00	0.26	0.26
95th-Percentile Queue Length [ft/ln]	61.89	55.55	0.97	16.02	15.48	0.00	6.51	6.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	43.07	43.07	43.07	43.69	43.69	43.69	1.00	2.22	2.20	0.00	1.46	1.46
Movement LOS	D	D	D	D	D	D	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	43.07			43.69			2.17			1.46		
Approach LOS	D			D			A			A		
d_I, Intersection Delay [s/veh]	4.15											
Intersection LOS	A											
Intersection V/C	0.432											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX J-V

YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	1,788.9
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	4.186

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	99	21	750	24	0	1967	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	99	21	750	24	0	1967	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	26	6	197	6	0	518	0
Total Analysis Volume [veh/h]	93	0	0	0	0	104	22	789	25	0	2071	0
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	4.19	0.00	0.00	0.00	0.00	0.45	0.08	0.01	0.00	0.00	0.02	0.00
d_M, Delay for Movement [s/veh]	1788.91	1885.69	1632.94	285.90	281.28	33.24	19.79	0.00	0.00	9.45	0.00	0.00
Movement LOS	F	F	F	F	F	D	C	A	A	A	A	A
95th-Percentile Queue Length [veh/ln]	11.80	11.80	11.80	2.19	2.19	2.19	0.27	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	295.07	295.07	295.07	54.84	54.84	54.84	6.72	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	1788.91			33.24			0.52			0.00		
Approach LOS	F			D			A			A		
d_I, Intersection Delay [s/veh]	54.85											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 10: Project Dwy 2 at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	11.0
Analysis Method:	HCM 2010	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.003

Intersection Setup

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	0	2	745	5	1	1967
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2	745	5	1	1967
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	196	1	0	518
Total Analysis Volume [veh/h]	0	2	784	5	1	2071
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.01	0.00	0.00	0.02
d_M, Delay for Movement [s/veh]	0.00	10.97	0.00	0.00	9.36	0.00
Movement LOS		B	A	A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.01	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.25	0.00	0.00	0.09	0.00
d_A, Approach Delay [s/veh]	10.97		0.00		0.00	
Approach LOS	B		A		A	
d_I, Intersection Delay [s/veh]	0.01					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	5,317.5
Analysis Method:	HCM 2010	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	10.175

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			No			No			No		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	50	56	1982	81	0	1188	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	50	56	1982	81	0	1188	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	13	15	522	21	0	313	1
Total Analysis Volume [veh/h]	61	0	0	1	0	53	59	2086	85	0	1251	5
Pedestrian Volume [ped/h]	0			0			0			0		

Intersection Settings

Priority Scheme	Stop	Stop	Free	Free
Flared Lane	No	No		
Storage Area [veh]	0	0	0	0
Two-Stage Gap Acceptance	No	No		
Number of Storage Spaces in Median	0	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	10.17	0.00	0.00	0.06	0.00	0.12	0.11	0.02	0.00	0.00	0.01	0.00
d_M, Delay for Movement [s/veh]	5317.53	5371.43	4734.06	239.08	704.27	16.36	12.34	0.00	0.00	19.86	0.00	0.00
Movement LOS	F	F	F	F	F	C	B	A	A	C	A	A
95th-Percentile Queue Length [veh/ln]	9.33	9.33	9.33	0.68	0.68	0.68	0.36	0.00	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	233.20	233.20	233.20	17.05	17.05	17.05	8.97	0.00	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	5317.53			20.48			0.33			0.00		
Approach LOS	F			C			A			A		
d_I, Intersection Delay [s/veh]	90.59											
Intersection LOS	F											

Intersection Level Of Service Report
Intersection 10: Project Dwy 2 at Greenspot Road

Control Type:	Two-way stop	Delay (sec / veh):	21.1
Analysis Method:	HCM 2010	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.009

Intersection Setup

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Approach	Northbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Thru	Right	Left	Thru
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00		45.00		45.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		No	

Volumes

Name	Project Dwy 2		Greenspot Road		Greenspot Road	
Base Volume Input [veh/h]	0	2	1965	18	3	1193
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00
Growth Rate	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	2	1965	18	3	1193
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	1	517	5	1	314
Total Analysis Volume [veh/h]	0	2	2068	19	3	1256
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.02	0.00	0.01	0.01
d_M, Delay for Movement [s/veh]	0.00	21.08	0.00	0.00	18.92	0.00
Movement LOS		C	A	A	C	A
95th-Percentile Queue Length [veh/ln]	0.00	0.03	0.00	0.00	0.03	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.67	0.00	0.00	0.87	0.00
d_A, Approach Delay [s/veh]	21.08		0.00		0.05	
Approach LOS	C		A		A	
d_I, Intersection Delay [s/veh]	0.03					
Intersection LOS	C					

APPENDIX J-VI

YEAR 2040 WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	7.0
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	88	0	0	0	0	99	21	750	24	0	1967	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	88	0	0	0	0	99	21	750	24	0	1967	0
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	0	0	0	0	26	6	197	6	0	518	0
Total Analysis Volume [veh/h]	93	0	0	0	0	104	22	789	25	0	2071	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	86	0	0	86	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	99	99	99	99	99	99
g / C, Green / Cycle	0.07	0.07	0.86	0.86	0.86	0.86	0.86	0.86
(v / s)_i Volume / Saturation Flow Rate	0.05	0.06	0.01	0.22	0.21	0.00	0.55	0.55
s, saturation flow rate [veh/h]	1800	1800	1800	1900	1900	1800	1900	1900
c, Capacity [veh/h]	194	163	1248	1629	1629	1491	1629	1629
d1, Uniform Delay [s]	52.01	52.35	1.18	1.49	1.49	0.00	2.57	2.57
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.82	4.11	0.03	0.37	0.37	0.00	1.91	1.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.64	0.02	0.25	0.25	0.00	0.64	0.64
d, Delay for Lane Group [s/veh]	53.83	56.45	1.21	1.86	1.85	0.00	4.48	4.48
Lane Group LOS	D	E	A	A	A	A	A	A
Critical Lane Group	No	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.72	3.13	0.03	0.68	0.67	0.00	3.12	3.12
50th-Percentile Queue Length [ft/ln]	67.93	78.33	0.78	17.09	16.86	0.00	77.89	77.89
95th-Percentile Queue Length [veh/ln]	4.89	5.64	0.06	1.23	1.21	0.00	5.61	5.61
95th-Percentile Queue Length [ft/ln]	122.27	141.00	1.40	30.77	30.35	0.00	140.20	140.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.83	53.83	53.83	56.45	56.45	56.45	1.21	1.86	1.85	0.00	4.48	4.48
Movement LOS	D	D	D	E	E	E	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	53.83			56.45			1.84			4.48		
Approach LOS	D			E			A			A		
d_I, Intersection Delay [s/veh]	6.99											
Intersection LOS	A											
Intersection V/C	0.648											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 9: Gold Buckle Road at Greenspot Road

Control Type:	Signalized	Delay (sec / veh):	4.7
Analysis Method:	HCM 2010	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			45.00			45.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Gold Buckle Road			Gold Buckle Road			Greenspot Road			Greenspot Road		
Base Volume Input [veh/h]	58	0	0	1	0	50	56	1982	81	0	1188	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	0	0	1	0	50	56	1982	81	0	1188	5
Peak Hour Factor	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500	0.9500
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	0	0	0	0	13	15	522	21	0	313	1
Total Analysis Volume [veh/h]	61	0	0	1	0	53	59	2086	85	0	1251	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal group	0	2	0	0	6	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	0	6	0	0	6	0	0	6	0	0	6	0
Maximum Green [s]	0	30	0	0	30	0	0	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	29	0	0	29	0	0	91	0	0	91	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	18	0	0	18	0	0	7	0	0	7	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No			No			No			No	
Maximum Recall		No			No			No			No	
Pedestrian Recall		No			No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	2.00	0.00	0.00	2.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	107	107	107	107	107	107
g / C, Green / Cycle	0.04	0.04	0.89	0.89	0.89	0.89	0.89	0.89
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.03	0.57	0.57	0.00	0.33	0.33
s, saturation flow rate [veh/h]	1800	1800	1800	1900	1900	1800	1900	1900
c, Capacity [veh/h]	140	110	1521	1689	1689	1349	1689	1689
d1, Uniform Delay [s]	56.69	56.46	0.76	1.72	1.72	0.00	1.10	1.10
k, delay calibration	0.11	0.11	0.50	0.50	0.50	0.50	0.50	0.50
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.14	3.35	0.05	1.89	1.89	0.00	0.63	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.49	0.04	0.64	0.64	0.00	0.37	0.37
d, Delay for Lane Group [s/veh]	58.83	59.81	0.81	3.61	3.61	0.00	1.73	1.73
Lane Group LOS	E	E	A	A	A	A	A	A
Critical Lane Group	Yes	No	No	Yes	No	No	No	No
50th-Percentile Queue Length [veh/ln]	1.91	1.71	0.03	1.21	1.21	0.00	0.41	0.41
50th-Percentile Queue Length [ft/ln]	47.80	42.87	0.70	30.22	30.22	0.00	10.36	10.34
95th-Percentile Queue Length [veh/ln]	3.44	3.09	0.05	2.18	2.18	0.00	0.75	0.74
95th-Percentile Queue Length [ft/ln]	86.04	77.17	1.26	54.40	54.40	0.00	18.64	18.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.83	58.83	58.83	59.81	59.81	59.81	0.81	3.61	3.61	0.00	1.73	1.73
Movement LOS	E	E	E	E	E	E	A	A	A	A	A	A
d_A, Approach Delay [s/veh]	58.83			59.81			3.54			1.73		
Approach LOS	E			E			A			A		
d_I, Intersection Delay [s/veh]	4.69											
Intersection LOS	A											
Intersection V/C	0.648											

Sequence

Ring 1	2	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

APPENDIX K

EXISTING TRAFFIC CONDITIONS
BASIC FREEWAY SEGMENTS
LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX K-I

EXISTING TRAFFIC CONDITIONS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*AB*
Agency or Company	*LLG*
Date Performed	*2/14/17*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-210 Westbound*
From/To	*South of 5th St/Greenspot Rd*
Jurisdiction	
Analysis Year	*Existing*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3296*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1752*	pc/h/ln
S	*63.2*	mph
D = v_p / S	*27.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2974*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1581*	pc/h/ln
S	*64.5*	mph
D = v_p / S	*24.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3164*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*2*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1682*	pc/h/ln	Design LOS		
S	*63.9*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
D = v_p / S	*26.3*	pc/mi/ln	S		mph
LOS	*D*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4108*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*2*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*2*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2184*	pc/h/ln	Design LOS		
S	*56.3*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
D = v_p / S	*38.8*	pc/mi/ln	S		mph
LOS	*E*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3738*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1987*	pc/h/ln
S	*60.1*	mph
D = v_p / S	*33.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3613*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*2*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1921*	pc/h/ln
S	*61.2*	mph
D = v_p / S	*31.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3205*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*2*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1704*	pc/h/ln	Design LOS	
S	*63.7*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	*26.8*	pc/mi/ln	S	mph
LOS	*D*		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3549*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*2*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1887*	pc/h/ln	Design LOS	
S	*61.6*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	*30.6*	pc/mi/ln	S	mph
LOS	*D*		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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APPENDIX K-II

EXISTING WITH PROJECT TRAFFIC CONDITIONS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3311*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*2*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1760*	pc/h/ln	Design LOS	
S	*63.2*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	*27.9*	pc/mi/ln	S	mph
LOS	*D*		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*2998*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1594*	pc/h/ln
S	*64.5*	mph
D = v_p / S	*24.7*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Existing + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3172*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1686*	pc/h/ln
S	*63.8*	mph
D = v_p / S	*26.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Eastbound
Agency or Company	LLG	From/To	South of 5th St/Greenspot Rd
Date Performed	2/14/17	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4154	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	2	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	2		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2208	pc/h/ln	Design LOS	
S	55.7	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	39.6	pc/mi/ln	S	mph
LOS	E		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3789*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2014*	pc/h/ln
S	*59.7*	mph
D = v_p / S	*33.8*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3629*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*2*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1929*	pc/h/ln	Design LOS		
S	*61.0*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
D = v_p / S	*31.6*	pc/mi/ln	S		mph
LOS	*D*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*2/14/17*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Existing + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3232*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1718*	pc/h/ln
S	*63.6*	mph
D = v_p / S	*27.0*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Eastbound
Agency or Company	LLG	From/To	South of 5th St/Greenspot Rd
Date Performed	2/14/17	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Existing + Project

Project Description: 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	3579	veh/h	Peak-Hour Factor, PHF	0.95	
AADT		veh/day	%Trucks and Buses, P_T	2	
Peak-Hr Prop. of AADT, K			%RVs, P_R	0	
Peak-Hr Direction Prop, D			General Terrain:	Level	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi	

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	2		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1903	pc/h/ln	Design LOS	
S	61.4	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	31.0	pc/mi/ln	S	mph
LOS	D		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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APPENDIX K-III

EXISTING WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

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APPENDIX L

EXISTING TRAFFIC CONDITIONS
FREEWAY MERGE AND DIVERGE SEGMENTS
LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX L-I

EXISTING TRAFFIC CONDITIONS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	2/16/17	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Existing

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	150	L_{down} =	2080 ft
V_u =	veh/h	Freeway Volume, V_F	3296	V_D =	382 veh/h
		Ramp Volume, V_R	704		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3296	0.95	Level	2	0	0.990	1.00	3504
Ramp	704	0.95	Level	2	0	0.990	1.00	748
UpStream								
DownStream	382	0.95	Level	2	0	0.990	1.00	406

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3504 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3504	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	2756	Exhibit 13-8	4700	No
V_R	748	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3504	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 33.0 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.495 (Exhibit 13-12)

S_R = 53.6 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 53.6 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	2/16/37	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Existing

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 2	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2080 ft	Acceleration Lane Length, L_A: 800	L_{down} = ft
V_u = 704 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2592	
	Ramp Volume, V_R: 382	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2592	0.95	Level	2	0	0.990	1.00	2756
Ramp	382	0.95	Level	2	0	0.990	1.00	406
UpStream	704	0.95	Level	2	0	0.990	1.00	748
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 2756 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3162	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3162	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 24.9 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.357 (Exibit 13-11)

S_R = 56.8 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 56.8 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	2/16/17	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Existing

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 220	V_D = 1199 veh/h
	Freeway Volume, V_F: 3164	
	Ramp Volume, V_R: 255	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3164	0.95	Level	2	0	0.990	1.00	3364
Ramp	255	0.95	Level	2	0	0.990	1.00	271
UpStream								
DownStream	1199	0.95	Level	2	0	0.990	1.00	1275

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3364 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3364	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3093	Exhibit 13-8	4700	No
V_R	271	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3364	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 31.2 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.452 (Exhibit 13-12)

S_R = 54.6 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 54.6 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	2/16/37	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Existing

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 2	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2040 ft	Acceleration Lane Length, L_A: 600	L_{down} = ft
V_u = 255 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2909	
	Ramp Volume, V_R: 1199	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2909	0.95	Level	2	0	0.990	1.00	3093
Ramp	1199	0.95	Level	2	0	0.990	1.00	1275
UpStream	255	0.95	Level	2	0	0.990	1.00	271
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 3093 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4368	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4368	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 35.2 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

M_S = 0.587 (Exibit 13-11)

S_R = 51.5 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 51.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	2/16/17	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Existing

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2080 ft
V_u = veh/h	Deceleration Lane Length L_D: 150	V_D = 533 veh/h
	Freeway Volume, V_F: 3738	
	Ramp Volume, V_R: 658	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3738	0.95	Level	2	0	0.990	1.00	3974
Ramp	658	0.95	Level	2	0	0.990	1.00	700
UpStream								
DownStream	533	0.95	Level	2	0	0.990	1.00	567

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3974 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3974	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3274	Exhibit 13-8	4700	No
V_R	700	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3974	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 37.1 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

D_s = 0.491 (Exhibit 13-12)

S_R = 53.7 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 53.7 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	2/16/37	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Existing

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 2	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2080 ft	Acceleration Lane Length, L_A: 800	L_{down} = ft
V_u = 658 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3080	
	Ramp Volume, V_R: 533	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3080	0.95	Level	2	0	0.990	1.00	3275
Ramp	533	0.95	Level	2	0	0.990	1.00	567
UpStream	658	0.95	Level	2	0	0.990	1.00	700
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 3275 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3842	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3842	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 30.2 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.447 (Exibit 13-11)

S_R = 54.7 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 54.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	2/16/17	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Existing

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	220
Freeway Volume, V_F	3205
Ramp Volume, V_R	500
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp: ☑ Yes ☑ On ☐ No ☐ Off; L_{down} = 2040 ft; V_D = 844 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3205	0.95	Level	2	0	0.990	1.00	3407
Ramp	500	0.95	Level	2	0	0.990	1.00	532
UpStream								
DownStream	844	0.95	Level	2	0	0.990	1.00	897

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3407 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3407	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	2875	Exhibit 13-8	4700	No
V_R	532	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3407	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 31.6 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.476 (Exhibit 13-12)

S_R = 54.1 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 54.1 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	2/16/37	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Existing

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp: ☑ Yes ☐ On ☐ No ☑ Off; L_{up} = 2040 ft; V_u = 500 veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	600
Deceleration Lane Length L_D	
Freeway Volume, V_F	2705
Ramp Volume, V_R	844
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{down} = ft; V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2705	0.95	Level	2	0	0.990	1.00	2876
Ramp	844	0.95	Level	2	0	0.990	1.00	897
UpStream	500	0.95	Level	2	0	0.990	1.00	532
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 2876 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3773	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3773	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 30.7 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.449 (Exibit 13-11)

S_R = 54.7 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 54.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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APPENDIX L-II

EXISTING WITH PROJECT TRAFFIC CONDITIONS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	2/16/17	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	150
Freeway Volume, V_F	3311
Ramp Volume, V_R	719
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2080 ft
V_D = 406 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3311	0.95	Level	2	0	0.990	1.00	3520
Ramp	719	0.95	Level	2	0	0.990	1.00	764
UpStream								
DownStream	406	0.95	Level	2	0	0.990	1.00	432

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R = mph (Exhibit 13-11)
S_0 = mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 1.000 using Equation (Exhibit 13-7)
V_{12} = 3520 pc/h
V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3520	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	2756	Exhibit 13-8	4700	No
V_R	764	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3520	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 33.2 (pc/mi/ln)
LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.497 (Exhibit 13-12)
S_R = 53.6 mph (Exhibit 13-12)
S_0 = N/A mph (Exhibit 13-12)
S = 53.6 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	2/16/37	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2080 ft
V_u = 719 veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	800
Deceleration Lane Length L_D	
Freeway Volume, V_F	2592
Ramp Volume, V_R	406
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2592	0.95	Level	2	0	0.990	1.00	2756
Ramp	406	0.95	Level	2	0	0.990	1.00	432
UpStream	719	0.95	Level	2	0	0.990	1.00	764
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = 1.000 using Equation (Exhibit 13-6)
V_{12} = 2756 pc/h
V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3188	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3188	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 25.1 (pc/mi/ln)
LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.360 (Exibit 13-11)
S_R = 56.7 mph (Exhibit 13-11)
S_0 = N/A mph (Exhibit 13-11)
S = 56.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = using Equation (Exhibit 13-7)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)
S_R = mph (Exhibit 13-12)
S_0 = mph (Exhibit 13-12)
S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	2/16/17	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 220	V_D = 1245 veh/h
	Freeway Volume, V_F: 3172	
	Ramp Volume, V_R: 263	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3172	0.95	Level	2	0	0.990	1.00	3372
Ramp	263	0.95	Level	2	0	0.990	1.00	280
UpStream								
DownStream	1245	0.95	Level	2	0	0.990	1.00	1324

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3372 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3372	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3092	Exhibit 13-8	4700	No
V_R	280	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3372	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 31.3 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.453 (Exhibit 13-12)

S_R = 54.6 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 54.6 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	2/16/37	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Existing + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	600	☑ No	☐ Off
L_{up} =	2040 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	263 veh/h	Freeway Volume, V_F	2909	V_D =	veh/h
		Ramp Volume, V_R	1245		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2909	0.95	Level	2	0	0.990	1.00	3093
Ramp	1245	0.95	Level	2	0	0.990	1.00	1324
UpStream	263	0.95	Level	2	0	0.990	1.00	280
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 3093 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4417	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4417	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 35.6 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

M_S = 0.602 (Exibit 13-11)

S_R = 51.2 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 51.2 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	2/16/17	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Existing + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2080 ft
V_u = veh/h	Deceleration Lane Length L_D: 150	V_D = 549 veh/h
	Freeway Volume, V_F: 3789	
	Ramp Volume, V_R: 709	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3789	0.95	Level	2	0	0.990	1.00	4028
Ramp	709	0.95	Level	2	0	0.990	1.00	754
UpStream								
DownStream	549	0.95	Level	2	0	0.990	1.00	584

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 4028 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4028	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3274	Exhibit 13-8	4700	No
V_R	754	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4028	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 37.5 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

D_s = 0.496 (Exhibit 13-12)

S_R = 53.6 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 53.6 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	2/16/37	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Existing + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2080 ft
V_u = 709 veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	800
Deceleration Lane Length L_D	
Freeway Volume, V_F	3080
Ramp Volume, V_R	549
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3080	0.95	Level	2	0	0.990	1.00	3275
Ramp	549	0.95	Level	2	0	0.990	1.00	584
UpStream	709	0.95	Level	2	0	0.990	1.00	754
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = 1.000 using Equation (Exhibit 13-6)
V_{12} = 3275 pc/h
V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3859	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3859	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 30.3 (pc/mi/ln)
LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.450 (Exibit 13-11)
S_R = 54.7 mph (Exhibit 13-11)
S_0 = N/A mph (Exhibit 13-11)
S = 54.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = using Equation (Exhibit 13-7)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)
S_R = mph (Exhibit 13-12)
S_0 = mph (Exhibit 13-12)
S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	2/16/17	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Existing + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 220	V_D = 874 veh/h
	Freeway Volume, V_F: 3232	
	Ramp Volume, V_R: 527	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3232	0.95	Level	2	0	0.990	1.00	3436
Ramp	527	0.95	Level	2	0	0.990	1.00	560
UpStream								
DownStream	874	0.95	Level	2	0	0.990	1.00	929

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3436 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3436	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	2876	Exhibit 13-8	4700	No
V_R	560	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3436	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 31.8 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.478 (Exhibit 13-12)

S_R = 54.0 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 54.0 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	2/16/37	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Existing + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 2	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2040 ft	Acceleration Lane Length, L_A: 600	L_{down} = ft
V_u = 527 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2705	
	Ramp Volume, V_R: 874	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2705	0.95	Level	2	0	0.990	1.00	2876
Ramp	874	0.95	Level	2	0	0.990	1.00	929
UpStream	527	0.95	Level	2	0	0.990	1.00	560
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 2876 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3805	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3805	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 31.0 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.454 (Exibit 13-11)

S_R = 54.6 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 54.6 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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APPENDIX L-III

EXISTING WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

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APPENDIX M

YEAR 2019 TRAFFIC CONDITIONS
BASIC FREEWAY SEGMENTS
LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX M-I

YEAR 2019 WITHOUT PROJECT TRAFFIC CONDITIONS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*AB*
Agency or Company	*LLG*
Date Performed	
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-210 Westbound*
From/To	*South of 5th St/Greenspot Rd*
Jurisdiction	
Analysis Year	*Year 2019*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3609*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1918*	pc/h/ln
S	*61.2*	mph
D = v_p / S	*31.3*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2019*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3363*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1788*	pc/h/ln
S	*62.9*	mph
D = v_p / S	*28.4*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Eastbound
Agency or Company	LLG	From/To	North of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019

Project Description: 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	3464	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	2		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1841	pc/h/ln	Design LOS	
S	62.2	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	29.6	pc/mi/ln	S	mph
LOS	D		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2019*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4551*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2419*	pc/h/ln
S	*50.3*	mph
D = v_p / S	*48.1*	pc/mi/ln
LOS	*F*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Westbound
Agency or Company	LLG	From/To	South of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4201	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	2		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2233	pc/h/ln	Design LOS	
S	55.2	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	40.5	pc/mi/ln	S	mph
LOS	E		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2019*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4003*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2128*	pc/h/ln
S	*57.5*	mph
D = v_p / S	*37.0*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Eastbound
Agency or Company	LLG	From/To	North of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019

Project Description: 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	3642	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	2	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	65.0	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	65.0	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1936	pc/h/ln
S	60.9	mph
D = v_p / S	31.8	pc/mi/ln
LOS	D	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2019*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3937*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2093*	pc/h/ln
S	*58.2*	mph
D = v_p / S	*36.0*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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APPENDIX M-II

YEAR 2019 WITH PROJECT TRAFFIC CONDITIONS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Westbound
Agency or Company	LLG	From/To	South of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019 + Project

Project Description: 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	3624	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	2		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1926	pc/h/ln	Design LOS	
S	61.1	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	31.5	pc/mi/ln	S	mph
LOS	D		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2019 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3387*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1800*	pc/h/ln
S	*62.7*	mph
D = v_p / S	*28.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2019 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3472*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1846*	pc/h/ln
S	*62.2*	mph
D = v_p / S	*29.7*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2019 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4597*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*2*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2444*	pc/h/ln	Design LOS	
S	*49.5*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	*49.3*	pc/mi/ln	S	mph
LOS	*F*		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2019 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4252*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2260*	pc/h/ln
S	*54.5*	mph
D = v_p / S	*41.5*	pc/mi/ln
LOS	*E*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Westbound
Agency or Company	LLG	From/To	North of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4019	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	2	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	65.0	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	65.0	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	2136	pc/h/ln
S	57.3	mph
D = v_p / S	37.3	pc/mi/ln
LOS	E	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2019 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3669*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*2*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1950*	pc/h/ln
S	*60.7*	mph
D = v_p / S	*32.1*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2019 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3967*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*2*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*2109*	pc/h/ln	Design LOS		
			v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S	*57.9*	mph	S		mph
D = v_p / S	*36.4*	pc/mi/ln	D = v_p / S		pc/mi/ln
LOS	*E*		Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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APPENDIX M-III

YEAR 2019 WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2019 + Project [MIT]*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3624*	veh/h	Peak-Hour Factor, PHF	*0.95*	
AADT		veh/day	%Trucks and Buses, P_T	*2*	
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*	
Peak-Hr Direction Prop, D			General Terrain:	*Level*	
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*	

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1284*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*19.8*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2019 + Project [MIT]*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3387*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1200*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*18.5*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2019 + Project [MIT]*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3472*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1230*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*18.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2019 + Project [MIT]*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4597*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1629*	pc/h/ln	Design LOS		
S	*64.3*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
D = v_p / S	*25.4*	pc/mi/ln	S		mph
LOS	*C*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Westbound
Agency or Company	LLG	From/To	South of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4252	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	3	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	65.0	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	65.0	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1507	pc/h/ln
S	64.8	mph
D = v_p / S	23.2	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2019 + Project [MIT]*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4019*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1424*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*21.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2019 + Project [MIT]*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*3669*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1300*	pc/h/ln	Design LOS	
S	*65.0*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	*20.0*	pc/mi/ln	S	mph
LOS	*C*		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Eastbound
Agency or Company	LLG	From/To	South of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	3967	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	3		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1406	pc/h/ln	Design LOS		
S	65.0	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
D = v_p / S	21.6	pc/mi/ln	S		mph
LOS	C		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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APPENDIX N

YEAR 2019 TRAFFIC CONDITIONS
FREEWAY MERGE AND DIVERGE SEGMENTS
LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX N-I

YEAR 2019 WITHOUT PROJECT TRAFFIC CONDITIONS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2080 ft
V_u = veh/h	Deceleration Lane Length L_D: 150	V_D = 611 veh/h
	Freeway Volume, V_F: 3609	
	Ramp Volume, V_R: 857	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3609	0.95	Level	2	0	0.990	1.00	3837
Ramp	857	0.95	Level	2	0	0.990	1.00	911
UpStream								
DownStream	611	0.95	Level	2	0	0.990	1.00	650

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3837 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3837	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	2926	Exhibit 13-8	4700	No
V_R	911	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3837	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = 35.9 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

D_s = 0.510 (Exhibit 13-12)

S_R = 53.3 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 53.3 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp
☑ Yes ☐ On
☐ No ☑ Off
L_{up} = 2080 ft
V_u = 857 veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	800
Deceleration Lane Length L_D	
Freeway Volume, V_F	2752
Ramp Volume, V_R	611
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{down} = ft
V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2752	0.95	Level	2	0	0.990	1.00	2926
Ramp	611	0.95	Level	2	0	0.990	1.00	650
UpStream	857	0.95	Level	2	0	0.990	1.00	911
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = 1.000 using Equation (Exhibit 13-6)
V_{12} = 2926 pc/h
V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3576	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3576	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = 28.1 (pc/mi/ln)
LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.404 (Exibit 13-11)
S_R = 55.7 mph (Exhibit 13-11)
S_0 = N/A mph (Exhibit 13-11)
S = 55.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = using Equation (Exhibit 13-7)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)
S_R = mph (Exhibit 13-12)
S_0 = mph (Exhibit 13-12)
S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 220	V_D = 1466 veh/h
	Freeway Volume, V_F: 3464	
	Ramp Volume, V_R: 379	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3464	0.95	Level	2	0	0.990	1.00	3683
Ramp	379	0.95	Level	2	0	0.990	1.00	403
UpStream								
DownStream	1466	0.95	Level	2	0	0.990	1.00	1559

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3683 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3683	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3280	Exhibit 13-8	4700	No
V_R	403	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3683	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 33.9 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.464 (Exhibit 13-12)

S_R = 54.3 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 54.3 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	600	☑ No	☐ Off
L_{up} =	2040 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	379 veh/h	Freeway Volume, V_F	3085	V_D =	veh/h
		Ramp Volume, V_R	1466		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3085	0.95	Level	2	0	0.990	1.00	3280
Ramp	1466	0.95	Level	2	0	0.990	1.00	1559
UpStream	379	0.95	Level	2	0	0.990	1.00	403
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 3280 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4839	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4839	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 38.7 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

M_S = 0.772 (Exibit 13-11)

S_R = 47.3 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 47.3 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	150	L_{down} =	2080 ft
V_u =	veh/h	Freeway Volume, V_F	4201	V_D =	735 veh/h
		Ramp Volume, V_R	933		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4201	0.95	Level	2	0	0.990	1.00	4466
Ramp	933	0.95	Level	2	0	0.990	1.00	992
UpStream								
DownStream	735	0.95	Level	2	0	0.990	1.00	781

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 4466 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4466	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3474	Exhibit 13-8	4700	No
V_R	992	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4466	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 41.3 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

D_s = 0.517 (Exhibit 13-12)

S_R = 53.1 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 53.1 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 2	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2080 ft	Acceleration Lane Length, L_A: 800	L_{down} = ft
V_u = 933 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3268	
	Ramp Volume, V_R: 735	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3268	0.95	Level	2	0	0.990	1.00	3474
Ramp	735	0.95	Level	2	0	0.990	1.00	781
UpStream	933	0.95	Level	2	0	0.990	1.00	992
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 3474 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4255	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4255	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 33.3 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.540 (Exibit 13-11)

S_R = 52.6 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 52.6 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 220	V_D = 1064 veh/h
	Freeway Volume, V_F: 3642	
	Ramp Volume, V_R: 769	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3642	0.95	Level	2	0	0.990	1.00	3872
Ramp	769	0.95	Level	2	0	0.990	1.00	818
UpStream								
DownStream	1064	0.95	Level	2	0	0.990	1.00	1131

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3872 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3872	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3054	Exhibit 13-8	4700	No
V_R	818	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3872	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 35.6 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

D_s = 0.502 (Exhibit 13-12)

S_R = 53.5 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 53.5 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	600	☑ No	☐ Off
L_{up} =	2040 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	769 veh/h	Freeway Volume, V_F	2873	V_D =	veh/h
		Ramp Volume, V_R	1064		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2873	0.95	Level	2	0	0.990	1.00	3054
Ramp	1064	0.95	Level	2	0	0.990	1.00	1131
UpStream	769	0.95	Level	2	0	0.990	1.00	818
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 3054 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4185	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4185	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 33.8 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.535 (Exibit 13-11)

S_R = 52.7 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 52.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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APPENDIX N-II

YEAR 2019 WITH PROJECT TRAFFIC CONDITIONS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	150	L_{down} =	2080 ft
V_u =	veh/h	Freeway Volume, V_F	3624	V_D =	635 veh/h
		Ramp Volume, V_R	872		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3624	0.95	Level	2	0	0.990	1.00	3853
Ramp	872	0.95	Level	2	0	0.990	1.00	927
UpStream								
DownStream	635	0.95	Level	2	0	0.990	1.00	675

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3853 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3853	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	2926	Exhibit 13-8	4700	No
V_R	927	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3853	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 36.0 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

D_s = 0.511 (Exhibit 13-12)

S_R = 53.2 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 53.2 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	800	☑ No	☐ Off
L_{up} =	2080 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	872 veh/h	Freeway Volume, V_F	2752	V_D =	veh/h
		Ramp Volume, V_R	635		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2752	0.95	Level	2	0	0.990	1.00	2926
Ramp	635	0.95	Level	2	0	0.990	1.00	675
UpStream	872	0.95	Level	2	0	0.990	1.00	927
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 2926 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3601	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3601	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 28.2 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.408 (Exibit 13-11)

S_R = 55.6 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 55.6 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R) P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	220	L_{down} =	2040 ft
V_u =	veh/h	Freeway Volume, V_F	3472	V_D =	1512 veh/h
		Ramp Volume, V_R	387		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3472	0.95	Level	2	0	0.990	1.00	3691
Ramp	387	0.95	Level	2	0	0.990	1.00	411
UpStream								
DownStream	1512	0.95	Level	2	0	0.990	1.00	1607

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3691 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3691	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3280	Exhibit 13-8	4700	No
V_R	411	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3691	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 34.0 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.465 (Exhibit 13-12)

S_R = 54.3 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 54.3 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	600	☑ No	☐ Off
L_{up} =	2040 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	387 veh/h	Freeway Volume, V_F	3085	V_D =	veh/h
		Ramp Volume, V_R	1512		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3085	0.95	Level	2	0	0.990	1.00	3280
Ramp	1512	0.95	Level	2	0	0.990	1.00	1607
UpStream	387	0.95	Level	2	0	0.990	1.00	411
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 3280 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4887	Exhibit 13-8		Yes

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4887	Exhibit 13-8	4600:All	Yes

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 39.1 (pc/mi/ln)

LOS = F (Exhibit 13-2)

Speed Determination

M_S = 0.796 (Exibit 13-11)

S_R = 46.7 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 46.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2080 ft
V_u = veh/h	Deceleration Lane Length L_D: 150	V_D = 751 veh/h
	Freeway Volume, V_F: 4252	
	Ramp Volume, V_R: 984	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4252	0.95	Level	2	0	0.990	1.00	4521
Ramp	984	0.95	Level	2	0	0.990	1.00	1046
UpStream								
DownStream	751	0.95	Level	2	0	0.990	1.00	798

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 4521 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4521	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3475	Exhibit 13-8	4700	No
V_R	1046	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	4521	Exhibit 13-8	4400:All	Yes

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 41.8 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

D_s = 0.522 (Exhibit 13-12)

S_R = 53.0 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 53.0 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp: ☑ Yes ☐ On ☐ No ☑ Off

L_{up} = 2080 ft

V_u = 984 veh/h

Freeway Number of Lanes, N	2
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	800
Deceleration Lane Length L_D	
Freeway Volume, V_F	3268
Ramp Volume, V_R	751
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3268	0.95	Level	2	0	0.990	1.00	3474
Ramp	751	0.95	Level	2	0	0.990	1.00	798
UpStream	984	0.95	Level	2	0	0.990	1.00	1046
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 3474 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4272	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4272	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 33.4 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.544 (Exibit 13-11)

S_R = 52.5 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 52.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 2	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 220	V_D = 1094 veh/h
	Freeway Volume, V_F: 3669	
	Ramp Volume, V_R: 796	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3669	0.95	Level	2	0	0.990	1.00	3901
Ramp	796	0.95	Level	2	0	0.990	1.00	846
UpStream								
DownStream	1094	0.95	Level	2	0	0.990	1.00	1163

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 1.000 using Equation (Exhibit 13-7)

V_{12} = 3901 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3901	Exhibit 13-8	4700	No
$V_{FO} = V_F - V_R$	3055	Exhibit 13-8	4700	No
V_R	846	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3901	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 35.8 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

D_s = 0.504 (Exhibit 13-12)

S_R = 53.4 mph (Exhibit 13-12)

S_0 = N/A mph (Exhibit 13-12)

S = 53.4 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	2	Downstream Adj Ramp	
☑ Yes	☐ On	Ramp Number of Lanes, N	1	☐ Yes	☐ On
☐ No	☑ Off	Acceleration Lane Length, L_A	600	☑ No	☐ Off
L_{up} =	2040 ft	Deceleration Lane Length L_D		L_{down} =	ft
V_u =	796 veh/h	Freeway Volume, V_F	2873	V_D =	veh/h
		Ramp Volume, V_R	1094		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2873	0.95	Level	2	0	0.990	1.00	3054
Ramp	1094	0.95	Level	2	0	0.990	1.00	1163
UpStream	796	0.95	Level	2	0	0.990	1.00	846
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = 1.000 using Equation (Exhibit 13-6)

V_{12} = 3054 pc/h

V_3 or V_{av34} 0 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4217	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4217	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 34.1 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.544 (Exibit 13-11)

S_R = 52.5 mph (Exhibit 13-11)

S_0 = N/A mph (Exhibit 13-11)

S = 52.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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APPENDIX N-III

YEAR 2019 WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	150	L_{down} =	2080 ft
V_u =	veh/h	Freeway Volume, V_F	3624	V_D =	635 veh/h
		Ramp Volume, V_R	872		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3624	0.95	Level	2	0	0.990	1.00	3853
Ramp	872	0.95	Level	2	0	0.990	1.00	927
UpStream								
DownStream	635	0.95	Level	2	0	0.990	1.00	675

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.621 using Equation (Exhibit 13-7)

V_{12} = 2744 pc/h

V_3 or V_{av34} 1109 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3853	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	2926	Exhibit 13-8	7050	No
V_R	927	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2744	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 26.5 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.511 (Exhibit 13-12)

S_R = 53.2 mph (Exhibit 13-12)

S_0 = 70.9 mph (Exhibit 13-12)

S = 57.3 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2080 ft	Acceleration Lane Length, L_A: 800	L_{down} = ft
V_u = 872 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2752	
	Ramp Volume, V_R: 635	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2752	0.95	Level	2	0	0.990	1.00	2926
Ramp	635	0.95	Level	2	0	0.990	1.00	675
UpStream	872	0.95	Level	2	0	0.990	1.00	927
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 554.01 (Equation 13-6 or 13-7)

P_{FM} = 0.600 using Equation (Exhibit 13-6)

V_{12} = 1755 pc/h

V_3 or V_{av34} 1171 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes, V_{12a} = 1755 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	3601	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2430	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 19.1 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.309 (Exibit 13-11)

S_R = 57.9 mph (Exhibit 13-11)

S_0 = 62.6 mph (Exhibit 13-11)

S = 59.3 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	220	L_{down} =	2040 ft
V_u =	veh/h	Freeway Volume, V_F	3472	V_D =	1512 veh/h
		Ramp Volume, V_R	387		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3472	0.95	Level	2	0	0.990	1.00	3691
Ramp	387	0.95	Level	2	0	0.990	1.00	411
UpStream								
DownStream	1512	0.95	Level	2	0	0.990	1.00	1607

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.649 using Equation (Exhibit 13-7)

V_{12} = 2539 pc/h

V_3 or V_{av34} 1152 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3691	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3280	Exhibit 13-8	7050	No
V_R	411	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2539	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 24.1 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.465 (Exhibit 13-12)

S_R = 54.3 mph (Exhibit 13-12)

S_0 = 70.7 mph (Exhibit 13-12)

S = 58.5 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2040 ft	Acceleration Lane Length, L_A: 600	L_{down} = ft
V_u = 387 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3085	
	Ramp Volume, V_R: 1512	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3085	0.95	Level	2	0	0.990	1.00	3280
Ramp	1512	0.95	Level	2	0	0.990	1.00	1607
UpStream	387	0.95	Level	2	0	0.990	1.00	411
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 740.42 (Equation 13-6 or 13-7)

P_{FM} = 0.594 using Equation (Exhibit 13-6)

V_{12} = 1949 pc/h

V_3 or V_{av34} 1331 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes, V_{12a} = 1949 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4887	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3556	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 28.7 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.416 (Exibit 13-11)

S_R = 55.4 mph (Exhibit 13-11)

S_0 = 62.0 mph (Exhibit 13-11)

S = 57.1 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 3	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2080 ft
V_u = veh/h	Deceleration Lane Length L_D: 150	V_D = 751 veh/h
	Freeway Volume, V_F: 4252	
	Ramp Volume, V_R: 984	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4252	0.95	Level	2	0	0.990	1.00	4521
Ramp	984	0.95	Level	2	0	0.990	1.00	1046
UpStream								
DownStream	751	0.95	Level	2	0	0.990	1.00	798

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.599 using Equation (Exhibit 13-7)

V_{12} = 3127 pc/h

V_3 or V_{av34} 1394 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4521	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3475	Exhibit 13-8	7050	No
V_R	1046	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3127	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 29.8 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.522 (Exhibit 13-12)

S_R = 53.0 mph (Exhibit 13-12)

S_0 = 69.8 mph (Exhibit 13-12)

S = 57.2 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2080 ft	Acceleration Lane Length, L_A: 800	L_{down} = ft
V_u = 984 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3268	
	Ramp Volume, V_R: 751	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3268	0.95	Level	2	0	0.990	1.00	3474
Ramp	751	0.95	Level	2	0	0.990	1.00	798
UpStream	984	0.95	Level	2	0	0.990	1.00	1046
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 697.61 (Equation 13-6 or 13-7)

P_{FM} = 0.600 using Equation (Exhibit 13-6)

V_{12} = 2084 pc/h

V_3 or V_{av34} 1390 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4272	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2882	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 22.6 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.335 (Exibit 13-11)

S_R = 57.3 mph (Exhibit 13-11)

S_0 = 61.8 mph (Exhibit 13-11)

S = 58.7 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 3	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 220	V_D = 1094 veh/h
	Freeway Volume, V_F: 3669	
	Ramp Volume, V_R: 796	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3669	0.95	Level	2	0	0.990	1.00	3901
Ramp	796	0.95	Level	2	0	0.990	1.00	846
UpStream								
DownStream	1094	0.95	Level	2	0	0.990	1.00	1163

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.624 using Equation (Exhibit 13-7)

V_{12} = 2751 pc/h

V_3 or V_{av34} 1150 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	3901	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	3055	Exhibit 13-8	7050	No
V_R	846	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2751	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 25.9 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.504 (Exhibit 13-12)

S_R = 53.4 mph (Exhibit 13-12)

S_0 = 70.7 mph (Exhibit 13-12)

S = 57.6 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2019 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2040 ft	Acceleration Lane Length, L_A: 600	L_{down} = ft
V_u = 796 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2873	
	Ramp Volume, V_R: 1094	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2873	0.95	Level	2	0	0.990	1.00	3054
Ramp	1094	0.95	Level	2	0	0.990	1.00	1163
UpStream	796	0.95	Level	2	0	0.990	1.00	846
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 597.04 (Equation 13-6 or 13-7)

P_{FM} = 0.594 using Equation (Exhibit 13-6)

V_{12} = 1815 pc/h

V_3 or V_{av34} 1239 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4217	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2978	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 24.4 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.356 (Exibit 13-11)

S_R = 56.8 mph (Exhibit 13-11)

S_0 = 62.3 mph (Exhibit 13-11)

S = 58.3 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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APPENDIX O

YEAR 2040 TRAFFIC CONDITIONS
BASIC FREEWAY SEGMENTS
LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX O-I

YEAR 2040 WITHOUT PROJECT TRAFFIC CONDITIONS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information

Analyst	*AB*
Agency or Company	*LLG*
Date Performed	*3/1/18*
Analysis Time Period	*AM Peak Hour*

Site Information

Highway/Direction of Travel	*SR-210 Westbound*
From/To	*South of 5th St/Greenspot Rd*
Jurisdiction	
Analysis Year	*Year 2040*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4910*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1740*	pc/h/ln
S	*63.4*	mph
D = v_p / S	*27.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2040*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4730*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1257*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*19.3*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Eastbound
Agency or Company	LLG	From/To	North of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4278	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	4		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1137	pc/h/ln	Design LOS	
S	65.0	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	17.5	pc/mi/ln	S	mph
LOS	B		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2040*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5429*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1924*	pc/h/ln
S	*61.1*	mph
D = v_p / S	*31.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2040*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5180*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1836*	pc/h/ln
S	*62.3*	mph
D = v_p / S	*29.5*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2040*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4942*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1314*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*20.2*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Eastbound
Agency or Company	LLG	From/To	North of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040

Project Description: 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4277	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	4		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1137	pc/h/ln	Design LOS	
S	65.0	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	17.5	pc/mi/ln	S	mph
LOS	B		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Eastbound
Agency or Company	LLG	From/To	South of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040

Project Description: 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4332	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	3		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1535	pc/h/ln	Design LOS	
S	64.7	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	23.7	pc/mi/ln	S	mph
LOS	C		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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APPENDIX O-II

YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS

BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2040 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4925*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1745*	pc/h/ln
S	*63.3*	mph
D = v_p / S	*27.6*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Westbound
Agency or Company	LLG	From/To	North of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040 + Project

Project Description: 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4754	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	4	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	65.0	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	65.0	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1264	pc/h/ln
S	65.0	mph
D = v_p / S	19.4	pc/mi/ln
LOS	C	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2040 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4286*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*4*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1139*	pc/h/ln
S	*65.0*	mph
D = v_p / S	*17.5*	pc/mi/ln
LOS	*B*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*AM Peak Hour*	Analysis Year	*Year 2040 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5475*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*3*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)		
Operational (LOS)			Design (N)		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1940*	pc/h/ln	Design LOS		
S	*60.9*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
D = v_p / S	*31.9*	pc/mi/ln	S		mph
LOS	*D*		D = v_p / S		pc/mi/ln
			Required Number of Lanes, N		

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Westbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2040 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*5231*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1854*	pc/h/ln
S	*62.1*	mph
D = v_p / S	*29.9*	pc/mi/ln
LOS	*D*	

Design (N)

Design (N)

Design LOS	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
S	mph
D = v_p / S	pc/mi/ln
Required Number of Lanes, N	

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 10-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	AB	Highway/Direction of Travel	SR-210 Westbound
Agency or Company	LLG	From/To	North of 5th St/Greenspot Rd
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040 + Project

Project Description: 2-16-3773-1 Heatherglen Residential Project, Highland

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	4958	veh/h	Peak-Hour Factor, PHF	0.95
AADT		veh/day	%Trucks and Buses, P_T	2
Peak-Hr Prop. of AADT, K			%RVs, P_R	0
Peak-Hr Direction Prop, D			General Terrain:	Level
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	mi

Calculate Flow Adjustments

f_p	1.00	E_R	1.2
E_T	1.5	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	0.990

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	4		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	65.0	mph	FFS	65.0	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	1318	pc/h/ln	Design LOS	
S	65.0	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	20.3	pc/mi/ln	S	mph
LOS	C		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*North of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2040 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4304*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs			Calc Speed Adj and FFS		
Lane Width		ft			
Rt-Side Lat. Clearance		ft	f_{LW}		mph
Number of Lanes, N	*4*		f_{LC}		mph
Total Ramp Density, TRD		ramps/mi	TRD Adjustment		mph
FFS (measured)	*65.0*	mph	FFS	*65.0*	mph
Base free-flow Speed, BFFS		mph			

LOS and Performance Measures			Design (N)	
Operational (LOS)			Design (N)	
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1144*	pc/h/ln	Design LOS	
S	*65.0*	mph	v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	pc/h/ln
D = v_p / S	*17.6*	pc/mi/ln	S	mph
LOS	*B*		D = v_p / S	pc/mi/ln
			Required Number of Lanes, N	

Glossary		Factor Location	
N - Number of lanes	S - Speed	E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
V - Hourly volume	D - Density	E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
v_p - Flow rate	FFS - Free-flow speed	f_p - Page 11-18	TRD - Page 11-11
LOS - Level of service	BFFS - Base free-flow speed	LOS, S, FFS, v_p - Exhibits 11-2, 11-3	
DDHV - Directional design hour volume			

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BASIC FREEWAY SEGMENTS WORKSHEET

General Information		Site Information	
Analyst	*AB*	Highway/Direction of Travel	*SR-210 Eastbound*
Agency or Company	*LLG*	From/To	*South of 5th St/Greenspot Rd*
Date Performed	*3/1/18*	Jurisdiction	
Analysis Time Period	*PM Peak Hour*	Analysis Year	*Year 2040 + Project*

Project Description *2-16-3773-1 Heatherglen Residential Project, Highland*

☑ Oper.(LOS) ☐ Des.(N) ☐ Planning Data

Flow Inputs

Volume, V	*4362*	veh/h	Peak-Hour Factor, PHF	*0.95*
AADT		veh/day	%Trucks and Buses, P_T	*2*
Peak-Hr Prop. of AADT, K			%RVs, P_R	*0*
Peak-Hr Direction Prop, D			General Terrain:	*Level*
DDHV = AADT x K x D		veh/h	Grade % Length Up/Down %	*mi*

Calculate Flow Adjustments

f_p	*1.00*	E_R	*1.2*
E_T	*1.5*	$f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$	*0.990*

Speed Inputs

Lane Width		ft
Rt-Side Lat. Clearance		ft
Number of Lanes, N	*3*	
Total Ramp Density, TRD		ramps/mi
FFS (measured)	*65.0*	mph
Base free-flow Speed, BFFS		mph

Calc Speed Adj and FFS

f_{LW}		mph
f_{LC}		mph
TRD Adjustment		mph
FFS	*65.0*	mph

LOS and Performance Measures

Operational (LOS)

v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)	*1546*	pc/h/ln
S	*64.7*	mph
D = v_p / S	*23.9*	pc/mi/ln
LOS	*C*	

Design (N)

Design (N)

Design LOS		
v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)		pc/h/ln
S		mph
D = v_p / S		pc/mi/ln
Required Number of Lanes, N		

Glossary

N - Number of lanes	S - Speed
V - Hourly volume	D - Density
v_p - Flow rate	FFS - Free-flow speed
LOS - Level of service	BFFS - Base free-flow speed
DDHV - Directional design hour volume	

Factor Location

E_R - Exhibits 11-10, 11-12	f_{LW} - Exhibit 11-8
E_T - Exhibits 11-10, 11-11, 11-13	f_{LC} - Exhibit 11-9
f_p - Page 11-18	TRD - Page 11-11
LOS, S, FFS, v_p - Exhibits 11-2, 11-3	

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APPENDIX O-III

YEAR 2040 WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

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APPENDIX P

YEAR 2040 TRAFFIC CONDITIONS
FREEWAY MERGE AND DIVERGE SEGMENTS
LEVEL OF SERVICE CALCULATION WORKSHEETS

APPENDIX P-I

YEAR 2040 WITHOUT PROJECT TRAFFIC CONDITIONS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	150
Freeway Volume, V_F	4910
Ramp Volume, V_R	1061
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp: ☑ Yes ☑ On ☐ No ☐ Off; L_{down} = 2080 ft; V_D = 881 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4910	0.95	Level	2	0	0.990	1.00	5220
Ramp	1061	0.95	Level	2	0	0.990	1.00	1128
UpStream								
DownStream	881	0.95	Level	2	0	0.990	1.00	937

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.578 using Equation (Exhibit 13-7)

V_{12} = 3492 pc/h

V_3 or V_{av34} 1728 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	5220	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	4092	Exhibit 13-8	7050	No
V_R	1128	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3492	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 32.9 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.530 (Exhibit 13-12)

S_R = 52.8 mph (Exhibit 13-12)

S_0 = 68.5 mph (Exhibit 13-12)

S = 57.1 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 4	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2080 ft	Acceleration Lane Length, L_A: 1500	L_{down} = ft
V_u = 1061 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3849	
	Ramp Volume, V_R: 881	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3849	0.95	Level	2	0	0.990	1.00	4092
Ramp	881	0.95	Level	2	0	0.990	1.00	937
UpStream	1061	0.95	Level	2	0	0.990	1.00	1128
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1169.12 (Equation 13-6 or 13-7)

P_{FM} = 0.101 using Equation (Exhibit 13-6)

V_{12} = 412 pc/h

V_3 or V_{av34} 1840 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	5029	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1349	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 6.2 (pc/mi/ln)

LOS = A (Exhibit 13-2)

Speed Determination

M_S = 0.231 (Exibit 13-11)

S_R = 59.7 mph (Exhibit 13-11)

S_0 = 60.2 mph (Exhibit 13-11)

S = 60.0 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 4	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 1500	V_D = 1755 veh/h
	Freeway Volume, V_F: 4278	
	Ramp Volume, V_R: 604	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4278	0.95	Level	2	0	0.990	1.00	4548
Ramp	604	0.95	Level	2	0	0.990	1.00	642
UpStream								
DownStream	1755	0.95	Level	2	0	0.990	1.00	1866

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.436 using Equation (Exhibit 13-7)

V_{12} = 2345 pc/h

V_3 or V_{av34} 1101 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4548	Exhibit 13-8	9400	No
$V_{FO} = V_F - V_R$	3906	Exhibit 13-8	9400	No
V_R	642	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2345	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 10.9 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.486 (Exhibit 13-12)

S_R = 53.8 mph (Exhibit 13-12)

S_0 = 70.9 mph (Exhibit 13-12)

S = 60.9 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp: ☑ Yes ☐ On ☐ No ☑ Off

L_{up} = 2040 ft

V_u = 604 veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	1500
Deceleration Lane Length L_D	
Freeway Volume, V_F	3674
Ramp Volume, V_R	1755
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off

L_{down} = ft

V_D = veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	3674	0.95	Level	2	0	0.990	1.00	3906
Ramp	1755	0.95	Level	2	0	0.990	1.00	1866
UpStream	604	0.95	Level	2	0	0.990	1.00	642
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1329.41 (Equation 13-6 or 13-7)

P_{FM} = 0.619 using Equation (Exhibit 13-6)

V_{12} = 2420 pc/h

V_3 or V_{av34} 1486 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	5772	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4286	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 28.6 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.499 (Exibit 13-11)

S_R = 53.5 mph (Exhibit 13-11)

S_0 = 61.5 mph (Exhibit 13-11)

S = 55.4 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp
☐ Yes ☐ On
☑ No ☐ Off
L_{up} = ft
V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	1
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	150
Freeway Volume, V_F	5180
Ramp Volume, V_R	1363
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp
☑ Yes ☑ On
☐ No ☐ Off
L_{down} = 2080 ft
V_D = 1125 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5180	0.95	Level	2	0	0.990	1.00	5507
Ramp	1363	0.95	Level	2	0	0.990	1.00	1449
UpStream								
DownStream	1125	0.95	Level	2	0	0.990	1.00	1196

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$
L_{EQ} = (Equation 13-6 or 13-7)
P_{FM} = using Equation (Exhibit 13-6)
V_{12} = pc/h
V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$
D_R = (pc/mi/ln)
LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)
S_R = mph (Exhibit 13-11)
S_0 = mph (Exhibit 13-11)
S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$
L_{EQ} = (Equation 13-12 or 13-13)
P_{FD} = 0.556 using Equation (Exhibit 13-7)
V_{12} = 3704 pc/h
V_3 or V_{av34} 1803 pc/h (Equation 13-14 or 13-17)
Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No
Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No
If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	5507	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	4058	Exhibit 13-8	7050	No
V_R	1449	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3704	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$
D_R = 34.8 (pc/mi/ln)
LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.558 (Exhibit 13-12)
S_R = 52.2 mph (Exhibit 13-12)
S_0 = 68.2 mph (Exhibit 13-12)
S = 56.5 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 4	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2080 ft	Acceleration Lane Length, L_A: 1500	L_{down} = ft
V_u = 1363 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3817	
	Ramp Volume, V_R: 1125	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3817	0.95	Level	2	0	0.990	1.00	4058
Ramp	1125	0.95	Level	2	0	0.990	1.00	1196
UpStream	1363	0.95	Level	2	0	0.990	1.00	1449
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1218.13 (Equation 13-6 or 13-7)

P_{FM} = 0.068 using Equation (Exhibit 13-6)

V_{12} = 277 pc/h

V_3 or V_{av34} 1890 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	5254	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1473	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 7.0 (pc/mi/ln)

LOS = A (Exhibit 13-2)

Speed Determination

M_S = 0.233 (Exibit 13-11)

S_R = 59.6 mph (Exhibit 13-11)

S_0 = 60.0 mph (Exhibit 13-11)

S = 59.9 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 4	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 1500	V_D = 1423 veh/h
	Freeway Volume, V_F: 4277	
	Ramp Volume, V_R: 1368	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4277	0.95	Level	2	0	0.990	1.00	4547
Ramp	1368	0.95	Level	2	0	0.990	1.00	1454
UpStream								
DownStream	1423	0.95	Level	2	0	0.990	1.00	1513

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.436 using Equation (Exhibit 13-7)

V_{12} = 2803 pc/h

V_3 or V_{av34} 872 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4547	Exhibit 13-8	9400	No
$V_{FO} = V_F - V_R$	3093	Exhibit 13-8	9400	No
V_R	1454	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2803	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 14.9 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.559 (Exhibit 13-12)

S_R = 52.1 mph (Exhibit 13-12)

S_0 = 71.3 mph (Exhibit 13-12)

S = 58.1 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2040 ft	Acceleration Lane Length, L_A: 1500	L_{down} = ft
V_u = 1368 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2909	
	Ramp Volume, V_R: 1423	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	2909	0.95	Level	2	0	0.990	1.00	3093
Ramp	1423	0.95	Level	2	0	0.990	1.00	1513
UpStream	1368	0.95	Level	2	0	0.990	1.00	1454
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1079.88 (Equation 13-6 or 13-7)

P_{FM} = 0.619 using Equation (Exhibit 13-6)

V_{12} = 1916 pc/h

V_3 or V_{av34} 1177 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4606	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3429	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 22.1 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.336 (Exibit 13-11)

S_R = 57.3 mph (Exhibit 13-11)

S_0 = 62.6 mph (Exhibit 13-11)

S = 58.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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APPENDIX P-II

YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Freeway Number of Lanes, N	3	Downstream Adj Ramp	
☐ Yes	☐ On	Ramp Number of Lanes, N	1	☑ Yes	☑ On
☑ No	☐ Off	Acceleration Lane Length, L_A		☐ No	☐ Off
L_{up} =	ft	Deceleration Lane Length L_D	150	L_{down} =	2080 ft
V_u =	veh/h	Freeway Volume, V_F	4925	V_D =	905 veh/h
		Ramp Volume, V_R	1076		
		Freeway Free-Flow Speed, S_{FF}	65.0		
		Ramp Free-Flow Speed, S_{FR}	35.0		

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	4925	0.95	Level	2	0	0.990	1.00	5236
Ramp	1076	0.95	Level	2	0	0.990	1.00	1144
UpStream								
DownStream	905	0.95	Level	2	0	0.990	1.00	962

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.576 using Equation (Exhibit 13-7)

V_{12} = 3503 pc/h

V_3 or V_{av34} 1733 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	5236	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	4092	Exhibit 13-8	7050	No
V_R	1144	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3503	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 33.0 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

D_s = 0.531 (Exhibit 13-12)

S_R = 52.8 mph (Exhibit 13-12)

S_0 = 68.4 mph (Exhibit 13-12)

S = 57.1 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 4	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2080 ft	Acceleration Lane Length, L_A: 1500	L_{down} = ft
V_u = 1076 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3849	
	Ramp Volume, V_R: 905	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3849	0.95	Level	2	0	0.990	1.00	4092
Ramp	905	0.95	Level	2	0	0.990	1.00	962
UpStream	1076	0.95	Level	2	0	0.990	1.00	1144
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1174.69 (Equation 13-6 or 13-7)

P_{FM} = 0.098 using Equation (Exhibit 13-6)

V_{12} = 399 pc/h

V_3 or V_{av34} 1846 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes, V_{12a} = 1636 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	5054	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	2598	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 15.9 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

M_S = 0.268 (Exibit 13-11)

S_R = 58.8 mph (Exhibit 13-11)

S_0 = 62.4 mph (Exhibit 13-11)

S = 60.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 4	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 1500	V_D = 1801 veh/h
	Freeway Volume, V_F: 4286	
	Ramp Volume, V_R: 612	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4286	0.95	Level	2	0	0.990	1.00	4557
Ramp	612	0.95	Level	2	0	0.990	1.00	651
UpStream								
DownStream	1801	0.95	Level	2	0	0.990	1.00	1915

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.436 using Equation (Exhibit 13-7)

V_{12} = 2354 pc/h

V_3 or V_{av34} 1101 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4557	Exhibit 13-8	9400	No
$V_{FO} = V_F - V_R$	3906	Exhibit 13-8	9400	No
V_R	651	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2354	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 11.0 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.487 (Exhibit 13-12)

S_R = 53.8 mph (Exhibit 13-12)

S_0 = 70.9 mph (Exhibit 13-12)

S = 60.9 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2040 ft	Acceleration Lane Length, L_A: 1500	L_{down} = ft
V_u = 612 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3674	
	Ramp Volume, V_R: 1801	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3674	0.95	Level	2	0	0.990	1.00	3906
Ramp	1801	0.95	Level	2	0	0.990	1.00	1915
UpStream	612	0.95	Level	2	0	0.990	1.00	651
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1339.89 (Equation 13-6 or 13-7)

P_{FM} = 0.619 using Equation (Exhibit 13-6)

V_{12} = 2420 pc/h

V_3 or V_{av34} 1486 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	5821	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	4335	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 29.0 (pc/mi/ln)

LOS = D (Exhibit 13-2)

Speed Determination

M_S = 0.514 (Exibit 13-11)

S_R = 53.2 mph (Exhibit 13-11)

S_0 = 61.5 mph (Exhibit 13-11)

S = 55.1 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 3	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2080 ft
V_u = veh/h	Deceleration Lane Length L_D: 150	V_D = 1141 veh/h
	Freeway Volume, V_F: 5231	
	Ramp Volume, V_R: 1414	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5231	0.95	Level	2	0	0.990	1.00	5561
Ramp	1414	0.95	Level	2	0	0.990	1.00	1503
UpStream								
DownStream	1141	0.95	Level	2	0	0.990	1.00	1213

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.552 using Equation (Exhibit 13-7)

V_{12} = 3742 pc/h

V_3 or V_{av34} 1819 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	5561	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	4058	Exhibit 13-8	7050	No
V_R	1503	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3742	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 35.1 (pc/mi/ln)

LOS = E (Exhibit 13-2)

Speed Determination

D_s = 0.563 (Exhibit 13-12)

S_R = 52.0 mph (Exhibit 13-12)

S_0 = 68.1 mph (Exhibit 13-12)

S = 56.4 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 4	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2080 ft	Acceleration Lane Length, L_A: 1500	L_{down} = ft
V_u = 1414 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 3817	
	Ramp Volume, V_R: 1141	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	3817	0.95	Level	2	0	0.990	1.00	4058
Ramp	1141	0.95	Level	2	0	0.990	1.00	1213
UpStream	1414	0.95	Level	2	0	0.990	1.00	1503
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1221.77 (Equation 13-6 or 13-7)

P_{FM} = 0.066 using Equation (Exhibit 13-6)

V_{12} = 269 pc/h

V_3 or V_{av34} 1894 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	5271	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	1482	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\, v_R + 0.0078\, V_{12} - 0.00627\, L_A$

D_R = 7.1 (pc/mi/ln)

LOS = A (Exhibit 13-2)

Speed Determination

M_S = 0.233 (Exibit 13-11)

S_R = 59.6 mph (Exhibit 13-11)

S_0 = 60.0 mph (Exhibit 13-11)

S = 59.9 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\, V_{12} - 0.009\, L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☐ Yes ☐ On	Freeway Number of Lanes, N: 4	☑ Yes ☑ On
☑ No ☐ Off	Ramp Number of Lanes, N: 1	☐ No ☐ Off
L_{up} = ft	Acceleration Lane Length, L_A:	L_{down} = 2040 ft
V_u = veh/h	Deceleration Lane Length L_D: 1500	V_D = 1453 veh/h
	Freeway Volume, V_F: 4304	
	Ramp Volume, V_R: 1395	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	$v = V/PHF \times f_{HV} \times f_p$
Freeway	4304	0.95	Level	2	0	0.990	1.00	4576
Ramp	1395	0.95	Level	2	0	0.990	1.00	1483
UpStream								
DownStream	1453	0.95	Level	2	0	0.990	1.00	1545

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.436 using Equation (Exhibit 13-7)

V_{12} = 2832 pc/h

V_3 or V_{av34} 872 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	4576	Exhibit 13-8	9400	No
$V_{FO} = V_F - V_R$	3093	Exhibit 13-8	9400	No
V_R	1483	Exhibit 13-10	2000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2832	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 15.1 (pc/mi/ln)

LOS = B (Exhibit 13-2)

Speed Determination

D_s = 0.561 (Exhibit 13-12)

S_R = 52.1 mph (Exhibit 13-12)

S_0 = 71.3 mph (Exhibit 13-12)

S = 58.0 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Eastbound
Agency or Company	LLG	Junction	On-Ramp from 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040 + Project

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp		Downstream Adj Ramp
☑ Yes ☐ On	Freeway Number of Lanes, N: 3	☐ Yes ☐ On
☐ No ☑ Off	Ramp Number of Lanes, N: 1	☑ No ☐ Off
L_{up} = 2040 ft	Acceleration Lane Length, L_A: 1500	L_{down} = ft
V_u = 1395 veh/h	Deceleration Lane Length L_D:	V_D = veh/h
	Freeway Volume, V_F: 2909	
	Ramp Volume, V_R: 1453	
	Freeway Free-Flow Speed, S_{FF}: 65.0	
	Ramp Free-Flow Speed, S_{FR}: 35.0	

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	2909	0.95	Level	2	0	0.990	1.00	3093
Ramp	1453	0.95	Level	2	0	0.990	1.00	1545
UpStream	1395	0.95	Level	2	0	0.990	1.00	1483
DownStream								

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = 1086.73 (Equation 13-6 or 13-7)

P_{FM} = 0.619 using Equation (Exhibit 13-6)

V_{12} = 1916 pc/h

V_3 or V_{av34} 1177 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}	4638	Exhibit 13-8		No

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}	3461	Exhibit 13-8	4600:All	No

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = 22.4 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

M_S = 0.340 (Exibit 13-11)

S_R = 57.2 mph (Exhibit 13-11)

S_0 = 62.6 mph (Exhibit 13-11)

S = 58.5 mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = using Equation (Exhibit 13-7)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F		Exhibit 13-8		
$V_{FO} = V_F - V_R$		Exhibit 13-8		
V_R		Exhibit 13-10		

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

D_s = (Exhibit 13-12)

S_R = mph (Exhibit 13-12)

S_0 = mph (Exhibit 13-12)

S = mph (Exhibit 13-13)

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APPENDIX P-III

YEAR 2040 WITH PROJECT WITH MITIGATION TRAFFIC CONDITIONS

RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	AM Peak Hour	Analysis Year	Year 2040 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	2
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	150
Freeway Volume, V_F	4925
Ramp Volume, V_R	1076
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp: ☑ Yes ☑ On ☐ No ☐ Off; L_{down} = 2080 ft; V_D = 905 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	4925	0.95	Level	2	0	0.990	1.00	5236
Ramp	1076	0.95	Level	2	0	0.990	1.00	1144
UpStream								
DownStream	905	0.95	Level	2	0	0.990	1.00	962

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.450 using Equation (Exhibit 13-7)

V_{12} = 2985 pc/h

V_3 or V_{av34} 2251 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☑ Yes ☐ No

If Yes, V_{12a} = 2992 pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	5236	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	4092	Exhibit 13-8	7050	No
V_R	1144	Exhibit 13-10	4000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	2985	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 22.8 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.531 (Exhibit 13-12)

S_R = 52.8 mph (Exhibit 13-12)

S_0 = 66.5 mph (Exhibit 13-12)

S = 57.9 mph (Exhibit 13-13)

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RAMPS AND RAMP JUNCTIONS WORKSHEET

General Information / Site Information

Analyst	AB	Freeway/Dir of Travel	SR-210 Westbound
Agency or Company	LLG	Junction	Off-Ramp to 5th/Greenspot
Date Performed	3/1/18	Jurisdiction	
Analysis Time Period	PM Peak Hour	Analysis Year	Year 2040 + Project [MIT]

Project Description 2-16-3773-1 Heatherglen Residential Project, Highland

Inputs

Upstream Adj Ramp: ☐ Yes ☐ On ☑ No ☐ Off; L_{up} = ft; V_u = veh/h

Freeway Number of Lanes, N	3
Ramp Number of Lanes, N	2
Acceleration Lane Length, L_A	
Deceleration Lane Length L_D	150
Freeway Volume, V_F	5231
Ramp Volume, V_R	1414
Freeway Free-Flow Speed, S_{FF}	65.0
Ramp Free-Flow Speed, S_{FR}	35.0

Downstream Adj Ramp: ☑ Yes ☑ On ☐ No ☐ Off; L_{down} = 2080 ft; V_D = 1141 veh/h

Conversion to pc/h Under Base Conditions

(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f_p	v = V/PHF x f_{HV} x f_p
Freeway	5231	0.95	Level	2	0	0.990	1.00	5561
Ramp	1414	0.95	Level	2	0	0.990	1.00	1503
UpStream								
DownStream	1141	0.95	Level	2	0	0.990	1.00	1213

Merge Areas

Estimation of v_{12}

$V_{12} = V_F (P_{FM})$

L_{EQ} = (Equation 13-6 or 13-7)

P_{FM} = using Equation (Exhibit 13-6)

V_{12} = pc/h

V_3 or V_{av34} pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☐ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☐ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_{FO}		Exhibit 13-8		

Flow Entering Merge Influence Area

	Actual	Max Desirable		Violation?
V_{R12}		Exhibit 13-8		

Level of Service Determination (if not F)

$D_R = 5.475 + 0.00734\ v_R + 0.0078\ V_{12} - 0.00627\ L_A$

D_R = (pc/mi/ln)

LOS = (Exhibit 13-2)

Speed Determination

M_S = (Exibit 13-11)

S_R = mph (Exhibit 13-11)

S_0 = mph (Exhibit 13-11)

S = mph (Exhibit 13-13)

Diverge Areas

Estimation of v_{12}

$V_{12} = V_R + (V_F - V_R)P_{FD}$

L_{EQ} = (Equation 13-12 or 13-13)

P_{FD} = 0.450 using Equation (Exhibit 13-7)

V_{12} = 3329 pc/h

V_3 or V_{av34} 2232 pc/h (Equation 13-14 or 13-17)

Is V_3 or V_{av34} > 2,700 pc/h? ☐ Yes ☑ No

Is V_3 or V_{av34} > 1.5 * V_{12}/2 ☐ Yes ☑ No

If Yes, V_{12a} = pc/h (Equation 13-16, 13-18, or 13-19)

Capacity Checks

	Actual	Capacity		LOS F?
V_F	5561	Exhibit 13-8	7050	No
$V_{FO} = V_F - V_R$	4058	Exhibit 13-8	7050	No
V_R	1503	Exhibit 13-10	4000	No

Flow Entering Diverge Influence Area

	Actual	Max Desirable		Violation?
V_{12}	3329	Exhibit 13-8	4400:All	No

Level of Service Determination (if not F)

$D_R = 4.252 + 0.0086\ V_{12} - 0.009\ L_D$

D_R = 25.7 (pc/mi/ln)

LOS = C (Exhibit 13-2)

Speed Determination

D_s = 0.563 (Exhibit 13-12)

S_R = 52.0 mph (Exhibit 13-12)

S_0 = 66.5 mph (Exhibit 13-12)

S = 57.0 mph (Exhibit 13-13)

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