DRAFT ENVIRONMENTAL IMPACT STATEMENT

TEJON INDIAN TRIBE
TRUST ACQUISITION AND CASINO PROJECT

VOLUME II - APPENDICES

JUNE 2020

LEAD AGENCY:

U.S. Department of the Interior
Bureau of Indian Affairs
Pacific Region Office
2800 Cottage Way # W2820
Sacramento, CA 95825

DRAFT ENVIRONMENTAL IMPACT STATEMENT

TEJON INDIAN TRIBE
TRUST ACQUISITION AND CASINO PROJECT

VOLUME II - APPENDICES

JUNE 2020

LEAD AGENCY:

U.S. Department of the Interior
Bureau of Indian Affairs
Pacific Region Office
2800 Cottage Way # W2820
Sacramento, CA 95825

PREPARED BY:

Analytical Environmental Services
1801 7th Street, Suite 100
Sacramento, CA 95811
(916) 447-3479
www.analyticalcorp.com

APPENDICES

APPENDIX A

EXECUTIVE SUMMARY TABLE

TABLE ES-1
SUMMARY OF IMPACTS AND MITIGATION MEASURES

Impact	Mitigation Measures	Original Impact/Residual Impact with Mitigation				
		Alternative A1	Alternative A2	Alternative A3	Alternative B	Alternative C
SECTION 3.2. Geology and Soils						
Site Topography – The project alternatives could result in changes to site topography from grading activities.	No mitigation required.	LS	LS	LS	LS	NI
Soils and Geology – Development could impact soils and thus cause soil erosion during construction. Construction activities such as clearing, grading, trenching, and backfilling could reduce the integrity of the soil structures, which would thereby increase the likelihood of erosion from wind and/or stormwater runoff.	The following measure is recommended for Alternatives A1, A2, and B. **MM 1-A** - The project shall comply with the NPDES Construction General Permit from the USEPA for construction site runoff during the construction phase in compliance with the CWA. A SWPPP shall be prepared, implemented, and maintained throughout the construction phase of the development, consistent with Construction General Permit requirements. The SWPPP shall detail the BMPs to be implemented during construction and post-construction operation of the selected project alternative to reduce impacts related to soil erosion and water quality. The mitigation measures shall include, but are not limited to, the following. 1. Existing vegetation shall be retained where practicable. To the extent feasible, grading activities shall be limited to the immediate area required for construction. 2. Temporary erosion control measures (such as silt fences, fiber rolls, vegetated swales, a velocity dissipation structure, staked straw bales, temporary re-vegetation, rock bag dams, erosion control blankets, and sediment traps) shall be employed for disturbed areas. 3. To the maximum extent feasible, no disturbed surfaces shall be left without erosion control measures in place. 4. Construction activities shall be scheduled to minimize land disturbance during peak runoff periods. Soil conservation practices shall be completed during the fall or late winter to reduce erosion during spring runoff. 5. Creating construction zones and grading only one area or part of a construction zone at a time shall minimize exposed areas. If practicable during the wet season, grading on a particular zone shall be delayed until protective cover is restored on the previously graded zone. 6. Disturbed areas shall be re-vegetated following construction activities. 7. Construction area entrances and exits shall be stabilized with large-diameter rock.	PS/LS	PS/LS	LS	PS/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

	8. Sediment shall be retained onsite by a system of sediment basins, traps, or other appropriate measures. 9. Petroleum products shall be stored, handled, used, and disposed of properly in accordance with provisions of the CWA [33 U.S. Code (USC) 1251 to 1387]. 10. Construction materials, including topsoil and chemicals, shall be stored, covered, and isolated to prevent runoff losses and contamination of surface and groundwater. 11. Fuel and vehicle maintenance areas shall be established away from all drainage courses and designed to control runoff. 12. Sanitary facilities shall be provided for construction workers. 13. Disposal facilities shall be provided for soil wastes, including excess asphalt during construction and demolition. 14. Other potential BMPs include use of wheel wash or rumble strips and sweeping of paved surfaces to remove any and all tracked soil. **MM 1-B** - Contractors involved in the project shall be trained on the potential environmental damage resulting from soil erosion prior to construction in a pre-construction meeting. Copies of the project's SWPPP shall be made available at that time. Construction bid packages, contracts, plans, and specifications shall contain language that requires adherence to the SWPPP.					
Seismicity – Construction near an active fault zone could yield adverse effects associated with seismic activity.	No mitigation required.	LS	LS	LS	LS	NI
Mineral Resources – Construction and operation could affect known or recorded mineral resources.	No mitigation required.	LS	LS	LS	LS	NI
Cumulative Geology and Soils Impacts – Development of the project alternatives could, when taken together with other foreseeable developments, result in significant topographic changes and/or soil loss.	No mitigation required.	LS	LS	LS	LS	NI
SECTION 3.3. Water Resources						
Floodplain – Development within a floodplain could generate adverse effects related to inundation.	No mitigation required.	LS	LS	LS	LS	NI
Surface Water						
1) Construction Impacts – Ground-disturbing activities such as grading and excavation could lead to erosion of topsoil.	The following measure is recommended for Alternatives A1, A2, and B. Implement **MM 1-A** and **MM 1-B.**	PS/LS	PS/LS	NI	PS/LS	NI
2) Stormwater Runoff – The project alternatives could alter the existing	No mitigation required.	LS	LS	LS	LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

	drainage pattern of the Mettler Site and increase stormwater runoff as a result of increased impervious surfaces.						
Groundwater							
1)	**Groundwater Supply** – The project alternatives could result in the drawdown of groundwater aquifers.	The following measures are recommended for Alternatives A1, A2, and B. **MM 2-H** To fully offset groundwater extraction associated with the selected project alternative, one or more of the following measures shall be implemented by the Tribe prior to operation. a. Amend the existing surface water contract for agricultural irrigation water with the appropriate water district (Arvin-Edison Water Storage District for the Mettler Site or Wheeler Ridge-Maricopa Water Storage District for the Maricopa Highway Site) to allow the transfer of surface water to other agricultural lands within the Kern County Subbasin that currently uses groundwater for irrigation. As a condition of the agreement, the agricultural land receiving the surface water would be required to reduce groundwater pumping by at least the same amount as the surface water they are receiving. b. Implement a groundwater recharge project, such as constructing a basin to recharge water from the selected property's existing surface water contract. c. Work with and compensate the County or local water district to implement a water conservation program and/or a conjunctive water use program. The program shall (1) assess existing and potential sources of reclaimed wastewater within Kern County Subbasin, and determine potential points of use for the reclaimed wastewater, and/or (2) supplement the County's or local water district's existing water conservation programs to identify and implement additional conservation measures within Kern County Subbasin.	S/LS	S/LS	LS	S/LS	NI
2)	**Groundwater Recharge** – The project alternatives could impact groundwater recharge through the development of impervious surfaces.	No mitigation required.	LS	LS	LS	LS	NI
3)	**Neighboring Groundwater Wells –** The project alternatives could impact neighboring groundwater wells.	The following measures are recommended for Alternatives A1, A2, and B. **MM 2-E** Prior to construction of the on-site wells, the USEPA shall be consulted in the early stages of establishing the well system. Furthermore, baseline monitoring of the groundwater shall be submitted to the USEPA prior to public water usage. **MM 2-F** The on-site wells shall be positioned as to avoid to the maximum extent possible adverse effects on the established wells and surface water features within a 1-mile radius of the project site while optimizing groundwater usage onsite, such as avoiding the	LS/LS	LS/LS	LS	LS/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

		percolation pond's cone of influence. A groundwater study shall be conducted in order to achieve this objective.					
4)	**Groundwater Quality** – The use of potentially hazardous construction materials may spill onto the ground and enter stormwater. Additionally the operation of a WWTP onsite that percolates treated effluent could impact groundwater quality.	The following measures are recommended for Alternatives A1, A2, and B. **MM 2-A** Wastewater shall be fully treated to at least a tertiary level using MBR or SBR technology. The Tribe shall apply for and obtain applicable permits and approvals prior to operation. **MM 2-B** The on-site WWTP shall be staffed with operators who are qualified to operate the plant safely, effectively, and in compliance with all permit requirements and regulations. The operators shall have qualifications similar to those required by the Operator Certification Program for municipal WWTPs. **MM 2-C** Water shall be treated onsite to USEPA standards prior to reuse or discharge into percolation ponds. Percolation ponds and reuse facilities shall be closely monitored by a responsible engineer. Periodic monitoring of the wastewater facility shall ensure the wastewater system is operating safely and efficiently. **MM 2-D** Groundwater sampling and analysis shall be performed regularly and all drinking water shall be treated to the SDWA standards. **MM 2-G** To avoid potential adverse influences on the on-site potable water supply, potable water transmission pipes shall not be located within the percolation pond's cone of influence.	PS/LS	PS/LS	LS	PS/LS	NI
Cumulative Water Resources Impacts							
1)	**Surface Water and Flooding** – Development of the project alternatives in conjunction with other proposed developments could significantly increase sedimentation, pollution, and stormwater runoff.	No mitigation required.	LS	LS	LS	LS	NI
2)	**Surface Water Quality** – The project alternatives, taken together with other foreseeable developments, could result in an increase in pollution and sedimentation.	The following measure is recommended for Alternatives A1, A2, and B. Implement **MM 1-A and MM 1-B.**	PS/LS	PS/LS	LS	PS/LS	NI
3)	**Groundwater** – The project alternatives, in conjunction with the buildout of County and/or City General Plans, could significantly impact groundwater supply if the total water demand exceeds the rate of groundwater recharge.	The following measure is recommended for Alternatives A1, A2, and B. Implement **MM 2-A** through **MM 2-H.**	PS/LS	PS/LS	LS	PS/LS	NI
SECTION 3.4. Air Quality							
Construction Emissions – Construction activities could adversely affect air quality		No mitigation required.	LS	LS	NI	LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

through the emission of PM_{10}, NO_x, SO_2, CO, ROG, GHGs, and HAPs (primarily in the form of DPM).						
Operational Vehicle and Area Emissions – Project alternatives could adversely affect air quality through the emission of criteria pollutants from vehicles and project facilities.	The following measure is recommended for Alternatives A1, A2, and B. **MM 3-A** - The Tribe shall purchase 112.74 tons of NOx ERCs and 18.52 tons of ROG ERCs for Alternative A1, as specified in the Draft General Conformity Determination included in **Appendix N**. Alternative A2 would require the purchase of 96.93 tons of NOx ERCs and 12.28 tons of ROG ERCs. Alternative B would require the purchase of 111.32 tons of NOx ERCs and 15.60 tons of ROG ERCs. Because the air quality effects are associated with operation of the facility and not with construction of the facility, real, surplus, permanent, quantifiable, and enforceable, ERCs shall be purchased prior to the opening day of the facility. ERCs shall be purchased in accordance with the 40 CFR 93 Subpart B, conformity regulations. With the purchase of the ERCs the project would conform to the applicable SIP and result in a less-than-adverse effect to regional air quality. As an alternative to or in combination with purchasing the above ERCs, the Tribe has the option to enter into a VERA with the SJVAPCD. The VERA would allow the Tribe to fund air quality projects that quantifiably and permanently offset project operational emissions.	PS/LS	PS/LS	NI	PS/LS	NI
Cumulative Air Quality Impacts						
1) Operational Emissions – Development of the project alternatives, in conjunction with other regional projects, could contribute to the nonattainment of NAAQS.	The following measure is recommended for Alternatives A1, A2, and B. Implement **MM 3-A**.	PS/LS	PS/LS	NI	PS/LS	NI
2) Carbon Monoxide Hot Spot Analysis – Development of the project alternatives, taken together with the buildout of the City and/or County General Plans, could cause an increase in delay at some intersections in the cumulative year 2040 sufficient to warrant a Hot Spot Analysis.	No mitigation required.	LS	LS	NI	LS	NI
3) Climate Change – Development of the project alternatives in conjunction with other foreseeable projects could significantly contribute to climate change through the emission of GHGs.	No mitigation required.	LS	LS	NI	LS	NI
SECTION 3.5. Biological Resources						
Potential Effects to Habitats – Development of project alternatives could disturb federally designated critical or sensitive habitats.	No mitigation required.	LS	LS	NI	LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

Potential Effects to Special-Status Species – The following special-status species could be impacted by the project alternatives:							
1)	San Joaquin Kit Fox (SJKF)	The following mitigation measures are recommended for Alternatives A1, A2, and B. **MM 4-A** - Potential dens shall be visibly marked by a qualified biologist into an exclusion zone with a 100-foot buffer. No staging of materials or equipment, construction personnel, or other construction activity shall occur within the setback areas. The avoidance buffer shall be maintained until either the completion of construction, or the proper destruction of the den as described below. The USFWS guidelines for SJKF avoidance and minimization shall be followed. **MM 4-B** - A qualified biologist shall conduct a pre-construction survey to assess potential presence of SJKF 2 calendar weeks to 30 calendar days prior to commencement of ground disturbance. A report summarizing the findings of the survey shall be sent to the USFWS within 5 days of completion of any pre-construction surveys. If the construction activities stop on the site for a period of 5 days or more, then an additional pre-construction survey shall be conducted no more than 48 hours prior to the start of construction. If no SJKF or potential dens are found during the preconstruction survey, no further action is required regarding this species. **MM 4-C** - If any SJKF potential dens are identified on the project site during the pre-construction survey or during construction activities (potential dens are defined as burrows at least 4 inches in diameter which open up within 2 feet), the USFWS shall be notified immediately and no construction activity shall occur within 100 feet of the potential den. An exclusionary zone shall be implemented as described in Measure A. Potential den entrances shall be monitored with trail cameras for 3 consecutive days, or dusted for 3 consecutive days to register track of any SJKF present. If no SJKF activity is identified, potential dens may be destroyed by careful excavation followed by immediate filling and compacting of the soil. If SJKF activity is identified, a buffer zone of 250 feet shall be maintained around the den until the biologist determines that the den has been vacated. The den shall be considered vacant when 3 days of den entrance dusting or trail camera monitoring results in no SJKF sign, at which point only a 100-foot buffer becomes necessary. Should destruction of such a vacated natal den be necessary, USFWS shall be contacted, and the appropriate take permit issued. Where SJKF are identified, the provisions of the USFWS's published *Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance (2010)* shall apply for den destruction and ongoing operational recommendations. **MM 4-D** - A qualified biologist shall conduct habitat sensitivity training related to SJKF for project contractors and shall monitor construction during initial grading activities within the project site. Under this program, workers shall be informed about the presence of SJKF and	PS/LS	PS/LS	LS	PS/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

		habitat associated with the species and that unlawful take of the animal or destruction of its habitat is not permitted. Prior to construction activities, a qualified biologist shall instruct and distribute informational materials to construction personnel about: (1) the life history of the SJKF; (2) the importance of habitat requirements for SJKF; (3) sensitive areas including those identified onsite; and (4) the importance of maintaining the required setbacks and detailing the limits of the construction area. Documentation of this training shall be maintained onsite. **MM 4-E** - The standards of the USFWS publication include provisions for educating construction workers regarding the SJKF, keeping heavy equipment operating at safe speeds, checking construction pipes for SJKF occupation during construction and similar activities.					
2)	Blunt Nosed Leopard Lizard (BLL)	The following mitigation measures are recommended for Alternatives A1, A2, and B. **MM 4-F** - A pre-construction survey for BLL shall be performed by a qualified biologist within 30 days prior to construction activities to establish the presence of species on this site. The survey shall occur during the months of April through October to avoid surveying during peak hibernation months when BLL are inactive. Should BLL be observed, the USFWS shall be contacted to determine appropriate removal or avoidance measures. The survey methods shall be consistent with CDFW's Approved Survey Methodology for the BLL. **MM 4-G** - Access gates shall remain closed during periods of inactivity and have at least a 6-inch curtain in contact with the soil surface anchored by hay bales and sand bags. A designated individual shall check for BLL under vehicles and equipment such as stored pipes before the start of the work day. If a BLL is discovered, the vehicle or equipment shall not be moved until the animal has exited on its own. Pipes and other den-like structures should be capped at both ends until just before use to prevent potentially occurring BLL from being trapped. **MM 4-H** - Prior to construction activities, a qualified biologist shall instruct and distribute informational materials to construction personnel about BLL, including life history information, habitat requirements, and appropriate response to potential observations. The qualified biologist shall monitor construction during initial grading activities. Documentation of this training shall be maintained onsite. **MM 4-I** - Should BLL or other listed federal species be detected within the construction footprint at any point during construction or monitoring, grading activities shall halt, and the USFWS shall be consulted. No grading activities shall commence until USFWS authorizes the re-initiation of grading activities.	PS/LS	PS/LS	LS	PS/LS	NI
3)	Tipton Kangaroo Rat and Giant Kangaroo Rat	The following mitigation measures are recommended for Alternatives A1 and A2 for the Tipton kangaroo rat, and Alternative B for the Tipton kangaroo rat and giant kangaroo rat. **MM 4-J** - A pre-construction survey for Tipton/giant kangaroo rat presence shall be conducted between 2 weeks and 30 calendar days	PS/LS	PS/LS	LS	PS/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

		before the start of ground-disturbing activities. A qualified biologist shall survey for Tipton/giant kangaroo rat signs, such as scat, burrows, tail drag marks, and tracks. Should a confirmed observation of a Tipton/giant kangaroo rat occur, the USFWS service shall be contacted to determine if relocation procedures are necessary. Presence of Tipton/giant kangaroo rat shall be assumed if any positive sign for any Tipton/giant kangaroo rat is observed due to the difficulty of species-level identification without live trapping. **MM 4-K** - Should an active burrow be observed onsite, a 50-foot buffer shall be marked around the burrow entrance by the qualified biologist with high-visibility fencing. Should the active burrow be within the project footprint, USFWS shall be contacted to determine the appropriate removal or avoidance measures. **MM 4-L** - Prior to construction activities, a qualified biologist shall instruct and distribute informational materials to construction personnel about Tipton/giant kangaroo rat including life history information, habitat requirements, and appropriate response to potential observations. The qualified biologist shall monitor construction during initial grading activities. Documentation of this training shall be maintained onsite.					
4)	Burrowing Owl	The following mitigation measures are recommended for Alternatives A1 and A2. **MM 4-M** - A qualified biologist shall conduct a pre-construction survey for burrowing owls within the 30 days prior to construction activities to establish the status of this species on the site. If ground-disturbing activities are delayed or suspended for more than 30 days after the pre-construction survey, the site shall be resurveyed. If burrowing owls are detected on or within approximately 500 feet of the site, a qualified biologist shall be consulted to develop measures to avoid "take" of this species prior to the initiation of any construction activities. Burrows observed onsite shall additionally be treated as potential burrowing owls dens and shall be handled as outlined in mitigation measures for burrowing owls. These measures include establishing appropriate buffers, and may require additional monitoring by a qualified biologist before destruction if burrowing owls are observed during pre-construction surveys. **MM 4-N** - Prior to construction activities, a qualified biologist shall instruct and distribute informational materials to construction personnel about: (1) the life history of the burrowing owl; (2) the importance of habitat requirements; (3) sensitive areas including those identified on site, and (4) the importance of maintaining the required setbacks and detailing the limits of the construction area. Documentation of this training shall be maintained on site.	PS/LS	PS/LS	LS	PS/LS	NI
Potential Effects to Migratory Birds and Other Birds of Prey – Active nests could be disturbed if construction occurred during the nesting season; lighting could increase		The following mitigation measures are recommended for Alternatives A1, A2, and B. **MM 4-O** - Should ground-disturbing activities occur during the general nesting season (February 1 to September 15), a pre-construction nesting bird survey shall be conducted by a qualified biologist no more	PS/LS	PS/LS	LS	PS/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

collisions of birds with structures or cause avian disorientation.	than 14 days prior to the start of ground-disturbing activities. Areas within 500 feet of ground-disturbing activities shall be surveyed for active nests. **MM 4-P** - Should an active nest be identified, an avoidance buffer shall be established based on the needs of the species identified and pursuant to consultation with CDFW and/or USFWS if necessary prior to initiation of ground-disturbing activities. Avoidance buffers may vary in size depending on habitat characteristics, project-related activities, and disturbance levels. Avoidance buffers shall remain in place until the end of the general nesting season or upon determination by a qualified biologist that young have fledged or the nest has failed.					
Potential Effects to Wetlands and Waters of the U.S. – Construction could impact wetlands within project site and improvement area boundaries.	The following mitigation measure is recommended for Alternatives A1, A2, and B. Implement **MM 1-A** and **MM 1-B.**	PS/LS	PS/LS	NI	PS/LS	NI
Cumulative Biological Resources Impacts						
1) Potential Effects to Habitat – The project alternatives, in conjunction with other foreseeable developments, could adversely impact critical or sensitive habitat.	No mitigation required.	LS	LS	LS	LS	NI
2) Potential Effects to Special-Status Species – Development of the project alternatives, taken together with the buildout of the City and County General Plans, could adversely impact special-status species.	The following mitigation measure is recommended for Alternatives A1, A2, and B. Implement **MM 4-A** through **MM 4-N.**	PS/LS	PS/LS	LS	PS/LS	NI
3) Potential Effects to Migratory Birds and Other Birds of Prey – The project alternatives, taken together with the development of other foreseeable projects, could disturb migratory birds.	The following mitigation measure is recommended for Alternatives A1, A2, and B. Implement **MM 4-O** through **MM 4-P.**	PS/LS	PS/LS	LS	PS/LS	NI
4) Potential Effects to Wetlands and/or Waters of the U.S. – The project alternatives and other foreseeable developments could adversely impact wetlands and/or water of the U.S. by increasing erosion or through the discharge of runoff or wastewater.	The following mitigation measure is recommended for Alternatives A1, A2, and B. Implement **MM 1-A** and **MM 1-B.**	PS/LS	PS/LS	NI	PS/LS	NI
SECTION 3.6. Cultural and Paleontological Resources						
Buried Resources – Ground-disturbing activities could uncover and/or damage archaeological sites.	The following measure is recommended for Alternatives A1, A2, A3, and B. **MM 5-A** - A qualified professional archaeologist shall complete pre-construction surveys of the off-site impact areas, documenting and assessing any resources encountered. If the find is determined to be significant by the archaeologist, then an appropriate course of	PS/LS	PS/LS	PS/LS	PS/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

	action shall be implemented prior to construction in the vicinity of the find. Possible actions may include recordation, archaeological testing/data recovery, development of a Treatment Plan, or other measures. All significant archaeological materials recovered shall be subject to scientific analysis, professional curation as appropriate, and documentation prepared by the archaeologist according to current professional standards. **MM 5-B** - In the event of inadvertent discovery of prehistoric or historic archaeological resources during construction-related earth-moving activities, all work within 50 feet of the find shall cease until a professional archaeologist meeting the Secretary of the Interior's qualifications (36 CFR 61) can assess the significance of the find. The BIA and Tribe shall be notified immediately, and all such finds shall be subject to procedures for post-review discoveries without prior planning pursuant to 36 CFR 800.13. If the find is determined to be significant by the archaeologist, BIA and/or Tribe, then the process in mitigation measure A shall be followed. **MM 5-C** - In the event of inadvertent discovery of paleontological resources during construction earth-moving activities, all work within 50 feet of the find shall cease until a qualified professional paleontologist can assess the significance of the find, and the BIA shall be notified. All such finds shall be subject to Section 101 (b)(4) of NEPA (40 CFR 1500 1508). If the find is determined to be significant by the paleontologist, then representatives of the BIA shall meet with the paleontologist to determine the appropriate course of action, including the development of an Evaluation Report and/or Mitigation Plan, if necessary. All significant paleontological materials recovered shall be subject to scientific analysis, professional curation, and a report prepared by the professional paleontologist according to current professional standards. **MM 5-D** - If human remains are discovered during ground-disturbing activities on Tribal lands, all work within 100 feet of the find shall cease immediately and the Tribe, BIA, and County Coroner shall be notified immediately. No further disturbance shall occur until the Tribe, BIA, and County Coroner have made the necessary findings as to the origin and disposition of the remains. If the remains are determined to be of Native American origin, the provisions of Native American Graves Protection and Repatriation Act shall be applied.					
Paleontological Resources – Paleontological resources could be uncovered and/or damaged by ground-disturbing activities.	The following measure is recommended for Alternatives A1, A2, A3, and B. Implement **MM 5-A** through **MM 5-D.**	PS/LS	PS/LS	PS/LS	PS/LS	NI
Cumulative Cultural Resources Impacts – Construction activities, in conjunction with the development of other foreseeable projects, could disturb archaeological or paleontological resources.	The following measure is recommended for Alternatives A1, A2, A3, and B. Implement **MM 5-A** through **MM 5-D.**	PS/LS	PS/LS	PS/LS	PS/LS	NI
SECTION 3.7. Socioeconomic Conditions						

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

Economic Effects							
1)	**Construction** – Construction of the project alternatives could impact spending and labor demand in the region.	No mitigation required.	BI	BI	LS	BI	NI
2)	**Operation** – Operation of the project alternatives could impact spending and labor demand in the region.	No mitigation required.	BI	BI	LS	BI	NI
3)	**Substitution Effects**						
a)	**Gaming Market Substitution Effects** – Operation of the project alternatives could reduce revenues at existing tribal casinos.	No mitigation required.	LS	LS	NI	LS	NI
b)	**Non-Gaming Substitution Effects** – Operation of the project alternatives could reduce revenues at existing hotels, restaurants, and retail facilities.	No mitigation required.	BI	BI	NI	BI	NI
4)	**Fiscal Effects** – The project alternatives could adversely impact County and/or City tax revenues and operating budgets.	No mitigation required.	BI	BI	LS	BI	NI
Employment							
1)	**Construction** – Construction of the project alternatives could impact wages, job availability, and/or employment rates.	No mitigation required.	BI	BI	LS	BI	NI
2)	**Operation** – Operation of the project alternatives could impact wages, job availability, and/or employment rates.	No mitigation required.	BI	BI	LS	BI	NI
Housing – Employment-driven in-migration could cause or exacerbate housing supply issues.		No mitigation required.	LS	LS	LS	LS	NI
Social Effects – The following social impacts could result from operation of the project alternatives:							
1)	**Problem and Pathological Gambling** – Operation of the project alternatives could increase the prevalence of problem or pathological gaming.	No mitigation required.	LS	LS	NI	LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

2) Crime – Operation of the project alternatives could increase the incidence of crime in the region.	The following measure is recommended for Alternatives A1, A2, and B. Implement **MM 9-A**.	PS/LS	PS/LS	NI	PS/LS	NI
Community Effects – Impacts to the following areas could result from development of the project alternatives:						
1) Schools – Employment-driven in-migration could introduce a number of new students in excess of the regional enrollment capacity.	No mitigation required.	LS	LS	LS	LS	NI
2) Libraries and Parks – Employment-driven in-migration could overburden existing recreational facilities.	No mitigation required.	LS	LS	LS	LS	NI
Effects to the Tejon Indian Tribe	No mitigation required.	BI	BI	BI	BI	NI
Environmental Justice – There are some identified minority and low-income populations in the vicinity of the alternative sites that could be affected.	The following measures are recommended for Alternatives A1, A2, and B. Implement **MM 7-A** through **MM 7-H** and **MM 3-A.**	PS/LS	PS/LS	LS	PS/LS	NI
Cumulative Socioeconomic Impacts – The project alternatives, taken together with the buildout of the City and County General Plans, could yield adverse impacts to the local labor market, housing availability, and local governments.						
1) Economy and Employment	No mitigation required.	BI	BI	LS	BI	NI
2) Population and Housing	No mitigation required.	LS	LS	LS	LS	NI
3) Substitution Effects	No mitigation required.	LS	LS	LS	LS	NI
SECTION 3.8. Transportation/ Circulation						
Construction Traffic – Vehicle trips associated with project construction could negatively impact roadways and significantly increase traffic volume.	No mitigation required.	LS	LS	LS	LS	NI
Project Traffic – Vehicle trips associated with the operation of the project alternatives could significantly increase traffic volume and exceed the designed capacity of regional roadways.	The following measures are recommended for Alternatives A1 and A2. **MM 7-A** - Stevens Drive/Maricopa Highway Intersection: install a traffic signal and provide an exclusive WB left-turn lane on Maricopa Highway at Stevens Drive, or install a roundabout, based on the recommendations of an ICE study, with an associated fair-share contribution of 100 percent for Alternatives A1 and A2. **MM 7-B** - Maricopa Highway/South Sabodan Street: install a traffic signal with an associated fair-share contribution of 100% for Alternatives A1 and A2 and the following geometry. **SB** – Construct the north leg of the intersection and provide one left-turn lane and one right-turn lane in the SB direction and one NB lane.	S/LS	S/LS	LS	S/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

	WB – One left-turn lane, one through lane, and one right-turn lane. **EB** – One left-turn lane, one through lane, and one shared through/right lane. **NB** – One left-turn lane and one shared through/right lane. Alternatively, install a roundabout, based on the recommendations of an ICE study. The following measures are recommended for Alternative B. **MM 7-F** - Stevens Drive/Maricopa Highway Intersection: install a traffic signal and provide an exclusive WB left-turn lane on Maricopa Highway at Stevens Drive, or install a roundabout, based on the recommendations of an ICE study, with an associated fair-share contribution of 100% for Alternative B **MM 7-G** - Maricopa Highway/I-5 SB Ramps Intersection: install an exclusive WB left-turn lane on Maricopa Highway and a traffic signal, or a roundabout with or without a loop ramp, based on the recommendations of an ICE study, with an associated fair-share contribution of 100 percent for Alternative B. **MM 7-H** - Maricopa Highway/I-5 NB Ramps Intersection: install an exclusive EB left-turn lane on Maricopa Highway and a traffic signal or a roundabout with or without a loop ramp, based on the recommendations of an ICE study, with an associated fair-share contribution of 100 percent for Alternative B.					
Roadway Conditions -- Traffic generated by the project alternatives could cause the degradation of roadway pavement.	The following measures are recommended for Alternative B. **MM 7-I** - Maricopa Highway Segment: The Tribe shall make an offer of dedication to Caltrans for 23 feet of right-of-way needed to accommodate the ultimate configuration of SR-166, as described in the May 2016 Transportation Concept Report for SR-166.	LS	LS	LS	PS/LS	NI
Transit, Bicycle, and Pedestrian Facilities -- Traffic generated by the project alternatives could adversely impact other transportation facilities.	No mitigation required.	NI	NI	NI	NI	NI
Cumulative Transportation/Circulation Impacts (Year 2040) – Development of the project alternatives in conjunction with other development projects could adversely impact traffic flow, roadway quality, and transportation facilities.	The following measures are recommended for Alternatives A1 and A2. Implement **MM 7-A** and **MM 7-B**. **MM 7-C** - Maricopa Highway/I-5 SB Ramps Intersection: contribute a fair share of 14 percent for Alternative A1 and 13 percent for Alternative A2 towards providing an exclusive WB left-turn lane on Maricopa Highway and installing a traffic signal or a roundabout with or without a loop ramp, based on the recommendations of an ICE study. **MM 7-D** - Maricopa Highway/I-5 NB Ramps Intersection: contribute a fair share of 26 percent for Alternative A1 and 24 percent for Alternative A2 towards providing an exclusive EB left-turn lane on Maricopa Highway and installing a traffic signal or a roundabout with or without a loop ramp, based on the recommendations of an ICE study.	S/LS	S/LS	LS	S/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

	MM 7-E - SR-166 to NB I-5 Ramp Merge: contribute a fair share of 52 percent for Alternative A1 and 48 percent for Alternative A2 towards providing a 1,000-foot auxiliary lane on I-5 NB mainline at the merge. The following measures are recommended for Alternative B. Implement **MM 7-F** through **MM 7-H.**					
SECTION 3.9. Land Use						
Land Use Plans – The project alternatives could conflict with County land use plans and ordinances (applicable to non-trust property).	No mitigation required.	LS	LS	LS	LS	NI
Land Use Compatibility – The project alternatives could conflict with neighboring land uses.	No mitigation required.	LS	LS	LS	LS	NI
Agriculture – The project alternatives could conflict with state and federal farmland designations.	No mitigation required.	LS	LS	LS	LS	NI
Cumulative Land Use Impacts – Development of the project alternatives in conjunction with other development projects could disrupt or impede access to neighboring land uses.	No mitigation required.	LS	LS	LS	LS	NI
SECTION 3.10. Public Services						
Water Supply – The project alternatives could exceed the capacity of the municipal water supply or require significant improvements to the existing municipal water distribution infrastructure.	No mitigation required.	NI	NI	NI	NI	NI
Wastewater Service – Operation of the project alternatives could exceed the capacity of the existing municipal wastewater treatment and disposal infrastructure.	No mitigation required.	NI	NI	NI	NI	NI
Solid Waste Service						
1) Construction – Construction of the project alternatives could generate quantities or types of waste that cannot be accommodated by regional waste disposal facilities.	No mitigation required.	LS	LS	NI	LS	NI
2) Operation - Operation of the project alternatives could generate quantities or types of waste that cannot be accommodated by regional waste disposal facilities.	No mitigation required.	LS	LS	LS	LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

Law Enforcement – Service calls to local law enforcement agencies could increase due to the project alternatives.		The following mitigation measure is recommended for Alternatives A1, A2, and B. **MM 9-A** - Prior to operation, the Tribe shall enter into agreements to reimburse the KCSD, KCFD, and county emergency medical services for quantifiable costs incurred in conjunction with providing services.	PS/LS	PS/LS	LS	PS/LS	NI
Fire Protection and Emergency Medical Services							NI
1)	**Construction** – Construction activities could increase the risk of fire.	No mitigation required.	LS	LS	LS	LS	NI
2)	**Operation** – The project alternatives could increase the number of service calls to local fire protection/emergency medical service providers.	The following mitigation measure is recommended for Alternatives A1, A2, and B. Implement **MM 9-A**.	PS/LS	PS/LS	LS	PS/LS	NI
Energy							
1)	**Construction** – Construction activities could damage underground utilities.	The following mitigation measure is recommended for Alternatives A1, A2, and B. Implement **MM 9-A**.	PS/LS	PS/LS	LS	PS/LS	NI
2)	**Operation** – Operation of the project alternatives could necessitate improvements to electrical and natural gas infrastructure that generate adverse environmental effects.	The following mitigation measures are recommended for Alternatives A1, A2, and B. Implement **MM 9-A**. **Public Services MM E** - The Tribe shall be responsible for a fair share of costs associated with any relocation of existing SoCalGas and PG&E facilities to accommodate the proposed development and traffic improvements. Appropriate funds shall be made available to conduct any necessary relocation and to construct any system upgrades required by the project.	PS/LS	PS/LS	LS	PS/LS	NI
Schools, Libraries, and Parks – Operation of the project alternatives could adversely impact schools, libraries, and parks.		No mitigation required.	LS	LS	LS	LS	NI
Cumulative Public Services Impacts							
1)	**Water Supply** – Development of the project alternatives, taken together with other foreseeable developments, could adversely impact the provision of water	No mitigation required.	NI	NI	NI	NI	NI
2)	**Wastewater** – Development of the project alternatives in conjunction with the buildout of the City and County General Plans could adversely impact the treatment and disposal of wastewater.	No mitigation required.	NI	NI	NI	NI	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

1)	**Solid Waste** – The project alternatives, taken together with other foreseeable developments, could adversely impact the disposal of solid waste.	No mitigation required.	LS	LS	LS	LS	NI
2)	**Law Enforcement** – Development of the project alternatives and other foreseeable projects could adversely impact the provision of law enforcement services.	No mitigation required.	LS	LS	LS	LS	NI
3)	**Fire Protection and Emergency Medical Services** – Operation of the project alternatives, taken together with other foreseeable development projects, could impede the provision of fire protection and emergency medical services.	No mitigation required.	LS	LS	LS	LS	NI
4)	**Energy** – Development of the project alternatives, in conjunction with the buildout of the City and County General Plans, could adversely impact the provision of electrical and natural gas services and the physical environment.t	No mitigation required.	LS	LS	LS	LS	NI
5)	**Schools, Libraries, and Parks --** Operation of the project alternatives could adversely impact schools, libraries, and parks.	No mitigation required	LS	LS	LS	LS	NI
SECTION 3.11. Noise							
Construction Noise– Noise associated with construction activities could adversely affect human health and/or the physical environment.		No mitigation required.	LS	LS	NI	LS	NI
Construction Traffic - Construction of the project alternatives could increase traffic-related noise in the vicinity of roads surrounding the project sites, with the exception of the roads analyzed separately below:		No mitigation required.	LS	LS	NI	LS	NI
Construction Vibration – Vibration associated with construction activities could adversely affect human health and/or the physical environment.		No mitigation required.	LS	LS	NI	LS	NI
Operational Noise							
1)	**Traffic** – Operation of the project alternatives could increase traffic-	No mitigation required.	LS	LS	LS	LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

	related noise in the vicinity of roads surrounding the project sites.						
2)	**Other Noise Sources**– Vibration and other noise sources associated with the project alternatives could contribute to a significant increase in noise levels.	No mitigation required.	LS	LS	LS	LS	NI
3)	**Vibration -** Vibration associated with the operation of the alternatives could adversely affect human health and/or the physical environment.	No mitigation required.	LS	LS	LS	LS	NI
Cumulative Noise Impacts - Development of the project alternatives, in combination with other foreseeable projects, could contribute toward a significant increase in noise levels.		No mitigation required.	LS	LS	LS	LS	NI
SECTION 3.12. Hazardous Materials							
Construction – Construction of the project alternatives could disturb existing hazardous materials or introduce new hazardous materials into the environment.		The following measures are recommended for Alternatives A1, A2, and B. **MM 11-A** - Workers and supervisors should be trained in Valley Fever locations, symptoms, and methods to minimize the risks of contracting Valley Fever before commencing work. This includes a "Valley Fever Training Handout," and a set schedule of educational sessions. The following documentation shall be assembled and retained by the Tribe. 1. A sign-in sheet of training participants, including names, signatures, and dates. 2. A written flyer or brochure that includes educational information on the health effects of exposure to Valley Fever. 3. Training on methods that may be able to prevent Valley Fever Infection. 4. A demonstration to employees on how to use personal projective equipment, such as respiratory masks, in order to reduce potential exposure to *C. immitis* spores. This protective equipment should be readily available for employees to use during work hours. Proof of this training can consist of printed materials, DVD, photographs, and/or digital media files. **MM 11-B** - The Tribe shall develop a Valley Fever Dust Management Plan that addresses possible *C. immitis* spores and mitigations for potential infections from *C. immitis* spores. The plan should encompass a program to assess the possible exposure to *C. immitis* spores from construction activities and to outline appropriate safety precautions that will be implemented, as appropriate, to reduce the risk of exposure to spores from *C. immitis*. The plan shall include of the following. 1. When performing soil-disturbing related tasks, workers shall be positioned upwind or crosswind when possible.	PS/LS	PS/LS	PS/LS	PS/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

	2. Heavy equipment, vehicles and machinery with factory enclosed cabs shall be furnished with HEPA filters when able and the windows should be closed. Furthermore, proof of workers being trained on the proper use of applicable heavy equipment cabs shall be retained (e.g., turning on the air conditioner before using equipment). 3. Communication methods within enclosed cabs shall be provided, such as two-way radios. 4. When dust exposure is unavoidable, workers shall wear approved respiration protection that covers the nose and mouth. The particulate filters should be rated at N95, N99, N100, or HEPA. 5. Separate, clean areas with hand-washing stations shall be provided for employees to eat at. 6. Equipment inspection stations shall be installed at access/egress points. At these stations, construction vehicles and equipment shall be inspected and cleaned of excess soil material as needed before being removed offsite. 7. Workers shall be trained on how to recognize Valley Fever symptoms and report symptoms surmised as being Valley Fever to a supervisor when encountered. 8. A medical professional shall be consulted in order to develop a medical protocol for evaluating employees with suspected Valley Fever. 9. An information handout concerning Valley Fever shall be disseminated to the public within a 3.0-mile radius of the project and no less than 30 days before the commencement of construction activities. The handout shall address the following topics about Valley Fever: potential sources and causes, common symptoms, options or remedies available if an individual should experience symptoms, and the locations of where tests are available for verifying Valley Fever.					
Operation – Operation of the project alternatives could introduce hazardous materials into the physical environment.	Applicable measures from **MM 11-A** and **11-B** shall be implemented for Alternative A3.	LS	LS	PS/LS	LS	LS
Cumulative Hazardous Materials Impacts – Development of the project alternatives, in combination with other foreseeable projects, could disturb existing hazardous materials or introduce new hazardous materials to the physical environment.	No mitigation required.	LS	LS	LS	LS	LS
SECTION 3.13. Aesthetics						
Construction– Construction activities could obstruct views of scenic resources.	No mitigation required.	LS	LS	NI	LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

Operation – Development of the project alternatives could generate significant adverse aesthetic impacts.	No mitigation required.	LS	LS	NI	LS	NI
Effects on Viewsheds Surrounding the Project – Development of the project alternatives could alter the viewsheds surrounding the site.	No mitigation required.	LS	LS	NI	LS	NI
Light and Glare – Development of the project alternatives could cause visually undesirable and potentially dangerous glares on private residences or public areas.	No mitigation required.	LS	LS	NI	LS	NI
Cumulative Aesthetics Impacts – The project alternatives, in combination with other foreseeable alternatives, could be visually incompatible with existing land uses or otherwise adversely impact aesthetic resources.	No mitigation required.	LS	LS	NI	LS	NI
SECTION 3.14. Indirect and Growth-Inducing Effects						
SECTION 3.14.1. Indirect Effects from Off-Site Mitigation Improvements						
Geology and Soils – Construction of roadway improvements could increase the potential for soil erosion and geological hazards.	The following measures are recommended for Alternatives A1, A2, and B. Implement **MM 1-A** and **MM 1-B**.	PS/LS	PS/LS	NI	PS/LS	NI
Water Resources – Construction of roadway improvements could increase stormwater runoff and erosion and adversely impact water quality.	The following measures are recommended for Alternatives A1, A2, and B. Implement **MM 1-A** and **MM 1-B**.	PS/LS	PS/LS	NI	PS/LS	NI
Air Quality – Construction of roadway improvements could adversely impact air quality through the emission of air pollutants.	No mitigation required.	LS	LS	NI	LS	NI
Biological Resources – Habitat could be lost and special-status species could be disturbed due to the construction of roadway improvements.	The following mitigation measure is recommended for Alternatives A1, A2, and B. Implement **MM 4-A** through **MM 4-P**.	PS/LS	PS/LS	NI	PS/LS	NI
Cultural Resources – Construction of roadway improvements has the potential to disturb archaeological resources.	The following measures are recommended for Alternatives A1, A2, and B. Implement **MM 5-A** through **MM 5-D**.	PS/LS	PS/LS	NI	PS/LS	NI
Socioeconomic Conditions – Roadway improvements could cause disturbances in traffic flow and/or the loss of access to businesses and communities.	No mitigation required.	LS	LS	NI	LS	NI
Transportation/Circulation – Roadway improvements could disrupt traffic flow and/or access to surrounding land uses.	No mitigation required.	LS	LS	NI	LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

Land Use – Roadway improvements could conflict with City or County planning ordinances or adversely impact adjacent property owners.	No mitigation required.	LS	LS	NI	LS	NI
Public Services – Roadway improvements could significantly disrupt the provision of public services.	No mitigation required.	LS	LS	NI	LS	NI
Noise – Construction of the roadway improvements could result in significant increases in ambient noise levels.	No mitigation required.	LS	LS	NI	LS	NI
Hazardous Materials – Hazardous materials could be released inadvertently and dry vegetation could be ignited during grading and construction activities.	The following measures are recommended for Alternatives A1, A2, and B. Implement **MM 11-A** and **MM 11-B**.	PS/LS	PS/LS	NI	PS/LS	NI
Aesthetics – Roadway improvements could significantly alter viewsheds.	No mitigation required.	LS	LS	NI	LS	NI
SECTION 3.14.2. Growth-Inducing Effects – Development of the project alternatives could promote population growth and/or the construction of additional housing, which could adversely impact the physical and human environments.						
Employment and Commercial Growth – Development of the project alternatives could promote population growth and/or the construction of additional housing, which could adversely impact the physical and human environments.		LS	LS	NI	LS	NI
Geology and Soils – Construction of potential future developments on the site could increase the potential for soil erosion and geological hazards.	The following measure is recommended for Alternatives A1, A2, and B. Implement **MM 1-A** and **MM 1-B**.	PS/LS	PS/LS	NI	PS/LS	NI
Water Resources – Construction of potential future developments on the site could increase stormwater runoff and erosion and adversely impact water quality.	The following measure is recommended for Alternatives A1, A2, and B. Implement **MM 1-A** and **MM 1-B**.	PS/LS	PS/LS	NI	PS/LS	NI
Air Quality – Construction of potential future developments on the site could adversely impact air quality through the emission of air pollutants.	The following measures are recommended for Alternatives A1 and A2. **MM 3-B** - Prior to operation of the potential future development on the Mettler or Maricopa Highway Sites as described in **Table 3.14-2**, the Tribe shall purchase 11.42 tons of NOx ERCs and 10.03 tons of ROG ERCs for Alternative A1, as specified in the Draft General Conformity Determination included in **Appendix N**. Alternative A2 would require the purchase of 12.16 tons of NOx ERCs and 10.09 tons of ROG ERCs. Because the air quality effects are associated with operation of the facility and not with construction of the facility, real, surplus, permanent, quantifiable, and enforceable ERCs will be purchased prior to the opening day of the facility. ERCs shall be purchased in accordance with 40 CFR 93 Subpart B conformity regulations. With the purchase of the ERCs, the project would conform to the applicable	PS/LS	PS/LS	NI	PS/LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

	SIP and result in a less-than-adverse effect to regional air quality. As an alternative to or in combination with purchasing the above ERCs, the Tribe has the option to enter into a VERA with the SJVAPCD. The VERA would allow the Tribe to fund air quality projects that quantifiably and permanently offset project operational emissions.					
Biological Resources – Habitat could be lost and special-status species could be disturbed due to the construction of potential future developments on the site.	The following measures are recommended for Alternatives A1, A2, and B. Implement **MM 4-A** through **MM 4-P**.	PS/LS	PS/LS	NI	PS/LS	NI
Cultural Resources – Construction of potential future developments on the site has the potential to disturb archaeological resources.	The following measures are recommended for Alternatives A1, A2, and B. Implement **MM 5-A** through **MM 5-D**.	PS/LS	PS/LS	NI	PS/LS	NI
Socioeconomic Conditions – Potential future developments on the site could cause disturbances in traffic flow and/or the loss of access to businesses and communities.	No mitigation required.	LS	LS	NI	LS	NI
Transportation/Circulation – Potential future developments on the site could disrupt traffic flow and/or access to surrounding land uses.	The following measures are recommended for Alternatives A1, A2, and B. Implement **MM 7-A** through **MM 7-H**.	PS/LS	PS/LS	NI	PS/LS	NI
Land Use – Potential future developments on the site could conflict with City or County planning ordinances or adversely impact adjacent property owners.	No mitigation required.	LS	LS	NI	LS	NI
Public Services – Potential future developments on the site could significantly disrupt the provision of public services.	No mitigation required.	LS	LS	NI	LS	NI
Noise – Construction of the potential future developments on the site could result in significant increases in ambient noise levels.	No mitigation required.	LS	LS	NI	LS	NI
Hazardous Materials – Hazardous materials could be released inadvertently and dry vegetation could be ignited during grading and construction activities.	The following measures are recommended for Alternatives A1, A2, and B. Implement **MM 11-A** and **MM 11-B**.	PS/LS	PS/LS	NI	PS/LS	NI
Aesthetics – Potential future developments on the site could significantly alter viewsheds.	No mitigation required.	LS	LS	NI	LS	NI

(Legend: NI = No Impact; BI = Beneficial Impact; LS = Less-than-Significant; PS = Potentially Significant; S = Significant)

APPENDIX B

ALTERNATIVES ELIMINATED FROM CONSIDERATION

ALTERNATIVES ELIMINATED FROM CONSIDERATION

The intent of the analysis of alternatives in the EIS is to present to decision-makers and the public a reasonable range of alternatives that are both feasible and sufficiently different from each other in critical aspects. Section 1502.14(a) of the CEQ's Regulations for implementing NEPA requires a brief discussion of alternatives that were eliminated from further study and the reasons for their having been eliminated. Alternatives, other than the No Action Alternative, were screened based on four criteria: 1) extent to which they meet the purpose and need for the Proposed Action, 2) feasibility, 3) ability to reduce environmental impacts, and 4) ability to contribute to a reasonable range of alternatives. Several alternatives were considered and rejected for full EIS analysis based on the above criteria. These are summarized below:

NON-GAMING DEVELOPMENT FOR EACH OF THE ALTERNATIVE LOCATIONS WITHIN THE TRIBE'S TRADITIONAL TERRITORY

This alternative was suggested by a commenter during the public scoping period. The Mettler and Maricopa Highway sites are both located within the central portion of the Historic 1851 Tejon Treaty Area and are considered Alternatives A and B within the EIS. A non-gaming alternative was analyzed for the Mettler Site (Alternative A3. A non-gaming alternative for the Maricopa Highway Site was analyzed but eliminated from consideration because non-gaming development on the site would not result in significant economic benefits to the Tribe. Additionally, due to the current zoning and land uses of the Maricopa Highway site, development of a non-gaming alternative would result in environmental impacts similar to the gaming alternatives presented in the EIS, and socioeconomic impacts would be similar to the gaming alternatives presented in the EIS. Therefore, analyzing a non-gaming alternative at the Maricopa Site would not meaningfully add to the range of alternatives, and would not meet the purpose and need of the project.

GAMING DEVELOPMENT ALTERNATIVES THAT DO NOT INCLUDE APPROVAL OF A GAMING MANAGEMENT AGREEMENT BY THE NIGC

For each alternative which includes a casino, the gaming activity may either be managed directly by employees of the Tribe or by a management contractor pursuant to a gaming management agreement approved by the NIGC. Under either form of management of the casino, the environmental impacts of the development of the casino for each alternative are the same. Therefore, analyzing gaming development alternatives that do not include approval of a gaming management agreement by the NIGC would not meaningfully add to the range of alternatives and such alternatives were eliminated.

FUTURE EXPANSION ALTERNATIVE

This alternative was suggested by a commenter during the public scoping period. This alternative would include future expansion plans of the proposed casino resort beyond what is being currently proposed by the Tribe. The respective sizes of the proposed alternatives described above were determined based on a market demand analysis; therefore, a casino resort larger than those proposed would not be feasible. Furthermore, there are no known plans for future expansion, and thus, this alternative was eliminated from consideration.

TEJON INDUSTRIAL COMPLEX SITE

The Tejon Industrial Complex Site is south of the Outlets at Tejon at the junction of I-5 and South Wheeler Ridge Road. Gaming and non-gaming options were considered for this site; however, this alternative site was eliminated from consideration due to the lack of a willing seller of the required real estate under viable terms and conditions.

TAFT HIGHWAY SITE

The Taft Highway Site is northeast of the I-5 and SR-119 intersection. A casino resort development similar to Alternative A1 was considered on this site; however, as the Taft Highway Site is not located within the Tribe's Historic 1851 Tejon Treaty Area and due to financial viability considerations, this site was eliminated from further consideration.

APPENDIX C

OFF-RESERVATION CHECKLIST

OFF-RESERVATION ENVIRONMENTAL IMPACT ANALYSIS CHECKLIST

I. AESTHETICS

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage off-reservation scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Create a new source of substantial light or glare, which would adversely affect day or nighttime views of historic buildings or views in the area?	☐	☐	☒	☐

II. AGRICULTURAL RESOURCES

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Involve changes in the existing environment, which, due to their location or nature, could result in conversion of off-reservation farmland, to non-agricultural use or conversion of off-reservation forest land to non-forest use?	☐	☐	☒	☐

III. AIR QUALITY

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b) Violate any air quality standard or contribute to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
d) Expose off-reservation sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people off-reservation?	☐	☐	☒	☐

IV. BIOLOGICAL RESOURCES

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Have a substantial adverse impact, either directly or through habitat modifications, on any species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any off-reservation riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected off-Reservation wetlands as defined by Section 404 of the Clean Water Act?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

V. CULTURAL RESOURCES

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Cause a substantial adverse change in the significance of an off-reservation historical or archaeological resource?	☐	☒	☐	☐
b) Directly or indirectly destroy a unique off-reservation paleontological resource or site or unique off-reservation geologic feature?	☐	☒	☐	☐
c) Disturb any off-reservation human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

VI. GEOLOGY AND SOILS

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Expose off-reservation people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial off-reservation soil erosion or the loss of topsoil?	☐	☒	☐	☐

VII. GREENHOUSE GAS EMISSIONS

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the off-reservation environment?	☐	☐	☒	☐

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
b) Conflict with any off-reservation plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

VIII. HAZARDS AND HAZARDOUS MATERIALS

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Create a significant hazard to the off-reservation public or the off-reservation environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Create a significant hazard to the off-reservation public or the off-reservation environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed off-reservation school?	☐	☐	☒	☐
d) Expose off-reservation people or structures to a significant risk of loss, injury, or death involving wildland fires.	☐	☐	☒	☐

IX. WATER RESOURCES

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Violate any water quality standards or waste discharge requirements off-Reservation?	☐	☐	☒	☐

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
b) Substantially deplete off-reservation groundwater supplies or interfere substantially with groundwater recharge such that there should be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion of siltation off-site?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding off-site?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff off-reservation?	☐	☐	☒	☐
f) Place structures within a 100-year flood hazard area, which would impede or redirect off-Reservation flood flows?	☐	☐	☒	☐
g) Expose off-reservation people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐

X. LAND USE

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Conflict with any off-reservation land use plan, policy, or regulation of an agency adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
b) Conflict with any applicable habitat conservation plan or natural community conservation plan covering off-reservation lands?	☐	☐	☒	☐

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*

XI. MINERAL RESOURCES

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Result in the loss of availability of a known off-reservation mineral resource classified MRZ-2 by the State Geologist that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of an off-Reservation locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

XII. NOISE

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Expose persons off-reservation to noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Expose persons off-reservation to excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) Result in a substantial permanent increase in ambient noise levels in the off-reservation vicinity of the project?	☐	☐	☒	☐
c) Result in a substantial temporary or periodic increase in ambient noise levels in the off-reservation vicinity of the project?	☐	☐	☒	☐

XIII. POPULATION AND HOUSING

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Induce substantial off-reservation population growth?	☐	☐	☒	☐
b) Displace substantial numbers of existing houses, necessitating the construction of replacement housing elsewhere off-reservation?	☐	☐	☒	☐

XIV. PUBLIC SERVICES

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered off-reservation governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the off-reservation public services:				
Fire protection?	☐	☒	☐	☐
Police protection?	☐	☒	☐	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☒	☐

XV. RECREATION

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Increase the use of existing off-reservation neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐

XVI. TRANSPORTATION / TRAFFIC

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the off-reservation circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☒	☐	☐
b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated off-reservation roads or highways?	☐	☒	☐	☐
c) Substantially increase hazards to an off-reservation design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access for off-reservation responders?	☐	☐	☒	☐

XVII. TRIBAL CULTURAL RESOURCES

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historic resources as defined in Public Resources Code Section 5020.1(k), or	☐	☐	☒	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section	☐	☒	☐	☐

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resources to a California Native American tribe.				

XVIII. UTILITIES AND SERVICE SYSTEMS

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Exceed off-reservation wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant off-reservation environmental effects?	☐	☒	☐	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant off-reservation environmental effects?	☐	☐	☐	☒
d) Result in a determination by an off-reservation wastewater treatment provider (if applicable), which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

XIX. CUMULATIVE EFFECTS

Would the Proposed Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less than Significant Impact*	*No Impact*
a) Have impacts that are individually limited, but cumulatively considerable off-reservation? "Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past, current, or probable future projects.	☐	☒	☐	☐

APPENDIX D

INTERGOVERNMENTAL AGREEMENT

Kern County
Agt.# 475-2019

INTERGOVERNMENTAL AGREEMENT

This Intergovernmental Agreement (this "Agreement") is made effective as of July 23, 2019, by and between the County of Kern (the "County"), a political subdivision of the State of California, and the Tejon Indian Tribe (the "Tribe"), a federally recognized Indian tribe. The capitalized terms not otherwise defined herein shall have the meanings set forth below.

RECITALS

WHEREAS, the Tribe is without a reservation or other trust land on which to develop its tribal economy, housing, healthcare, and other services; and

WHEREAS, in 2016 the Tribe and the County entered into a separate Memorandum of Understanding for the provision of services to 10.3 acres of real property at 4941 David Road if that property is placed into trust (Kern County Agreement #1118-2016, referred to herein as the "David Road Agreement"); and

WHEREAS, the Tribe has requested that the Secretary of the United States Department of the Interior accept title to certain Property located within an unincorporated area of the County in trust for the Tribe, a portion of which would be used for the development of a tribal resort, hotel and gaming project to promote tribal economic development, self-sufficiency, and self-government; and

WHEREAS, the Secretary has authorized the Bureau of Indian Affairs to prepare an environmental impact statement, or EIS, to consider a range of alternative project developments and sites within the Tribe's aboriginal territory to meet the purposes and needs for the Trust Acquisition and the conduct of gaming; and

WHEREAS, the County and Tribe are participating as cooperating agencies in the preparation of the EIS with the opportunity to review and comment on administrative drafts prior to the release of each of the draft and final EIS to the public; and

WHEREAS, the Tribe will be required to implement the mitigation measures identified in the final EIS pursuant to the Record of Decision for the Trust Acquisition; and

WHEREAS, the Tribe does not intend to make any physical changes to the environment on the sites being considered in the EIS prior to approval of the Trust Acquisition and the Tribe has not requested the County to issue and the County does not commit itself to issue any discretionary approval of any kind under this Agreement; and

WHEREAS, the primary purpose of this Agreement is to provide a funding mechanism for the Tribe to compensate the County for law enforcement, fire protection, and emergency services, to provide reasonable compensation for programs designed to

treat problem gambling, to mitigate any effect on public safety attributable to the Project, and to mitigate all other impacts of the Project on the County; and

WHEREAS, if the Secretary takes the Property in trust for the Tribe, the County will not have the legal authority to assess real property taxes against the newly acquired trust land or to collect taxes or other assessments from the Tribe or to extend its regulatory authority over the Property; and

WHEREAS, the County has determined after public hearing that it is in the best interests of the County to enter into this Agreement; and

WHEREAS, after taking into account the provisions of this Agreement, the Tribe's commitment to mitigate any potentially significant environmental impacts identified in the EIS, the potential job creation, and the other economic benefits of the Project to the Tribe and the community, the County has determined that the development, construction, and operation of the Project would not be detrimental to the County and the surrounding community; and

WHEREAS, the County and the Tribe wish to enter into this Agreement to build upon their cooperative and mutually respectful government-to-government relationship.

NOW, THEREFORE, the Parties hereby agree as follows:

1. Definitions

The terms not defined elsewhere in this Agreement shall have the following meanings:

"Agreement" means this Intergovernmental Agreement between the County and the Tribe.

"Applicable Codes" means the California Building Code and the California Public Safety Code applicable to the County, as set forth in titles 19 and 24 of the California Code of Regulations, as those regulations may be amended, including, but not limited to, codes for building, electrical, energy, mechanical, plumbing, fire and safety.

"Bureau of Indian Affairs" means the Bureau of Indian Affairs of the United States Department of the Interior.

"CEQA" means the California Environmental Quality Act (California Public Resources Code §§ 21000 *et seq.*) and the guidelines promulgated thereunder, as the same may be amended or modified from time to time.

"Construction Date" means, after the Trust Acquisition, the later of the date the Tribe closes a loan to obtain funding from a financial institution to finance construction of the Gaming Facility or commences vertical construction of the Gaming Facility.

"County" means the County of Kern, California, a political subdivision of the State, and its departments, agencies and subdivisions, including, but not limited to, the Sheriff and Sheriff's Office and the County Fire Department.

"County Administrative Office" means a department of the County responsible for executing and coordinating County administrative and financial policy.

"CPI Adjustment" means an annual increase from the dollar amount applicable to the previous year that is equal to the annual increase in the Consumer Price Index used by the Kern County Assessor's Office, as provided in the California State Board of Equalization's annual California Consumer Price Index letter to County Assessors.

"EIS" means the environmental impact statement for the Project and Trust Acquisition being prepared by the Bureau of Indian Affairs as the lead federal agency under authority delegated by the Secretary pursuant to NEPA.

"Gaming Facility" means any building on the Property in which class III gaming authorized under the Tribal-State Compact occurs.

"IGRA" means the Indian Gaming Regulatory Act of 1988 (25 U.S.C. §§ 2701 *et seq.*) and the regulations promulgated thereunder, as the same may be amended or modified from time to time.

"Joint Substation" has the meaning given in Subsection 2(a) of this Agreement.

"NEPA" means the National Environmental Policy Act (42 U.S.C. §§ 4321 *et seq.*) and the regulations promulgated thereunder, as the same may be amended or modified from time to time.

"Opening Date" means the date on which the Tribe commences commercial operations open to the public on the Property.

"Party" means the County or the Tribe.

"Parties" means the County and the Tribe.

"Project" means the development, construction and operation of all uses on the Property, including the Gaming Facility.

"Property" means the approximately 306 acres of fee land located within the unincorporated area of the County identified in the notice to prepare an EIS for the proposed Trust Acquisition published on August 13, 2015 in the Federal Register (80

Fed. Reg. 48559) as described and shown on Attachment A or such other property that is identified in the Record of Decision as the preferred alternative for the Trust Acquisition.

"Public Entity" means any federal, State, regional or local governmental entity, public authority, public agency, public corporation or any subdivision thereof, including, without limitation, the County.

"Public Law 280" refers to the statute that extended state criminal jurisdiction and limited, non-regulatory civil jurisdiction to Indian country in certain states, including California, pursuant to Public Law 280, 67 Stat. 588 (1953), as amended, 18 U.S.C. §§ 1161-62, 25 U.S.C. §§ 1321-22, 28 U.S.C. § 1360 (1953).

"Record of Decision" means the final document issued for the Project and Trust Acquisition by the Bureau of Indian Affairs following issuance of the final EIS pursuant to NEPA which sets forth the preferred alternative for the proposed action and identifies and adopts mitigation measures to minimize or avoid environmental harm from the preferred alternative.

"Secretary" means the Secretary of the United States Department of the Interior or her or his representative.

"Sheriff" or "Sheriff's Office" means, respectively, the Kern County Sheriff or the Kern County Sheriff's Office responsible for law enforcement in the County.

"State" means the State of California.

"Tribe" means the Tejon Indian Tribe, a federally recognized Indian tribe.

"Tribal-State Compact" means (i) a Tribal-State gaming compact for the Project between the Tribe and the State that has been approved by the Secretary or allowed to become effective by operation of law pursuant to IGRA; or (ii) procedures prescribed by the Secretary governing the conduct of class III gaming activities by the Tribe issued pursuant to IGRA.

"Trust Acquisition" means the acquisition by the United States of title to the Property in trust for the Tribe for gaming and other purposes.

2. Non-recurring EIS Mitigation and Other Payments

(a) Non-recurring EIS Mitigation

The Tribe shall implement the following mitigation measures commencing after the Construction Date to provide for the timely mitigation of potentially significant impacts of the Project identified in the EIS as set forth in this Subsection 2(a).

(i) Joint Substation

The Tribe shall develop, build, and fully furnish a new fire and sheriff joint substation ("Joint Substation") for lease by the County Fire Department and Sheriff's Office at a total cost not to exceed ten million dollars ($10,000,000). The Joint Substation shall be located on approximately four (4) acres of land in the southwest corner of the Property and designed in accordance with plans provided by the County and analyzed in the EIS. Construction of the Joint Substation shall commence after the Construction Date, be built in compliance with the Applicable Codes, and shall include all utilities, including water, sewer, and roof-top solar. Upon completion of the Joint Substation, the Tribe shall lease the Joint Substation to the County for a minimum term of twenty (20) years at one dollar ($1) per annum or as otherwise agreed upon by the Parties.

(ii) Ladder Truck

The Tribe shall pay the County the actual cost, in an amount not to exceed one million eight hundred thousand dollars ($1,800,000), to purchase a fully equipped, 110-foot ladder truck for use by the County Fire Department from the Joint Substation. Following the Construction Date, the Tribe shall make a one-time payment to the County Administrative Office to provide for delivery of the ladder truck prior to the Opening Date. The Tribe shall pay the amount requested within sixty (60) days after receipt of a request for payment from the County.

(iii) Patrol Vehicles

The Tribe shall pay the County the actual cost, in an amount not to exceed nine hundred sixty-two thousand dollars ($962,000), to purchase up to twelve (12) new, fully equipped patrol vehicles for use by the Sheriff's Office from the Joint Substation. Following the Construction Date, the Tribe shall make payments to the County Administrative Office on a schedule that provides for the delivery of patrol vehicles to the Joint Substation thirty (30) days prior to new Sheriff's Office staff beginning assignment at the Joint Substation. The Tribe shall pay the amount requested within sixty (60) days after receipt of a request for payment from the County.

(b) Other Non-recurring Payments

The Tribe shall make the following non-recurring payments after the Construction Date to compensate the County for law enforcement, fire protection, emergency services and any other public services to be provided by the County to the Tribe as a consequence of the Project as set forth in this Subsection 2(b).

(i) Law Enforcement Training Academy

The Tribe shall pay the County five hundred thousand dollars ($500,000) for training of new Sheriff's Office recruits for the Joint Substation at the Kern County Regional Law Enforcement Training Academy. Following the Construction Date, the

Tribe shall make a one-time payment to the County Administrative Office within sixty (60) days after receipt of a request for payment from the County.

(ii) Wildlands Fire Vehicle

The Tribe shall pay the County the actual cost, in an amount not to exceed one hundred thirty thousand dollars ($130,000), to purchase a type 6 wildlands fire vehicle for use by the County Fire Department at the Joint Substation. Following the Construction Date, the Tribe shall make a one-time payment to the County Administrative Office to provide for delivery of the wildlands fire vehicle prior to the Opening Date. The Tribe shall pay the amount requested within sixty (60) days after receipt of a request for payment from the County.

3. Recurring Payments

(a) Recurring Payments for Services

The Tribe shall make the following recurring payments after the Opening Date to compensate the County for law enforcement, fire protection, emergency services and all other public services to be provided by the County to the Tribe for all purposes of the Project and to mitigate all other impacts of the Project on the County and any potentially significant effect on the Property and surrounding community as a consequence of the Project as set forth in this Section 3.

(i) Fire Services Payments

The Tribe shall make recurring payments to the County equal to the actual cost of the County Fire Department's staffing of the Joint Substation in an amount not to exceed two million eight hundred seventy-five thousand dollars ($2,875,000) per annum. Such payments shall pay the salaries and benefits of not more than twelve (12) new County Fire Department positions at the Joint Substation, including three captains, three engineers, and six emergency medical technician (EMT) firefighters. The Tribe shall make payments on a schedule reflecting actual staffing at the Joint Substation. By way of example only, in the event staffing at the Joint Substation was at nine positions in the first year, the payments due to the County would be limited to the salaries and benefits of those nine positions.

(ii) Law Enforcement Payments

The Tribe shall make recurring payments to the County equal to the actual cost of the Sheriff's Office staffing of the Joint Substation in an amount not to exceed two million five hundred thousand dollars ($2,500,000) per annum. Such payments shall pay the salaries and benefits of not more than thirteen (13) new Sheriff's Office positions at the Joint Substation, including one sergeant, one senior deputy, ten deputies, and one clerk. The Tribe shall make payments on a schedule reflecting actual staffing at the Joint Substation. By way of example only, in the event staffing at the Joint Substation was at nine positions in the first year, the payments due to the County would be limited to the salaries and benefits of those nine positions.

(iii) General Fund Payments

The Tribe shall make recurring payments equal to the one percent (1%) General Government Factor multiplied by the appropriate factor for the General Fund in Tax Rate Area 118-006, as established in the tax year of the Opening Date, multiplied by the dollar value of the Gaming Facility constructed on the Property for deposit in the General Fund of the County for payment of all other general government services to the Property. By way of example only, in the event the Gaming Facility opened in 2019 and had an initial value of six hundred million dollars ($600 million), the payment due to the County per annum would be calculated as follows:

Initial Gaming Facility Value: $600,000,000
1% General Government Factor: 0.01 x $600,000,000 = $6,000,000
General Fund Factor for TRA 118-006 Tax Year 2019: 0.345521 x $6,000,000 = $2,073,126.

In the event one or more additional phases of construction are later added to the Gaming Facility, the value of the Gaming Facility shall be increased by the value of such additional phase as submitted to the County by the Tribe. By way of example only, if an additional phase of the Gaming Facility opened in 2020 and had a value of one hundred million dollars ($100 million), the payment due to the County per annum for that additional phase would be calculated as follows:

Additional Phase of Construction Gaming Facility Value: $100,000,000
1% General Government Factor: 0.01 x $100,000,000 = $1,000,000
General Fund Factor for TRA 118-006 Tax Year 2020: 0.345521 x $1,000,000 = $345,521.

For purposes of this Subsection and Subsection 3(a)(iv) below, the "dollar value of the Gaming Facility" refers to the total cost to design, engineer, construct, furnish, install, and equip the Gaming Facility and related infrastructure, but shall not include such costs associated with the construction and furnishing of the Substation, predevelopment and financing costs, and the cost of any off-site road or other public improvements.

(iv) Capital Maintenance Payments

The Tribe shall make recurring payments to the County equal to the one percent (1%) General Government Factor multiplied by the appropriate factor for the Fire Fund in Tax Rate Area 118-006, as established in the tax year of the Opening Date, multiplied by the dollar value of the Gaming Facility constructed on the Property for deposit in the General Fund of the County for payment of capital maintenance costs of the County Fire Department and the Sheriff's Office. By way of example only, in the event the initial Gaming Facility opened in 2019 and had an initial value of six hundred million dollars ($600 million), the payment due to the County per annum would be calculated as follows:

Initial Gaming Facility Value: $600,000,000
1% General Government Factor: .01 x $600,000,000 = $6,000,000
Fire Fund Factor for TRA 118-006 Tax Year 2019: 0.101074 x $6,000,000 = $606,444

In the event one or more additional phases of construction are later added to the Gaming Facility, the value of the Gaming Facility shall be increased by the value of such additional phase as submitted to the County by the Tribe. By way of example only, if an additional phase of the Gaming Facility opened in 2020 and had a value of one hundred million dollars ($100 million), the payment due to the County per annum for that additional phase would be calculated as follows:

Additional Phase of Construction Gaming Facility Value: $100,000,000
1% General Government Factor: 0.01 x $100,000,000 = $1,000,000
Fire Fund Factor for TRA 118-006 Tax Year 2020: 0.101074 x $1,000,000 = $101,074.

(b) Recurring Occupied Room Fee Payments

Following the opening of a hotel on the Property, the Tribe shall make recurring payments to the County in an amount equivalent to six percent (6%) of the revenue paid for occupied rooms in such hotel. The Tribe shall assess a tax on the amount paid for occupied hotel rooms at the Project as least as high as the highest occupied room fee assessed within the County and the incorporated areas within the County.

(c) Recurring Problem Gambling Payments

To provide reasonable compensation for programs designed to address gambling addiction, the Tribe shall make recurring payments of no less than fifty thousand dollars ($50,000) per annum to one or more organizations dedicated to the prevention and treatment of gambling addiction which are located or able to provide services within the County. The Parties shall determine the recipient organization(s) by mutual agreement.

(d) Recurring Payment Terms

The recurring payments to be made on an a per annum basis under Subsections 3(a) and (b) of this Agreement shall be made to the County Administrative Office after the Opening Date in four (4) successive, equal quarterly installments within thirty (30) days following the end of each full calendar quarter, unless the Parties agree otherwise. The first payment shall be due on the thirtieth (30^{th}) day following the end of the first full quarter and shall cover the prorated period from the Opening Date to the end of the first full calendar quarter of operations. The County shall determine the amount of each recurring payment due under Subsection 3(a) at least thirty (30) days prior to the Opening Date and by June 1 of each year thereafter. The County shall provide the Tribe a statement in sufficient detail for the Tribe to verify the amounts paid in the prior year and to identify the payment amounts due in the upcoming year based on projected staffing of the Substation as adjusted by (i) any deductions under Subsection 4(d) and (ii) the CPI Adjustment.

(e) CPI Adjustment

All recurring payments described in Subsection 3(a) of this Agreement shall be increased annually by the CPI Adjustment, which shall be effective on July 1 of each year following the Opening Date, provided that, the increase in the payments described in Subsections(3)(a)(iii) and (3)(a)(iv) shall not exceed the rate set forth in the California Constitution, article XIII A, section 2(b).

4. Payment Matters

(a) Sufficiency of Payments

The County has determined that the payments referenced in Sections 2 and 3 of this Agreement are sufficient to (i) compensate the County for any public services to be provided by the County in connection with the Tribe's Project, and (ii) mitigate all other impacts of the Project on the County, and, as a result, the Trust Acquisition and the Project will not have a detrimental impact on the County and the surrounding community.

(b) Distribution of Payments

The County Administrative Office shall be responsible for County compliance with this Agreement and distributing the payments referenced in Section 2 and Subsections 3(a) and 3(b) of this Agreement to the appropriate County departments, agencies and subdivisions.

(c) Contingency of Payments

The Parties acknowledge and agree that the Project and the Tribe's implementation of the non-recurring mitigation measures and other payments set forth in Section 2 of this Agreement are, and shall be, contingent upon the occurrence of (i) the

Trust Acquisition and (ii) the Construction Date. The Parties further acknowledge and agree that the Tribe's obligation for the recurring payments set forth in Section 3 of this Agreement are, and shall be, contingent upon (i) the Tribal-State Compact being in effect and (ii) the occurrence of the Opening Date. In the event the Construction Date does not occur for any reason, no payments shall be owed and the Tribe shall have no further obligations under this Agreement. The County shall make good faith efforts to segregate and identify expenditures made with payments provided to the County by the Tribe under this Agreement and to publicly attribute such expenditures to the Tribe.

(d) Deductions

The Tribe may deduct the following amounts from the next payment that the Tribe would otherwise be required to make pursuant to Section 3 of this Agreement:

(i) the amount of any payments, if any, which the Tribe pays the County in excess of the amounts identified in Section 2 of this Agreement;

(ii) the amount of any payments, if any, which the Tribe pays in advance of the dates set forth in Section 2 of this Agreement, plus interest on such amount at the prime lending rate of Bank of America from the date the payment is made until the date the payment would otherwise have been due;

(iii) the amount of any payments, if any, which the Tribe receives, or is entitled to receive, from state, federal or other sources and directs to be paid to, and is accepted by, the County;

(iv) the amount of any overpayments made under Subsection 3(a)(i) and (ii) as a result of a reduction in staffing at the Substation for a period of ninety (90) consecutive days or longer; and

(v) should an approved development project fund any of the same items set forth in Sections 2 or 3 of this Agreement, the Tribe shall be entitled to a dollar-for-dollar deduction or refund at the time the County receives funding from the approved development project until such time as the Tribe recovers an amount attributable to the impacts of the approved development project or the Tribe's contribution is equal to the quantifiable impacts of the Gaming Facility.

5. Funding Mechanism

This Agreement creates a funding mechanism which does not commit the County to make any physical changes in the environment. By approving and performing the transactions contemplated by this Agreement, the County does not and does not commit itself to, (i) issue any lease, permit, license, certificate or entitlement for use, (ii) develop, construct or improve any facilities or cause any other physical changes to the environment, or (iii) approve, shape, deliberate on or otherwise exercise judgment over

the Trust Acquisition or other federal or state actions for the Project. Further, nothing in this Agreement contemplates or commits the County to any project which may result in a potentially significant physical impact on the environment. If and to the extent the County hereafter determines that it is required to comply with CEQA with respect to any "project" (as such term is defined in CEQA) which causes a physical change in the environment, the County fully intends to comply with CEQA at such time.

6. Additional Tribal Covenants

(a) Local Hiring

Prior to the Construction Date, the Tribe shall submit a letter to the County detailing its efforts to encourage all contractors of the Project site to hire at least 50 percent of their workers from local communities in the County. The Tribe shall provide the contractors a list of training programs that provide skilled workers and shall require the contractors to advertise locally for available jobs, notifying the training programs of job availability, all in conjunction with normal hiring practices of the contractor. Nothing herein is intended to limit the Tribe's right to provide a preference in employment to members of federally recognized Indian tribes pursuant to tribal law.

(b) Cannabis

The Tribe agrees to follow federal law regarding the cultivation or use of cannabis on the Property. The Tribe further agrees to adopt as tribal law a cannabis code that is consistent with County policy should that policy prohibit the cultivation, sale or use of cannabis.

(c) Public Health and Safety Requirements in Compact

The Parties anticipate the Tribal-State Compact to include provisions that subject the Gaming Facility to inspections and enforcement mechanisms for verifying compliance with Applicable Codes, applicable County and State public health standards for food and beverage handling, federal water quality and safe drinking standards applicable in California, and federal, State and County workplace and occupational health and safety standards. In the event the Tribal-State Compact does not contain provisions relating to the above-referenced topics which are substantially similar or identical to those found in other tribal-state compacts in California in effect at the time of the execution of this Agreement, the County may request that the Tribe enter into negotiations with the County, in which event the Tribe shall enter into good faith negotiations with the County, to execute and deliver an agreement or other arrangement with the County on mutually agreeable terms to address the need for such public health and safety requirements.

(d) County Services

The Parties acknowledge that, under the current design of the Project, the Tribe has not requested the County to provide, and the County does not hereby commit itself to provide, water, wastewater, electricity, natural gas or telecommunications services to the Project or the Property. At the request of the Tribe or as otherwise provided under the Tribal-State Compact, the County shall provide health and safety inspections or other services for the Project in accordance with applicable policies and procedures and the Tribe shall grant access to the Property for that purpose. The Tribe shall pay to the County the applicable fee or fees set by ordinance or resolution for the particular inspection or other service provided and the County shall provide to the Tribe the results of any such inspection. Full payment shall be made by the Tribe within thirty (30) days after the service is rendered.

(e) EMS Services

The Tribe agrees to permit the Exclusive Provider ("EP") in Exclusive Operating Area 8 access to the Property in order for EP to provide all ground ambulance service and Basic Life Support (BLS) and Advanced Life Support (ALS) standby services, as defined in the Kern County Ambulance Ordinance, codified at Chapter 8.12 of the Kern County Ordinance Code. The EP, in providing such service, shall comply with all regulations, policies, procedures, standards, and protocols that are effective during the term of this Agreement. Notwithstanding the foregoing, during the term of this Agreement EP shall charge the rates established by the Kern County Board of Supervisors for Exclusive Operating Area 8 for services provided on the Property. The EP shall not charge the Tribe or any person at the Property any service rate, cost, fee or additional charge not approved by the Kern County Board of Supervisors for Exclusive Operating Area 8. Further, EP shall not require the Tribe or the Gaming Entity to purchase or provide funding for any equipment, facilities or staff.

7. Mutual Aid Arrangements

(a) Mutual Aid

Upon the request of the Tribe, the County or its departments will enter into good faith negotiations with the Tribe to execute and deliver a mutual aid agreement or other arrangements with the Tribe on mutually agreeable terms relating to fire protection, emergency services, first responder and law enforcement responses.

(b) Law Enforcement

(i) Upon the request of the Tribe, the County or its departments will

enter into good faith negotiations with the Tribe to execute and deliver agreements or arrangements on mutually agreeable terms relating to investigation, jurisdictional or other similar issues. The Tribe acknowledges that, pursuant to, and to the extent set forth in, federal Public Law 280 as in effect and construed as of the date of this Agreement, most State criminal laws will have the same force and effect on the Property as they have elsewhere in the State and the Sheriff will have jurisdiction over most offenses committed by or against Indians on the Property. However, nothing in this Subsection or any agreement entered into pursuant to this Subsection does or is intended to create County, State or other Public Entity jurisdiction over the Tribe or the Property.

(ii) Control of Sheriff's Personnel: The Sheriff shall provide not less than the level of service to the Property as he or she provides to non-tribal properties within the County. Selection, supervision, and quality control of the officers assigned to the Joint Substation shall be the sole responsibility of the Sheriff's Office. The Sheriff, in his or her sole discretion, may deploy Joint Substation personnel or equipment to preserve the peace as may be deemed necessary under the existing circumstances. The Sheriff shall exercise this discretion in good faith with the goal of keeping the peace in a non-discriminatory manner. In the event of an emergency or other temporary situation elsewhere in the County, the Sheriff reserves the right to assign any and all of his or her personnel to that emergency or other temporary situation. Sheriff's Office personnel will work closely with Tribal staff to maintain peace and order. Sheriff's Office personnel will adhere to their policies, state laws, and federal laws in providing services to the Property.

(c) Additional Mutual Aid Arrangement Matters

(i) The Parties do not intend that (i) the Tribe shall make any contributions or payments to the County or any other entity pursuant to the mutual aid or other agreements or arrangements contemplated by this Section; (ii) the Tribe shall be required to include the County as a party to, or obtain the approval of the County for, any such mutual aid or other agreements or arrangements between the Tribe and any entity other than the County.

(ii) David Road Agreement: In consideration of the payments made under this Agreement, County shall waive any claims for payment for Law Enforcement Services as described in Section 3 of the David Road Agreement and any claims for payment for Emergency Medical, Fire, and Hazmat Services as described in Section 4 of the David Road Agreement.

8. Term

(a) Effective Date

This Agreement shall not become effective unless and until the following events have occurred:

(i) This Agreement has been approved or ratified by the County Board of Supervisors; and

(ii) This Agreement has been approved or ratified by the General Council of the Tribe.

(b) Expiration Date

Subject to the early termination provisions of this Agreement, this Agreement shall expire on the latter of (i) the twentieth (20^{th}) anniversary of the date of this Agreement, or (ii) the date of the expiration or termination of the Tribal-State Compact.

9. Termination

(a) Termination Events

Unless otherwise agreed by the Parties, this Agreement shall automatically terminate in the event, and on the date, that:

(i) prior to the Trust Acquisition Date, the Tribe submits a written notice to the County to the effect that the Tribe has permanently decided (i) to withdraw or not submit any application requesting that the Secretary accept trust title to the Property for the benefit of the Tribe or (ii) to otherwise cease development or operation of the Gaming Facility; or

(ii) after the Trust Acquisition, the Property (i) is removed from trust or restricted status such that the Property is no longer held in trust by the United States for the benefit of the Tribe, (ii) is no longer "Indian country" within the meaning of federal law, or (iii) is otherwise not eligible for the development or operation of the Gaming Facility for any reason; or

(iii) after the Tribal-State Compact becomes effective, such Tribal-State Compact expires or terminates for any reason or is determined by the Secretary or any court of competent jurisdiction to be unlawful or otherwise ineffective for any reason; or

(iv) the Tribe permanently ceases commercial operations on the Property.

(b) Retention of Funds

In the event of a termination of this Agreement, the County will be entitled to retain any recurring, non-recurring, and non-recurring EIS mitigation payments for services paid to the County through the effective date of termination, but the County will not be entitled to receive any recurring, non-recurring, or non-recurring EIS mitigation payments for services payable after the effective date of termination. In the event of a termination of this Agreement pursuant to Subsection 9(a)(ii) or (a)(iii), the County will not be entitled to retain any recurring, non-recurring, or non-recurring EIS mitigation payments for services paid to the County through the effective date of termination.

10. Suspension Events

If, due to Force Majeure (as hereinafter defined), an act of God, valid business considerations, or the events listed in Section 12 of this Agreement, a material portion of the gaming operations previously conducted by the Tribe on the Property are suspended or terminated, the Parties' obligations under this Agreement shall be suspended as of the date of such suspension or termination until such time as such operations are resumed. For the purposes of this Section, the term "Force Majeure" shall include, without limitation, the following: earthquake; flood; fire; other natural disasters; changes in law, regulation or governmental policy that has a material adverse effect on the Project; riots; war; or terrorism. Nothing in this Section shall reduce the Tribe's liability for contributions or other payments which become due and payable prior to the date such gaming operations are suspended or terminated.

11. Renegotiation Provisions

(a) Tribe Renegotiation Events

The Tribe may request that the County renegotiate one or more of the provisions of this Agreement if there is a change in law or other circumstances which has a significant and adverse financial impact on the Project or the Gaming Facility. Such changes shall be deemed to include, without limitation, the following:

(i) any change in State or federal constitutions, laws, rules or regulations, guidelines or bulletins, or the construction or interpretation thereof, relating to IGRA or gaming on Indian lands, or ending the prohibition on class III gaming (as defined in IGRA) or the operation of gaming devices by non-Indians in the State;

(ii) a reduction in the scope of gaming permitted on the Property, whether pursuant to a change in federal, State or local constitutions, laws, rules or regulations, the Tribal-State Compact or otherwise; or

(iii) the Tribal-State Compact, as amended or interpreted from time to time, (A) does not authorize the Tribe to conduct the scope of class III (as defined in IGRA) gaming activities substantially similar or identical to those authorized under other tribal-state compacts in California in effect at the time of execution of this Agreement, or (B) does not authorize the Tribe to operate at least two thousand (2000) gaming devices.

(b) County Renegotiation Events

At the County's request, the Tribe shall renegotiate one or more of the provisions of this Agreement if the Tribe materially expands the public spaces of the Gaming Facility beyond the footprint of the preferred alternative identified in the Record of Decision.

(c) Effect of Expiration or Termination

Upon expiration or termination of this Agreement, the provisions of this Agreement shall be of no further force or effect and none of the provisions of this Agreement shall survive such expiration or termination; provided, however, that the Tribe shall continue to make contributions pursuant to the terms of this Agreement which became due and payable prior to any expiration or termination date.

(d) Renegotiation Procedures

Upon the occurrence of a renegotiation event identified in this Section, all requests by either Party to renegotiate or amend this Agreement shall be by written notice addressed to the other Party and shall identify the provisions of this Agreement to be negotiated. Upon receipt of such notice, the Parties shall be obligated to renegotiate this Agreement in good faith. The Parties shall confer promptly and determine a schedule for commencing negotiations within thirty (30) days of receipt of notice. The Parties are hereby authorized to designate the person or agency responsible for conducting the negotiations, and shall execute any documents necessary to do so. The purpose of the negotiations will be to renegotiate the provisions of this Agreement in good faith so that the Parties will retain substantially the same rights and economic benefits in the aggregate from the Project as contemplated on the date of execution of this Agreement. Any requested increase in the level of contributions made by the Tribe pursuant to this Agreement shall be consistent with payments for other similar commercial uses in the County.

(e) Amendments

This Agreement may be modified or amended only by mutual and written agreement of the Parties.

12. Severability

(a) If any provision of this Agreement is held by the Secretary, the arbitrators or a court of competent jurisdiction to be illegal, invalid, unenforceable, or unauthorized under present or future laws, the remaining provisions of this Agreement shall remain in full force and effect and shall not be affected by the illegal, invalid, unenforceable, unauthorized or non-compliant provision or by its severance from this Agreement. In the event of any such determination, the Parties shall enter into good faith negotiations to replace the invalid provision with a valid provision, the economic or practical effect of which comes as close as possible to that of the invalid provision, which negotiations shall be conducted pursuant to the provisions of Subsection 13(d) of this Agreement.

(b) In the event that the entire Agreement is declared null and void or is unauthorized, the Parties shall enter into good faith negotiations to negotiate a new intergovernmental agreement.

13. Dispute Resolution Provisions

(a) Dispute Resolution

In an effort to foster good government-to-government relationships and to ensure implementation of this Agreement, the Parties agree to the dispute resolution procedures set forth in this Section. The Parties further agree that any dispute regarding the Sheriff's Office's obligations under this Agreement shall be resolved by the Parties pursuant to this Section 13. This section shall not be construed to waive, limit, or restrict the ability of the Parties to pursue, by mutual agreement, any other method of dispute resolution, including, but not limited to, mediation, or utilization of a technical advisor to the Parties; provided, however, that no Party is under an obligation to agree to such alternative method of dispute resolution.

(b) Meeting

The Parties shall make their best efforts to resolve any dispute specifically arising under this Agreement by good faith negotiations whenever possible. The Parties shall meet and confer in good faith to resolve any disputes arising under the Agreement or concerning its terms or administration as follows:

(i) A Party shall give the other Party, as soon as possible after the dispute arises, written notice setting forth, with specificity, the Party's claims.

(ii) The Parties shall meet and confer in a good faith attempt to resolve such dispute through negotiation not later than ten (10) business days after receipt of notice, unless the Parties agree in writing to an extension of time.

(iii) In the event that a payment dispute arises between the Parties, the

Party disputing the payment shall pay the disputed amount "under protest." If the payment dispute is resolved in favor of the Party who paid the disputed amount under protest, that Party shall be refunded the amount of the overpayment plus interest calculated as follows:

(No. of Days Overpaid/365) x Pooled Treasury Rate x $ Amount of Overpayment = Overpayment Interest Charge

(c) Arbitration

If such dispute is not resolved to the satisfaction of the Parties within thirty (30) calendar days after the first meeting, then either Party may seek to have the dispute resolved by arbitration in accordance with the following procedures; provided, however, that neither party shall be required to agree to submit to arbitration.

(i) Upon the request of a Party in writing, the dispute shall be submitted to binding arbitration in accordance with this Subsection.

(ii) The disputes to be submitted to arbitration shall be limited to disputes specifically arising under this Agreement.

(iii) In the event that there is any dispute as to whether a matter is subject to the arbitration provisions of this Agreement, or any dispute concerning the scope of the matter or matters to be arbitrated, the disagreement as to whether the dispute is subject to the arbitration provisions of this Agreement or the scope of such arbitration shall be resolved by the courts referenced in Subsection (d) of this Section.

(iv) The arbitration shall be administered by three (3) arbitrators with Judicial Arbitration and Mediation Services ("JAMS"). The Tribe and the County shall each select one (1) arbitrator and those two (2) arbitrators shall select the third arbitrator. All arbitrators shall be generally familiar with federal Indian law and commercial business transactions and shall have no interest in the matter.

(v) The arbitration shall be held in Bakersfield, California, or at such other location as is mutually agreeable to the Parties.

(vi) The arbitration shall be administered in accordance with the Streamlined Arbitration Rules and Procedures of JAMS (or if those rules no longer exist, the closest equivalent) as modified by the provisions of this Agreement.

(vii) The provisions of section 1283.05 of the California Code of Civil Procedure shall apply; provided that no discovery authorized by that section may be conducted without leave of the arbitrators.

(viii) Each Party shall bear its own costs, attorneys' fees and one-half of the costs and expenses of the arbitrators.

(ix) Subject to the provisions of this Section, the arbitrators shall be empowered to grant compensatory and declaratory relief only.

(x) The decision of the arbitrators shall be in writing and shall give reasons for the decision.

(xi) Confirmation of Decisions. Any Party to an arbitration in which a decision has been made pursuant to this Section may petition the United States District Court for the Eastern District of California or the Superior Court of California for the County to affirm the decision. The Parties expressly consent to be sued in such courts for affirmation of any such decision. A decision shall be affirmed, provided that:

(1) The decision is limited to matters specifically arising under this Agreement.

(2) No monetary damages may be awarded except those which require the payment of sums pursuant to breaches of obligations of the Parties under this Agreement and which are not inconsistent with Section 15 (Damages) and Section 14(b) (Limitations of Tribe's Waiver) of this Agreement.

(3) No person or entity other than the Parties is party to the action, unless failure to join a third party would deprive the court of jurisdiction; provided that nothing herein shall be construed to constitute a waiver of the sovereign immunity of the Parties in respect to any such third party.

If an award is affirmed, judgment shall be entered in conformity therewith. The judgment so entered has the same force and effect as, and is subject to all the provisions of law relating to, a judgment in a civil action and may be enforced like any other judgment of the court in which it is entered.

(d) Actions

The express waivers and consents provided for in this Section and Section 14 of this Agreement shall only extend to the following: civil actions specifically arising under this Agreement; civil actions to compel arbitration; civil actions to determine whether a matter is subject to arbitration or determine the scope of the arbitration; any arbitration proceeding as provided herein; any action to confirm or enforce any judgment or arbitration award as provided herein; and any appellate proceedings emanating from a matter in which an immunity waiver has been granted. Except as stated herein or elsewhere in this Agreement, no other waivers or consents to be sued, either express or implied, are granted by either Party.

(e) Submission to Federal or Superior Court

Disagreements on matters specifically arising under this Agreement that are not otherwise resolved by arbitration or other mutually acceptable means provided in this Section may be resolved in the United States District Court for the Eastern District of California or the Kern County Superior Court. Any such action pursuant to this subsection is expressly limited to disagreements on matters specifically arising under this Agreement, limited to compensatory and declaratory relief only, and subject to Sections 14 and 15 of this Agreement. The Parties agree that no person or entity other than the Parties shall be a party to the action, unless failure to join a third party would deprive the court of jurisdiction; provided that nothing herein shall be construed to constitute a waiver of the sovereign immunity of the Parties in respect to any such third party. Each Party shall bear its own costs, attorneys' fees and court costs. The parties agree that, except in case of imminent threat to the public health or safety, best efforts will be made to resolve the matter using alternative dispute resolution prior to resorting to judicial process.

(f) No Waiver of Breach

The waiver by the County or the Tribe of any term, covenant, or condition contained in this Agreement must be in writing and shall not be deemed to be a waiver of any subsequent breach of the term, covenant, or condition, and no custom or practice that may arise between the Parties during the course of this Agreement shall be construed to waive or lessen the right of the County or the Tribe to performance by the Parties in strict accordance with the terms of this Agreement.

(g) Confidentiality

The Parties agree that any dispute resolution meetings or communications, arbitration proceedings, or agreements among the Parties settling or otherwise relating to any claims of breach of this Agreement or otherwise shall be and remain confidential to the extent not prohibited by applicable law.

14. Limited Waiver of Sovereign Immunity

(a) Waiver

Subject to the provisions of this Section, the Tribe expressly and irrevocably waives sovereign immunity (and any defenses based thereon) in favor of the County (but not as to any other person or entity) as to any disputes specifically arising under this Agreement and not as to any other actions, matters or disputes.

(b) Limitations of Tribe's Waiver

The Tribe's waiver of sovereign immunity in favor of the County is specifically limited to permitting, and does permit, the decisions referenced in Subsection 13(c)(ix) and actions referenced in Subsection 13(e). The arbitrators and the courts will have no authority or jurisdiction to issue any monetary award or damages or order the execution or enforcement of any monetary award or damages against any assets or revenues of the Tribe except for the Tribe's share of the net revenues (as defined by IGRA) from the Gaming Facility. The Tribe does not waive its sovereign immunity with respect to (i) actions by third parties, or (ii) disputes between the Tribe and the County which do not specifically arise under this Agreement.

(c) Tribal General Council Resolution

The Tribe represents to the County that its Tribal General Council has adopted a resolution in accordance with the Tribe's Constitution which provides that (i) the Chairperson of the Tribal Executive Committee has the authority to act on behalf of the Tribe in connection with the execution and delivery of this Agreement, (ii) the Tribal General Council delegates authority to the Chairperson to execute and deliver this Agreement on behalf of the Tribe and (iii) the Tribe waives sovereign immunity on a limited basis as set forth in this Agreement. A certified copy of the resolution is attached to this Agreement as Exhibit A.

15. Damages

The Parties hereby agree that, in the event of default, any damages awarded or arising under this Agreement shall be exclusively limited to actual direct damages incurred and which have been demonstrated with substantial certainty. In no instance shall the Parties to this Agreement be entitled to special, incidental, indirect, consequential or punitive damages, lost profits or attorney's fees. By acceptance and execution of this Agreement, the Parties hereby agree that the only monetary damages contemplated by the Parties as arising from this Agreement are actual or direct damages which do not, in any event, exceed the contribution amounts expressly stated in this Agreement and that the Parties are precluded from asserting any claims for additional or other monetary damages.

16. No Submission to Jurisdiction

The Parties acknowledge and agree that nothing in this Agreement shall be construed as constituting a submission by the Tribe to the jurisdiction of the County. Nothing in this Agreement shall be construed to state or imply that the Tribe would be required to make the contributions or covenants set forth in this Agreement other than pursuant to the terms and conditions of this Agreement.

17. County Obligation

Subject to the limitations in Section 5, the County agrees to support the Trust Acquisition and the Project and to provide such letters of support or other communication which the Tribe may reasonably request from time to time.

18. Third Party Matters

This Agreement is not intended to, and will not be construed to, create any right on the part of any other third party to bring any action or to otherwise enforce any of its terms.

19. Binding Agreement

This Agreement is intended to be, and shall be construed to be, binding upon the Parties and all successors and successors-in-interest of each Party. The County intends that its approval, execution, delivery and performance of this Agreement shall (i) be construed to be administrative actions, as distinguished from legislative actions, and (ii) not be construed to be an express or implied enactment, adoption or amendment of any zoning ordinance, general plan, special plan or elements thereof.

20. Notice

All notices required by this Agreement will be deemed to have been given when made in writing and delivered or mailed to the Party and its representatives at their respective addresses as set forth below, or such other address as they may provide to the other Party from time to time:

For the Tribe:

Tejon Indian Tribe
1731 Hasti Acres Drive, Suite 108
Bakersfield, California 93309
Attention: Octavio Escobedo, Chairman

With a copy to:

Arlinda Locklear
Tejon General Counsel
4113 Jennifer Street, NW
Washington, DC 20015

and

Maier Pfeffer Kim Geary & Cohen, LLP

1970 Broadway, Suite 825
Oakland, California 94612
Attention: John Maier

For the County: County Administrative Officer
Administrative Center
1115 Truxtun Avenue, Fifth Floor
Bakersfield, California 93301

With a copy to:

Office of the County Counsel
1115 Truxtun Avenue, Fourth Floor
Bakersfield, California 93301

21. Governing Law

This Agreement shall be governed by, and construed in accordance with, the laws of the State.

22. Construction of Agreement

This Agreement, including all recitals, together with all Exhibits, constitutes the entire agreement between the Parties relating to the subject matter hereof and supersedes all prior negotiations, representations or other agreements, whether written or oral. In the event of a dispute between the Parties as to the language of this Agreement or the construction or meaning of any term hereof, this Agreement shall be deemed to have been drafted by the Parties in equal parts so that no presumptions or inferences concerning its terms or interpretation may be construed against, or in favor of, any Party based on the preparation or negotiation of this Agreement. The headings contained in this Agreement are for convenience of reference only and shall not affect the construction or interpretation hereof.

23. Counterparts

This Agreement may executed in counterparts, each of which shall be deemed an original.

24. Approval by the Department of the Interior

The Parties will submit this Agreement to the Department of the Interior for either (i) approval pursuant to 25 U.S.C. Section 81 or (ii) a written response that this Agreement does not require approval under 25 U.S.C. Section 81.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date first set forth above.

COUNTY OF KERN, CALIFORNIA

Date: July 23, 2019

By: _____
David Couch
Chair, Board of Supervisors

RECOMMENDED AND APPROVED AS TO CONTENT

Date: July 22, 2019

By: _____
Ryan Alsop
County Administrative Officer

APPROVED AS TO FORM

Date: July 22, 2019

By: _____
Margo Raison
County Counsel

TEJON INDIAN TRIBE

Date: July 22, 2019

By: _____
Octavio Escobedo
Chairman

APPROVED AS TO FORM

Date: July 23, 2019

By: _____
John Maier
Legal Counsel for the Tribe

Attachment A (Intergovernmental Agreement)

LEGAL DESCRIPTION

Real property in the unincorporated area of the County of Kern, State of California, described as follows:

PARCEL 1: (APN: 238-204-02)

THE NORTHEAST QUARTER OF SECTION 2, TOWNSHIP 11 NORTH, RANGE 20 WEST, SAN BERNARDINO MERIDIAN, IN THE UNINCORPORATED AREA OF THE COUNTY OF KERN, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

PARCEL 2: (APN: 238-204-04)

THE NORTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 11 NORTH, RANGE 20 WEST, SAN BERNARDINO MERIDIAN, IN THE UNINCORPORATED AREA OF THE COUNTY OF KERN, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

PARCEL 3: (APN: 238-204-07)

THE WEST HALF OF THE SOUTHEAST QUARTER AND THE SOUTHEAST QUARTER OF THE SOUTHEAST QUARTER OF SECTION 2, TOWNSHIP 11 NORTH, RANGE 20 WEST, SAN BERNARDINO MERIDIAN, IN THE UNINCORPORATED AREA OF THE COUNTY OF KERN, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF.

EXCEPTING THEREFROM ALL OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES WITHIN OR UNDERLYING SAID LAND, OR THAT MAY BE PRODUCED AND SAVED THEREFROM, PROVIDING HOWEVER, GRANTOR, HIS SUCCESSORS AND ASSIGNS SHALL NOT CONDUCT DRILLING OR OTHER OPERATIONS UPON THE SURFACE OF SAID LAND, BUT NOTHING HEREIN CONTAINED SHALL BE DEEMED TO PREVENT THE GRANTOR, HIS SUCCESSORS AND ASSIGNS, FROM EXTRACTING OR CAPTURING SAID MINERALS BY DRILLING ON ADJACENT OR NEIGHBORING LANDS AND/OR FROM CONDUCTING SUBSURFACE DRILLING OPERATIONS UNDER SAID LAND AT A DEPTH OF 100 FEET BELOW THE SURFACE OF SAID LAND, SO AS NOT TO DISTURB THE SURFACE OF SAID LAND OR ANY IMPROVEMENTS THEREON, AS RESERVED BY CHANSLOR-WESTERN OIL AND DEVELOPMENT COMPANY, A DELAWARE CORPORATION, SUCCESSOR IN INTEREST TO CHANSLOR-CANFIELD MIDWAY OIL COMPANY, A CALIFORNIA CORPORATION, IN DEED RECORDED NOVEMBER 8, 1954, IN BOOK 2317, PAGE 102, OF OFFICIAL RECORDS.

PARCEL 4: (APN: 238-204-14)

ALL THAT PORTION OF SECTION 11, TOWNSHIP 11 NORTH, RANGE 20 WEST, SAN BERNARDINO MERIDIAN, IN THE UNINCORPORATED AREA OF THE COUNTY OF KERN, STATE OF CALIFORNIA, ACCORDING TO THE OFFICIAL PLAT THEREOF DESCRIBED AS FOLLOWS:

BEGINNING AT THE NORTHEAST CORNER OF SAID SECTION 11, THENCE SOUTH 78° 07' 14" WEST 184.02 FEET TO THE TRUE POINT OF BEGINNING; THENCE SOUTH 89° 48' 55" WEST 40.00 FEET; THENCE NORTH 0° 11' 05" WEST 40.00 FEET; THENCE NORTH 89° 48' 55" EAST 40.00 FEET; THENCE SOUTH 0° 11' 05" EAST 40.00 FEET TO THE TRUE POINT OF BEGINNING.

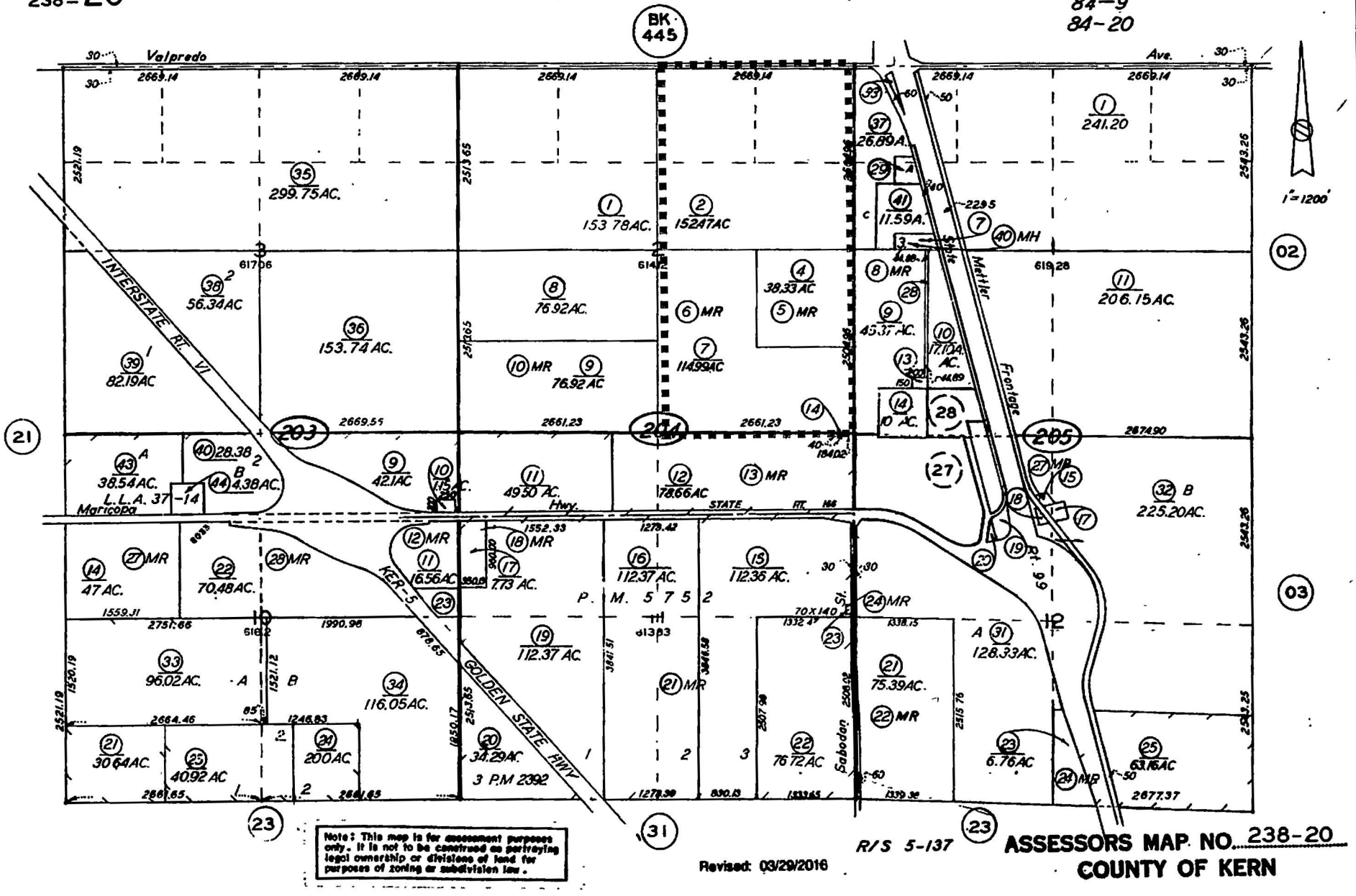
EXCEPTING THEREFROM ALL OIL, GAS, MINERALS AND OTHER HYDROCARBON SUBSTANCES WITHIN OR UNDERLYING SAID LAND AS RESERVED BY KERN COUNTY LAND COMPANY, IN DEED DATED OCTOBER 3, 1945, RECORDED IN BOOK 1283, PAGE 212, OF OFFICIAL RECORDS.

238-20

T. 11 N. R. 20 W.

SCHOOL DIST. 84-3
84-9
84-20

238-20



FOR DEMONSTRATIVE PURPOSES ONLY. THIS MAP SHALL NOT BE USED FOR ANY OTHER PURPOSE.

EXHIBIT A

Tribal General Council Resolution

Tejon Indian Tribe
Resolution No. T2019-100

Whereas, the Tejon Indian Tribe (Tribe) is a federally recognized Indian tribe with the inherent sovereignty to make its own laws and be governed by them; and

Whereas, the Tejon Tribal Constitution authorizes the Tribal Executive Committee to promulgate and enforce ordinances/resolutions governing the Tribe and to manage all economic affairs of the Tribe; and

Whereas, the Tribe's aboriginal homeland includes Kern County and the Tribe shares a common interest with the people of Kern County in fostering a vibrant community for current and future generations; and

Whereas, the Tribe has applied to place approximately 306 acres (Homeland Parcel) of land into trust near Mettler, California, for homeland purposes, including housing, gaming, wellness, health care, administrative offices and other uses; and

Whereas, the Department of the Interior is preparing an environmental impact statement (EIS) for federal approvals concerning the Homeland Parcel to evaluate the impacts of taking those federal actions; and

Whereas, the EIS will take into account intergovernmental agreements regarding mitigation and the provision of services in developing any mitigation measures; and

Whereas, the Tribe will be required to implement the mitigation measures identified in the final EIS pursuant to the Record of Decision for the Trust Acquisition; and

Whereas, the Tribe values vibrant and safe communities and fully supports law enforcement, firefighters and emergency responders in their efforts to maintain safe communities; and

Whereas, the attached Intergovernmental Agreement between the Tribe and Kern County ("Intergovernmental Agreement") is intended to promote the best interests of the Tribe and the surrounding community of Kern County; and

Whereas, the Tribe recognizes that it does not currently have the capacity to provide all governmental services to the Homeland Parcel; and

Whereas, the Tribe is dedicated to working amicably with the County of Kern; and

Whereas, there is mutual recognition of the Tribe's status as a federally recognized tribe with authority to make laws and be governed by them; and

Whereas, the Intergovernmental Agreement includes covenants by the Tribe to encourage local hiring, to comply with applicable County and State public health, environmental, and workplace and occupational health and safety standards for the Gaming Facility; and

Whereas, the Intergovernmental Agreement provides for the Tribe to make both non-recurring and recurring payments to the County for law enforcement, fire protection and all other public services to the Homeland Parcel for the Tribe and its members; and

Whereas, the Intergovernmental Agreement provides a limited waiver of tribal sovereign immunity to the County (but not as to any other person or entity) to resolve disputes specifically arising under the Agreement and limits relief to declaratory and actual, direct compensatory damages only against the Tribe's share of net revenues from the Gaming Facility; and

Whereas, in the spirit of cooperation and collaboration, the Tribe enters into the Intergovernmental Agreement defining the scope of agreement and the scope of services.

Now Therefore Be It Resolved, that the Chairman has the authority to act on behalf of the Tribe in connection with the execution and delivery of the Intergovernmental Agreement, and

Be It Further Resolved, that the Tejon General Tribal Council hereby approves the attached Intergovernmental Agreement, grants the limited waiver of sovereign immunity set forth therein for the purpose of enforcing the agreements contained in the Intergovernmental Agreement, and expressly authorizes the Chairman to execute and deliver the Intergovernmental Agreement on behalf of the Tejon Indian Tribe.

CERTIFICATION

We, the undersigned Chairperson and Treasurer of the Tejon Indian Tribe's Tribal Executive Committee, as representatives of the Tribal General Council, do hereby certify that the Tribal General Council met as a body of whom 30, constituting a quorum, were present at a meeting thereof, duly and regularly called, noticed, convened, and held on the 20th day of July, 2019, and that the foregoing Resolution was duly adopted by the affirmative vote of 90 members, with 3 opposing, and with 0 abstaining.

DATED this 20th day of July, 2019

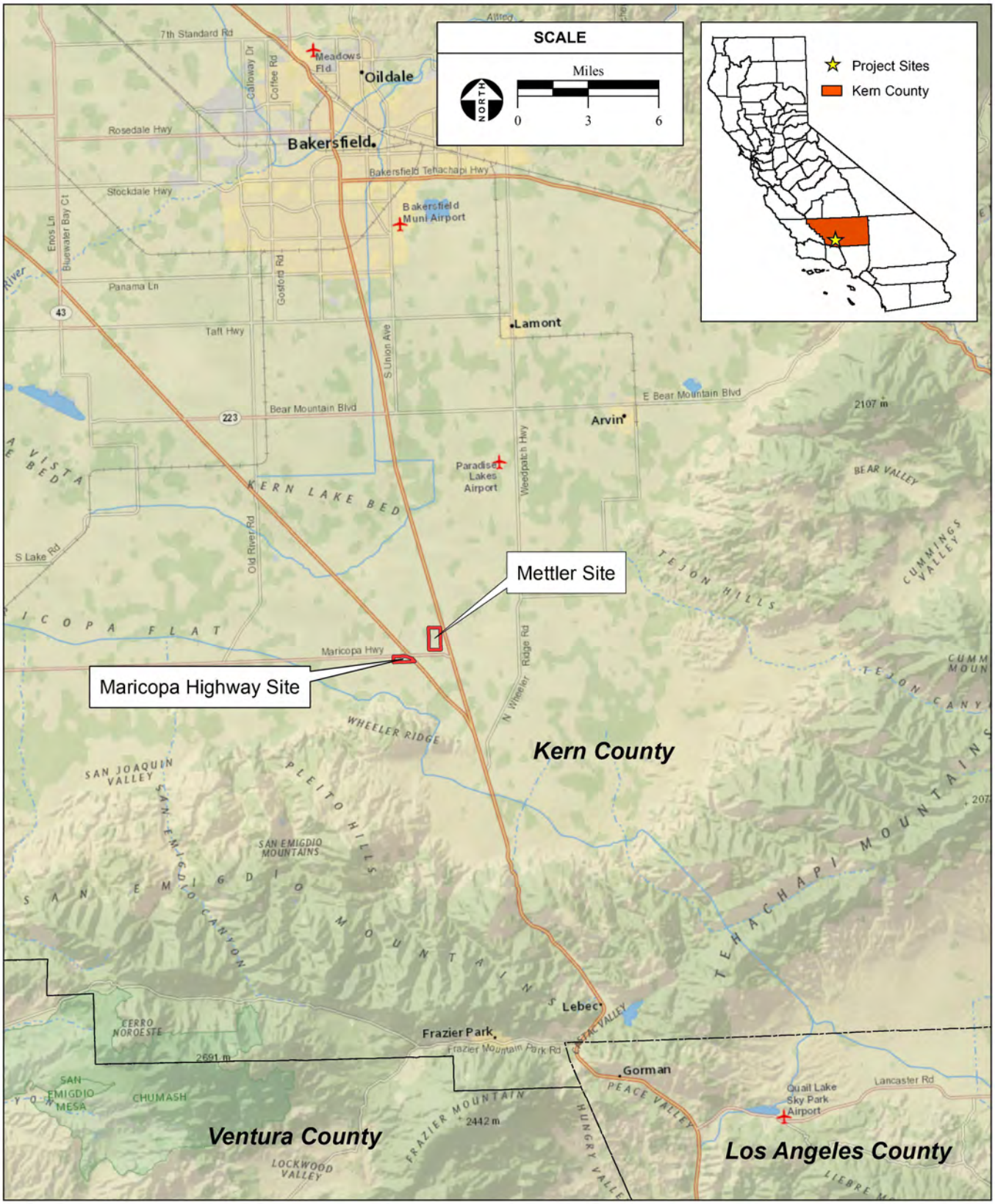
Octavio Escobedo III, Chairman
Tejon Indian Tribe

ATTEST:

Thomas Gonzales, Vice Chairman
Tejon Indian Tribe

APPENDIX E

FIGURES



SOURCE: NatGeo 2019; AES, 4/16/2019

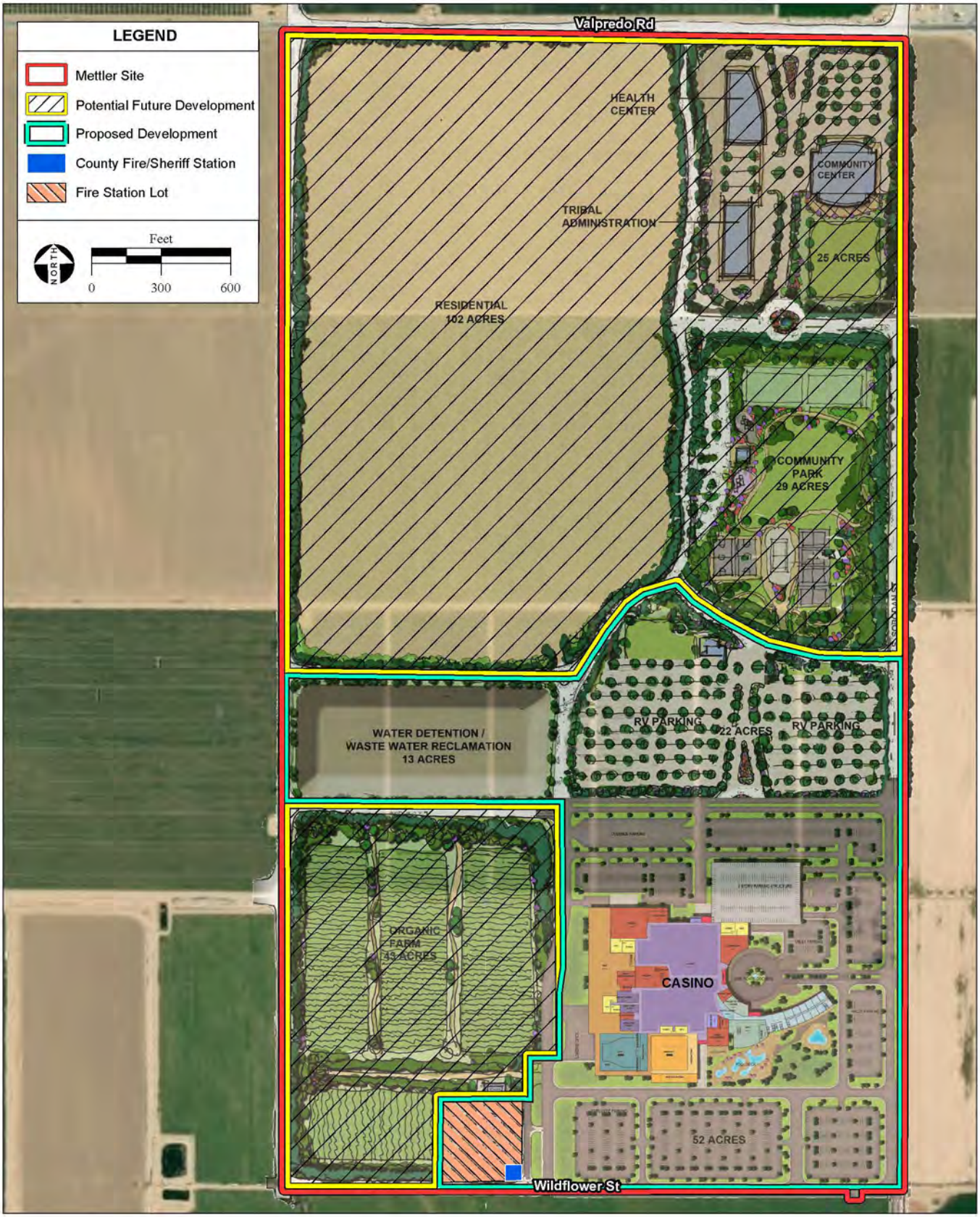
Figure 2-1
Regional Location

SOURCE: "Mettler, CA" USGS 7.5 Minute Topographic Quadrange, T11N, R20W, Section 2, San Bernardino Baseline & Meridian; ESRI Data, 2013; AES, 4/16/2019

Figure 2-2
Mettler Site and Vicinity

SOURCE: Kern County, 2016; DigitalGlobe aerial photograph, 7/1/2018; AES, 8/14/2019

Figure 2-3
Mettler Site Parcel Map



SOURCE: Friedmutter Group, 11/2018; DigitalGlobe aerial photograph, 11/1/2017; AES, 8/14/2019

Figure 2-4

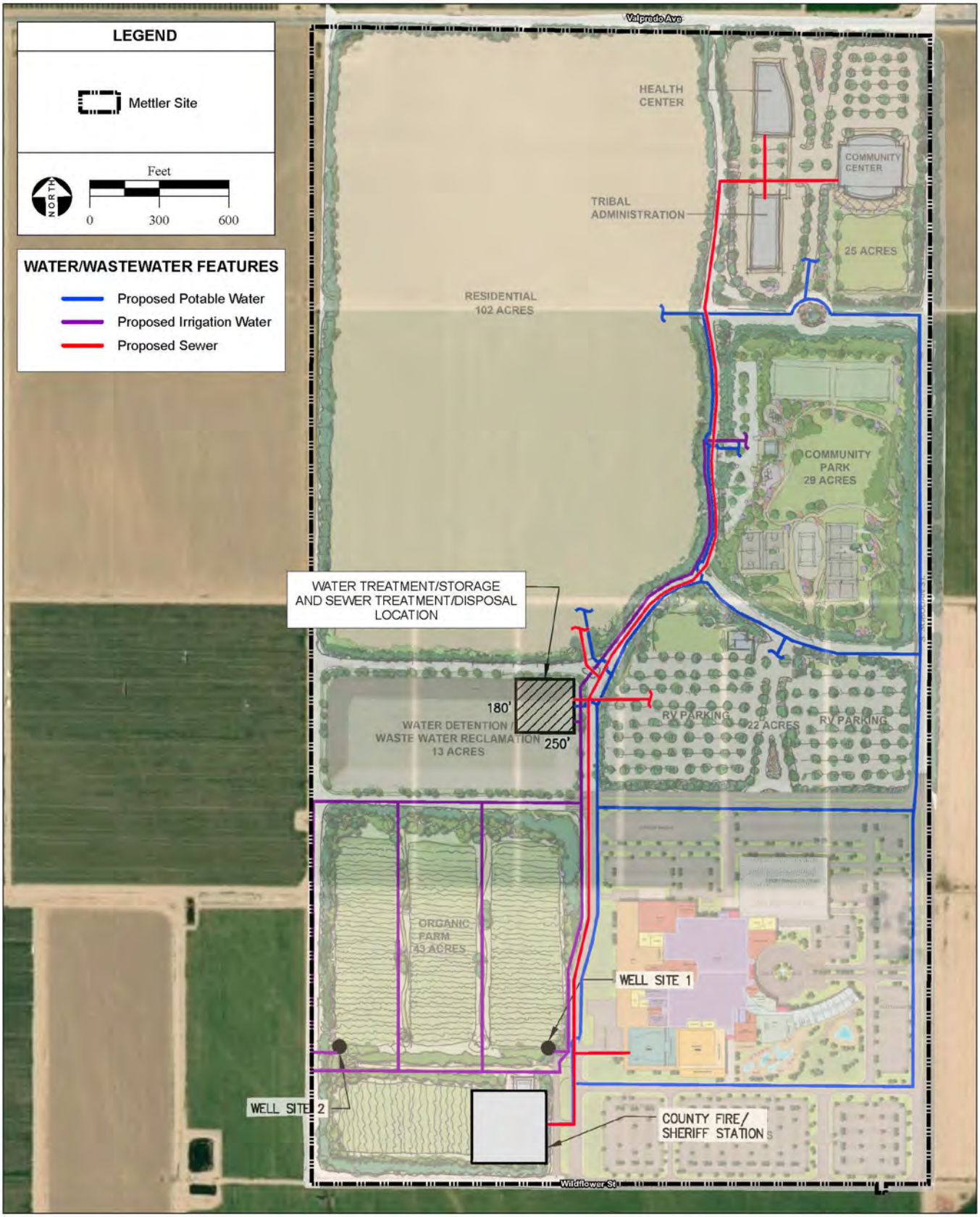
Alternative A1 and Potential Future Development Site Plan

SOURCE: Friedmutter Group, 11/26/2018; AES, 8/14/2019

Figure 2-5
Alternative A1 - Casino Site Plan

SOURCE: Friedmutter Group 1/2019; AES, 8/14/2019

Figure 2-6
Architectural Rendering - Alternatives A1, A2, and B



SOURCE: Dexter Wilson Engineering, 5-23-2019; DigitalGlobe aerial photograph, 11/1/2017; AES, 1/23/2020

Figure 2-7

Alternative A1 + Cumulative Buildout - Water/Wastewater Facilities

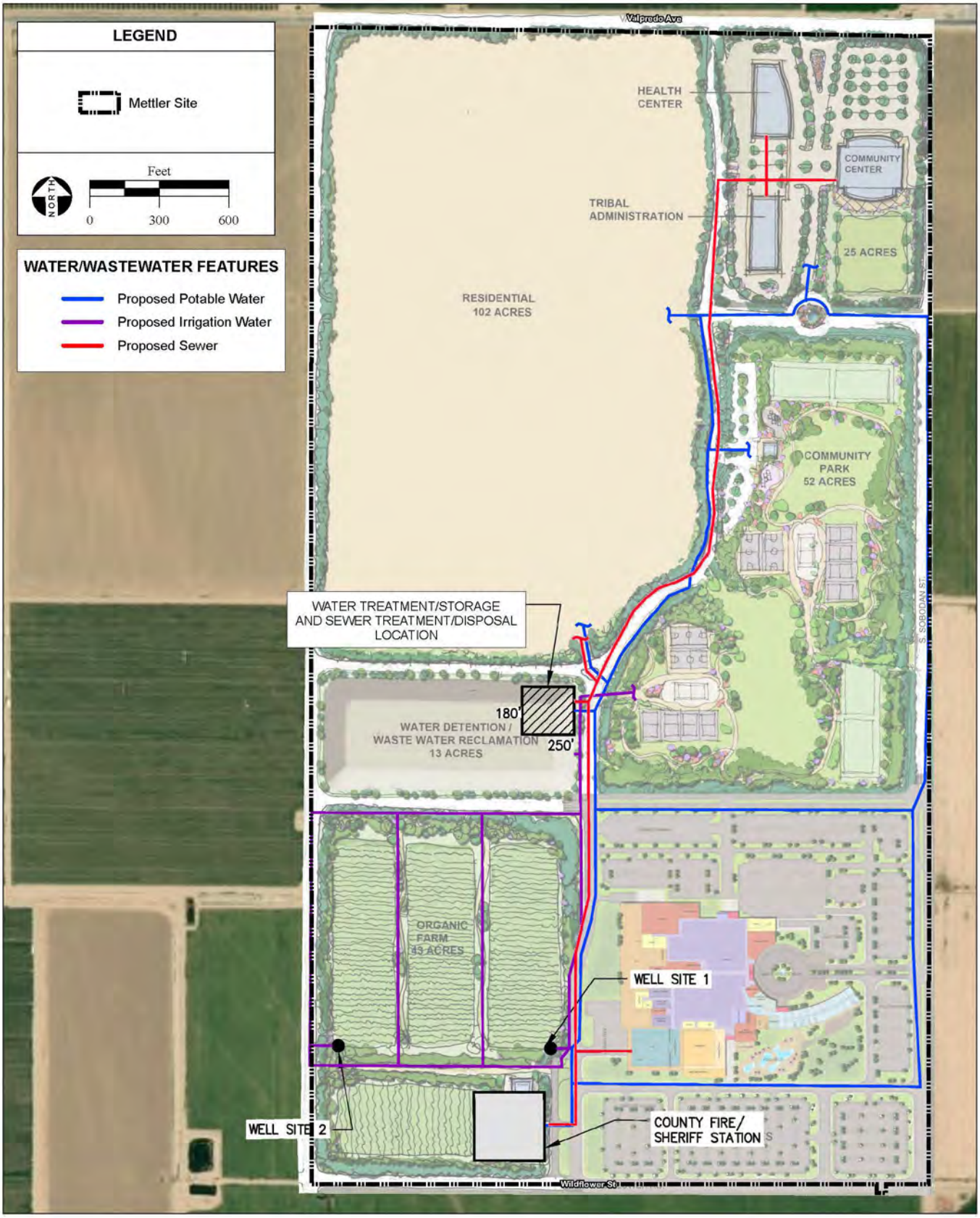
SOURCE: Friedmutter Group, 11/2018; DigitalGlobe aerial photograph, 11/1/2017; AES, 8/14/2019

Figure 2-8

Alternative A2 and Potential Future Development Site Plan

SOURCE: Friedmutter Group, 11/26/2018; AES, 8/14/2019

Figure 2-9
Alternative A2 - Casino Site Plan



SOURCE: Dexter Wilson Engineering, 5-23-2019; DigitalGlobe aerial photograph, 11/1/2017; AES, 8/14/2019

Figure 2-10

Alternative A2 + Cumulative Buildout - Water/Wastewater Facilities

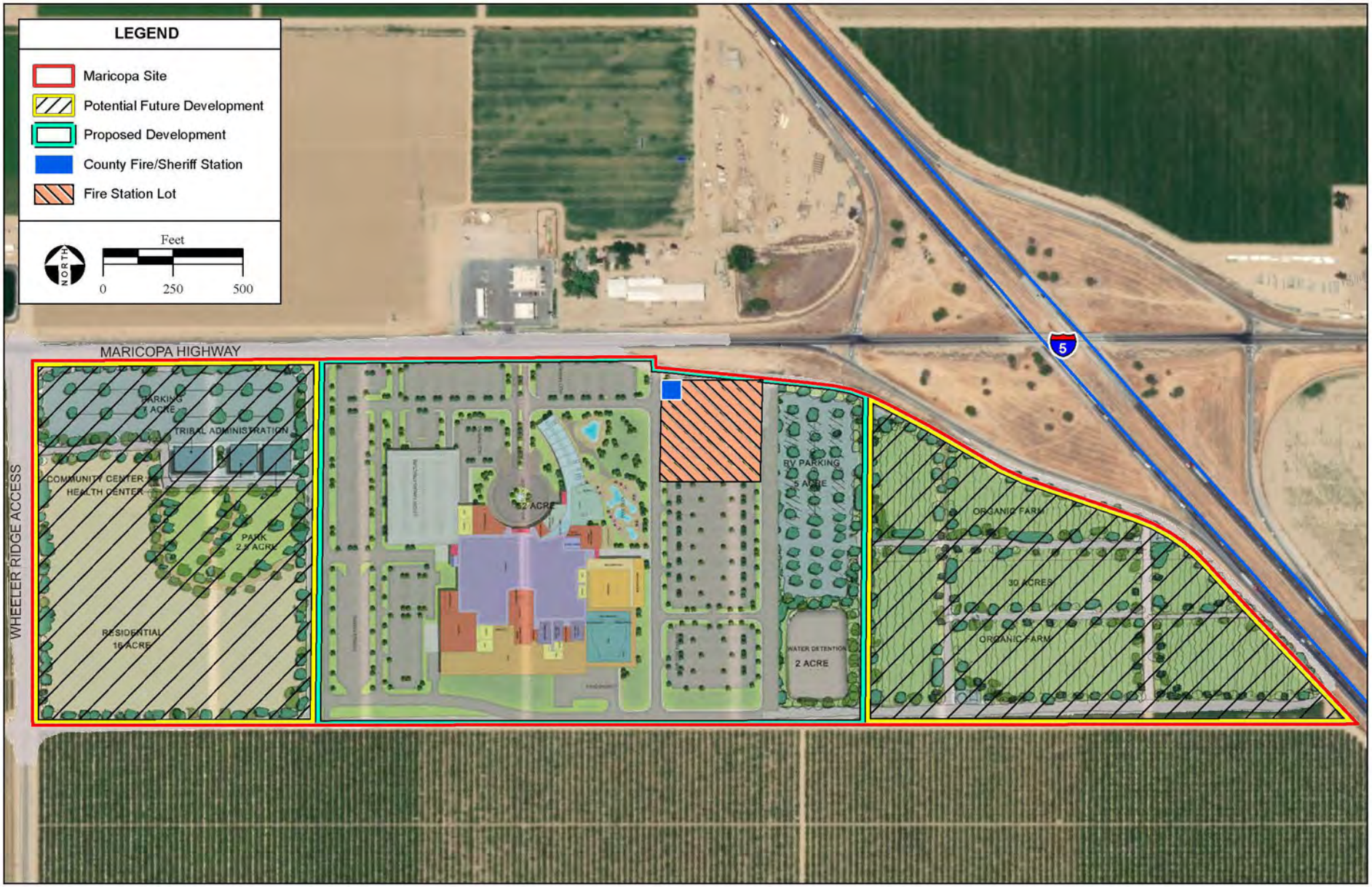
SOURCE: "Coal Oil Canyon, CA" & "Mettler, CA" USGS 7.5 Minute Topographic Quadranges, T11N R20W, Section 10, San Bernardino Baseline & Meridian; Kern County GIS, 2017; ESRI, 2018; AES, 8/15/2019

Figure 2-11
Maricopa Highway Site and Vicinity

SOURCE: Friedmutter Group, 11/2018; DigitalGlobe aerial photograph, 11/1/2017; AES, 8/15/2019

Figure 2-12

Maricopa Highway Site Parcel Map



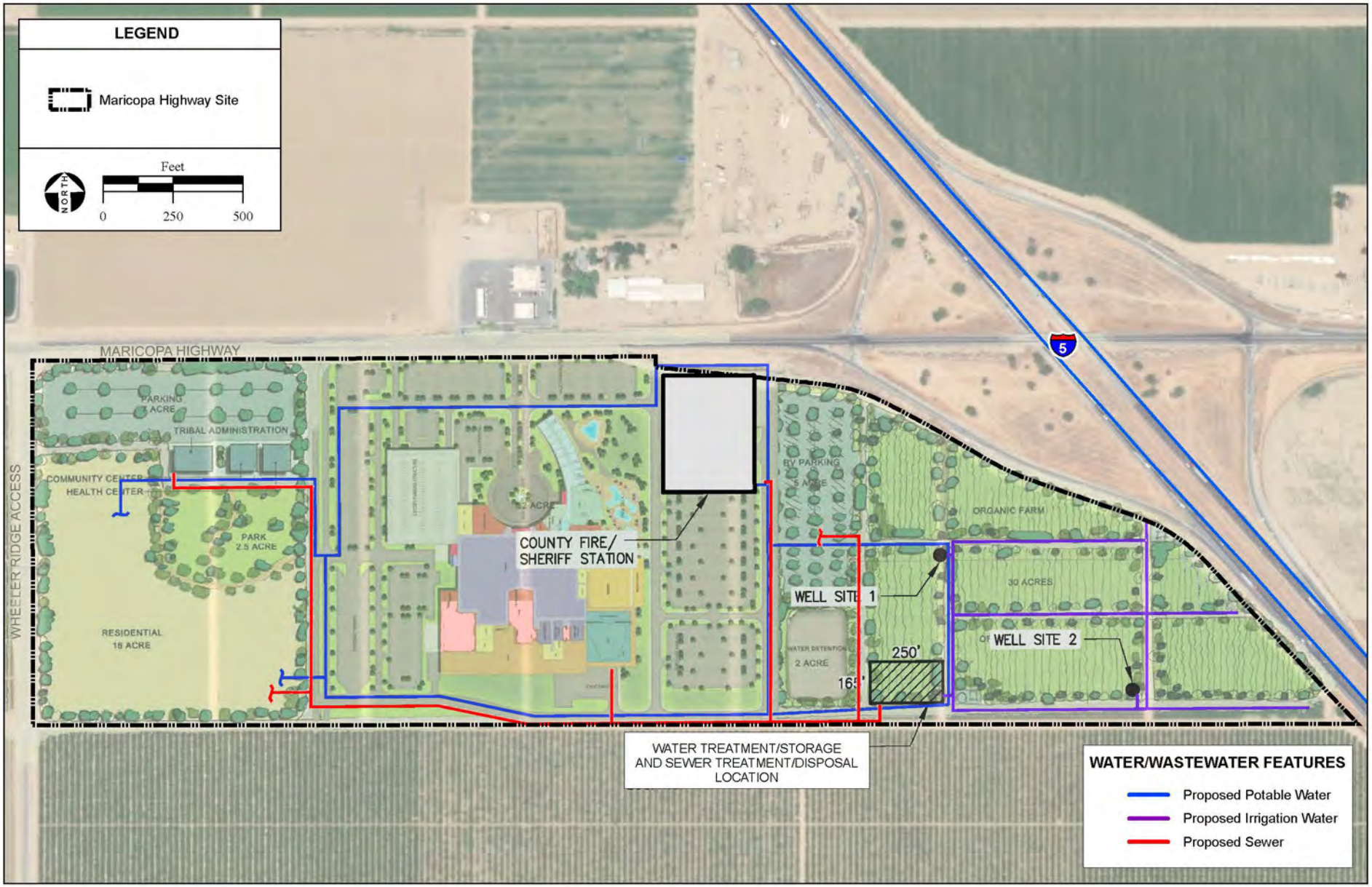
SOURCE: Friedmutter Group, 11/2018; DigitalGlobe aerial photograph, 11/1/2017; AES, 8/14/2019

Figure 2-13

Alternative B and Potential Future Development Site Plan

SOURCE: Friedmutter Group, 11/26/2018; AES, 8/14/2019

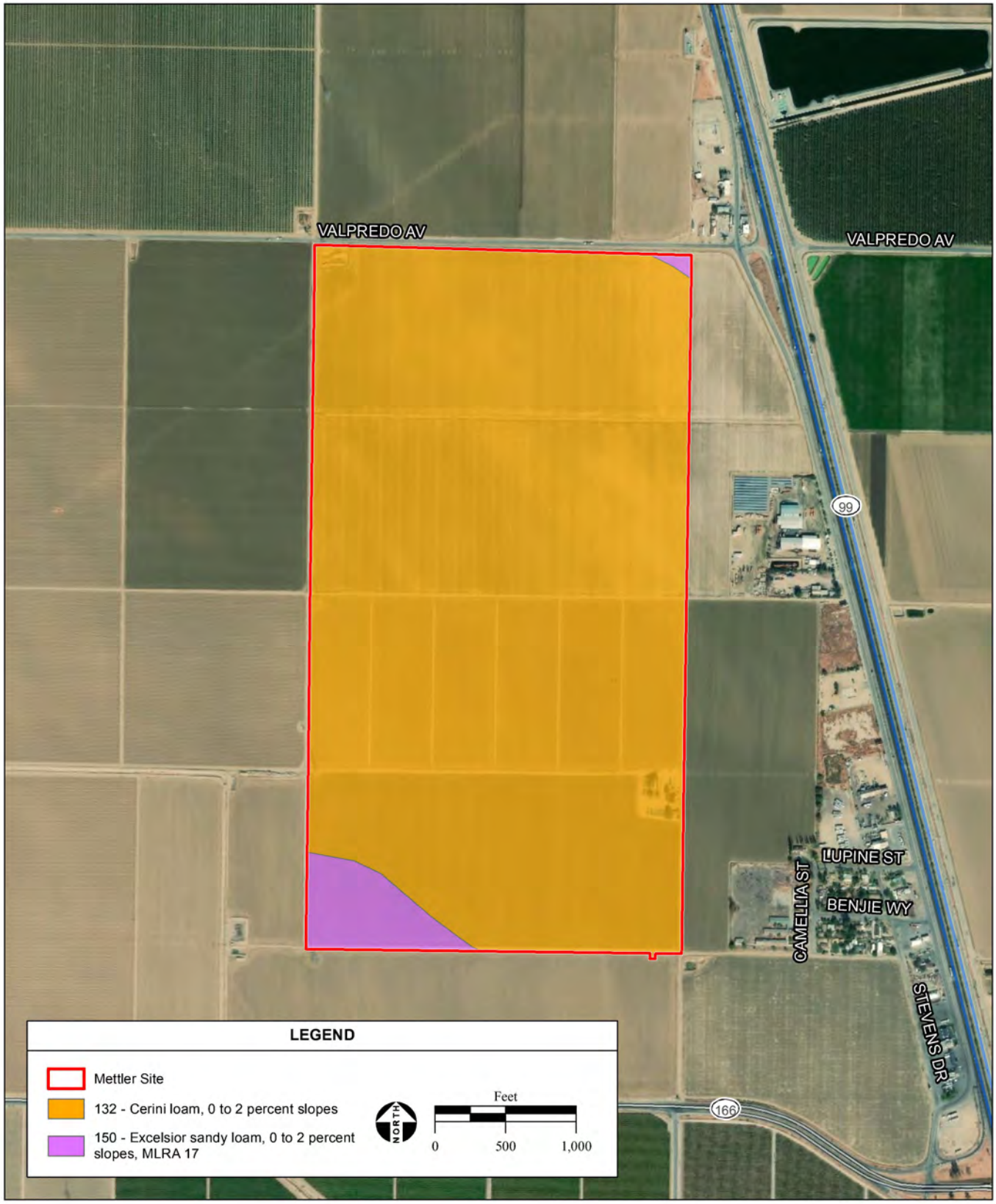
Figure 2-14
Alternative B - Casino Site Plan



SOURCE: Dexter Wilson Engineering 4/2019, Friedmutter Group, 11/2018; DigitalGlobe aerial photograph, 11/1/2017; AES, 8/14/2019

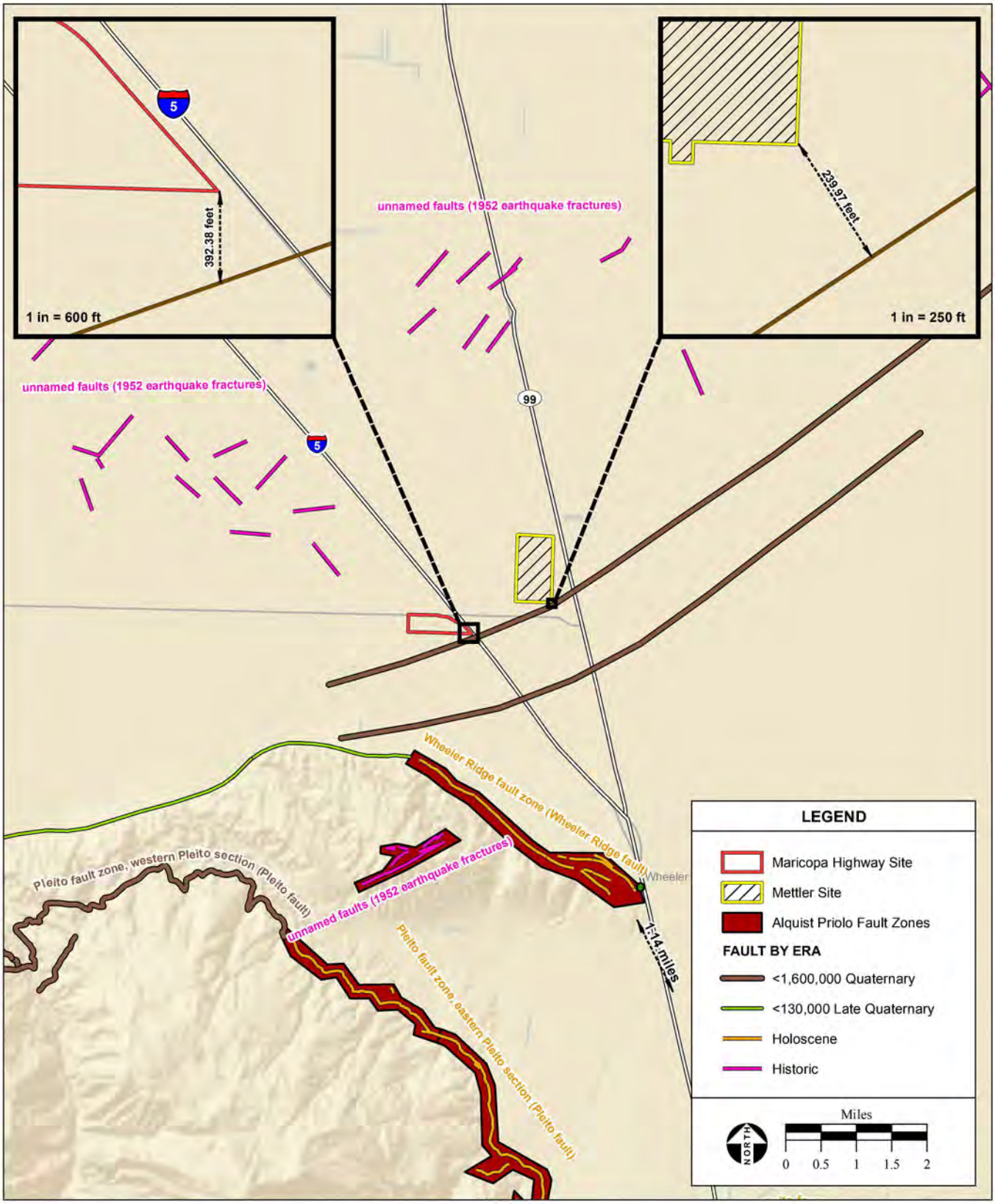
Figure 2-15

Alternative B + Cumulative Buildout - Water/Wastewater Facilities



SOURCE: USDA NRCS Soil Surveys of Kern County, 2013/2017; DigitalGlobe aerial photograph, 7/2017; AES, 9/17/2018

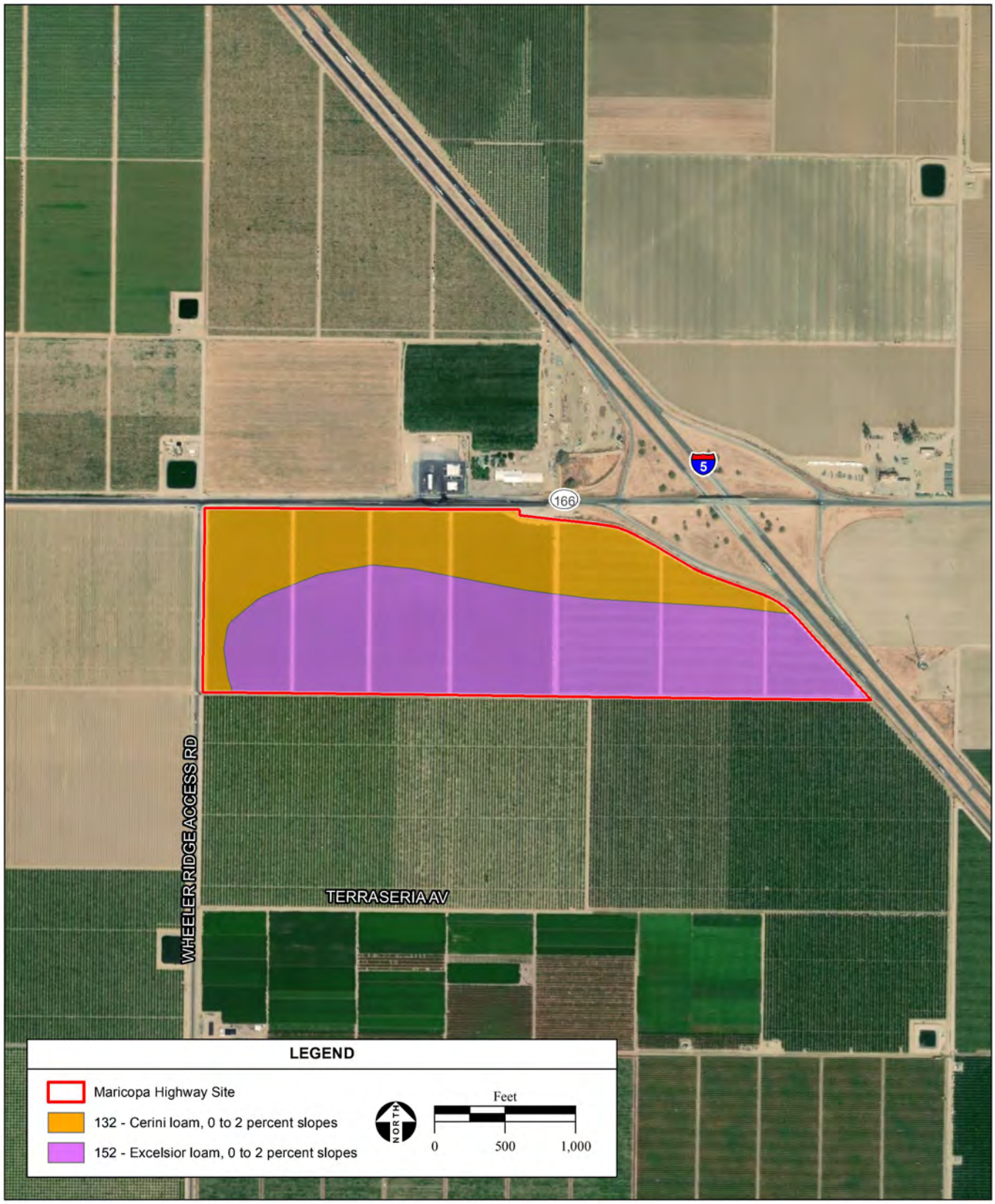
Figure 3.2-1
Mettler Site Soils



SOURCE: California Geologic Survey "Fault Activity Map of California", 2010; USGS Earthquake Hazards Program, 2010; AES, 5/3/2019

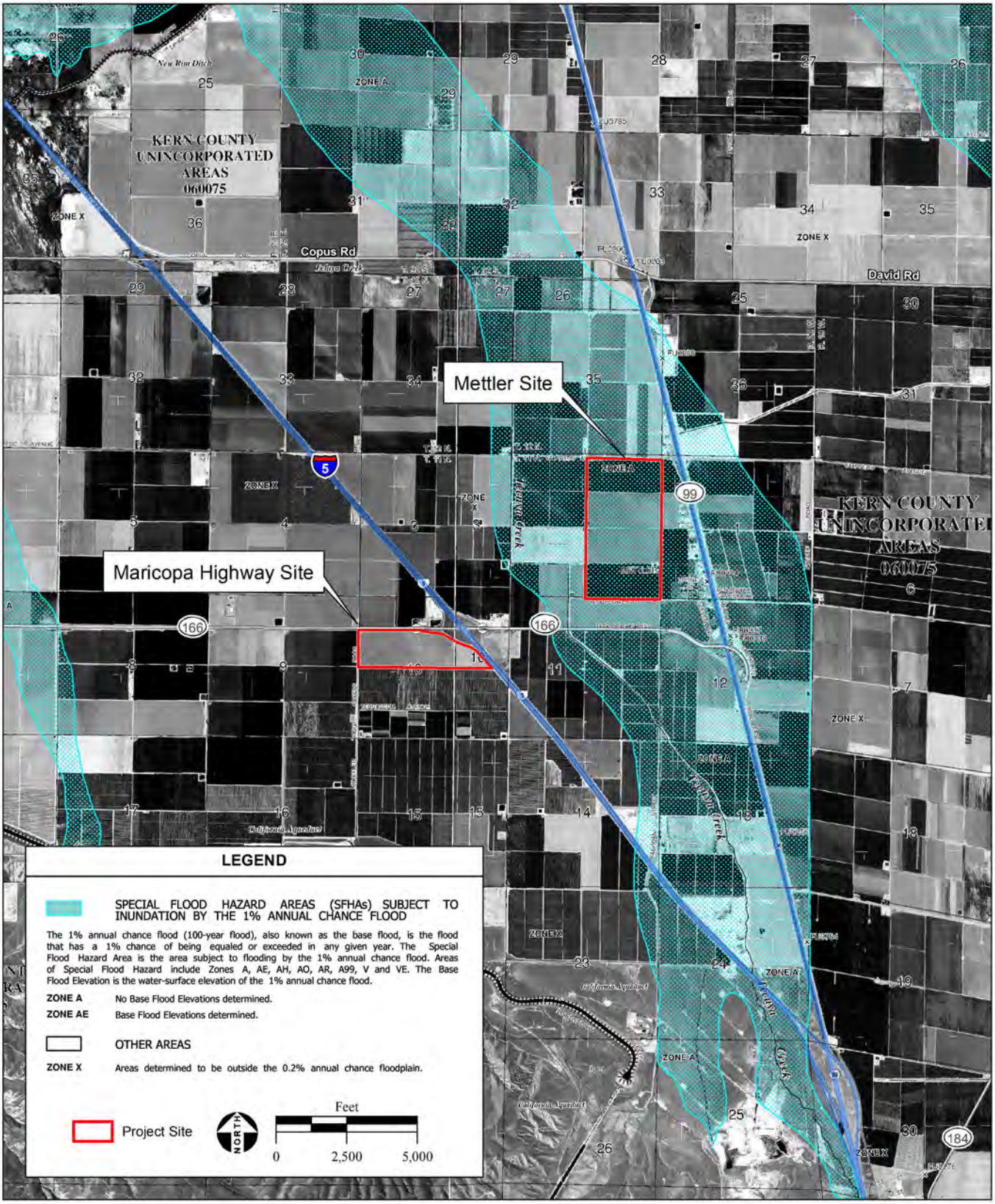
Figure 3.2-2

Mettler and Maricopa Highway Site Nearby Fault Lines



SOURCE: USDA NRCS Soil Surveys of Kern County, 2013/2017;
DigitalGlobe aerial photograph, 7/2017; AES, 6/3/2019

Figure 3.2-3
Maricopa Highway Site Soils



SOURCE: FEMA FIRM updated effective, 9/26/2008; AES, 9/20/2018

Figure 3.3-1

Mettler and Maricopa Highway Site FEMA Flood Zones

SOURCE: DigitalGlobe aerial photograph, 11/1/2017; Kern County Data, 2010; AES, 5/21/2019

Figure 3.5-1
Mettler Site Habitat Types

PHOTO 1: View of ruderal/disturbed habitat and agricultural row crop facing west.

PHOTO 2: View of drainage ditch and agricultural row crop along western boundary of the project site facing north.

PHOTO 3: View of disturbed/developed habitat showing rural residence and agricultural structures facing north

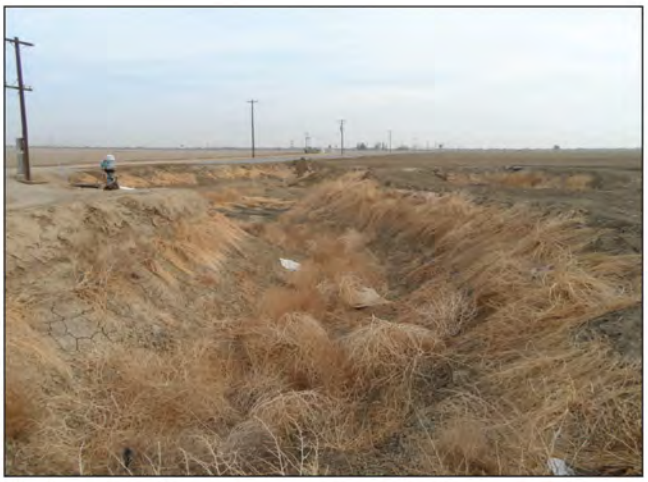


PHOTO 4: View of manmade agricultural ponds facing east.

PHOTO 5: View of manmade agricultural ponds facing south.

SOURCE: AES, 5/21/2019

Figure 3.5-2
Mettler Site Photographs

SOURCE: DigitalGlobe aerial photograph, 7/2017; AES, 5/16/2019

Figure 3.5-3
Maricopa Highway Site Habitat Types

PHOTO 1: View of drainage ditch, access road and agricultural vine rows along SR-166. Photograph taken from the northwestern corner of the project site facing east.

PHOTO 2: View of access road and agricultural vine rows. Photograph taken from the north western corner of the project site facing south.

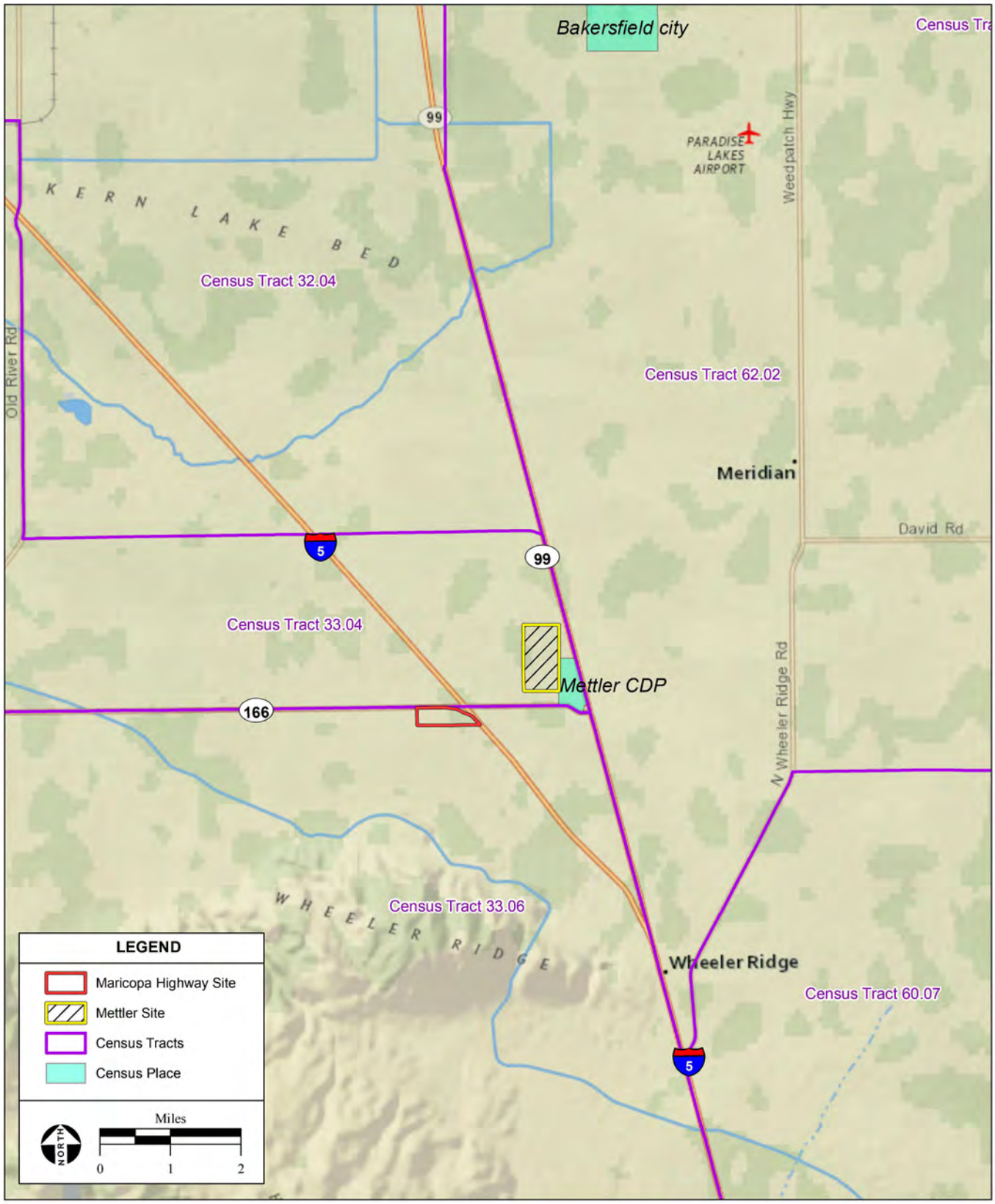
PHOTO 3: View of drainage ditch and access road along the north central boundary of the project site facing east.

PHOTO 4: View of agricultural vine rows and ruderal/disturbed habitat.

PHOTO 5: View of drainage ditch and access road along Wheeler Ridge Access Road facing north.

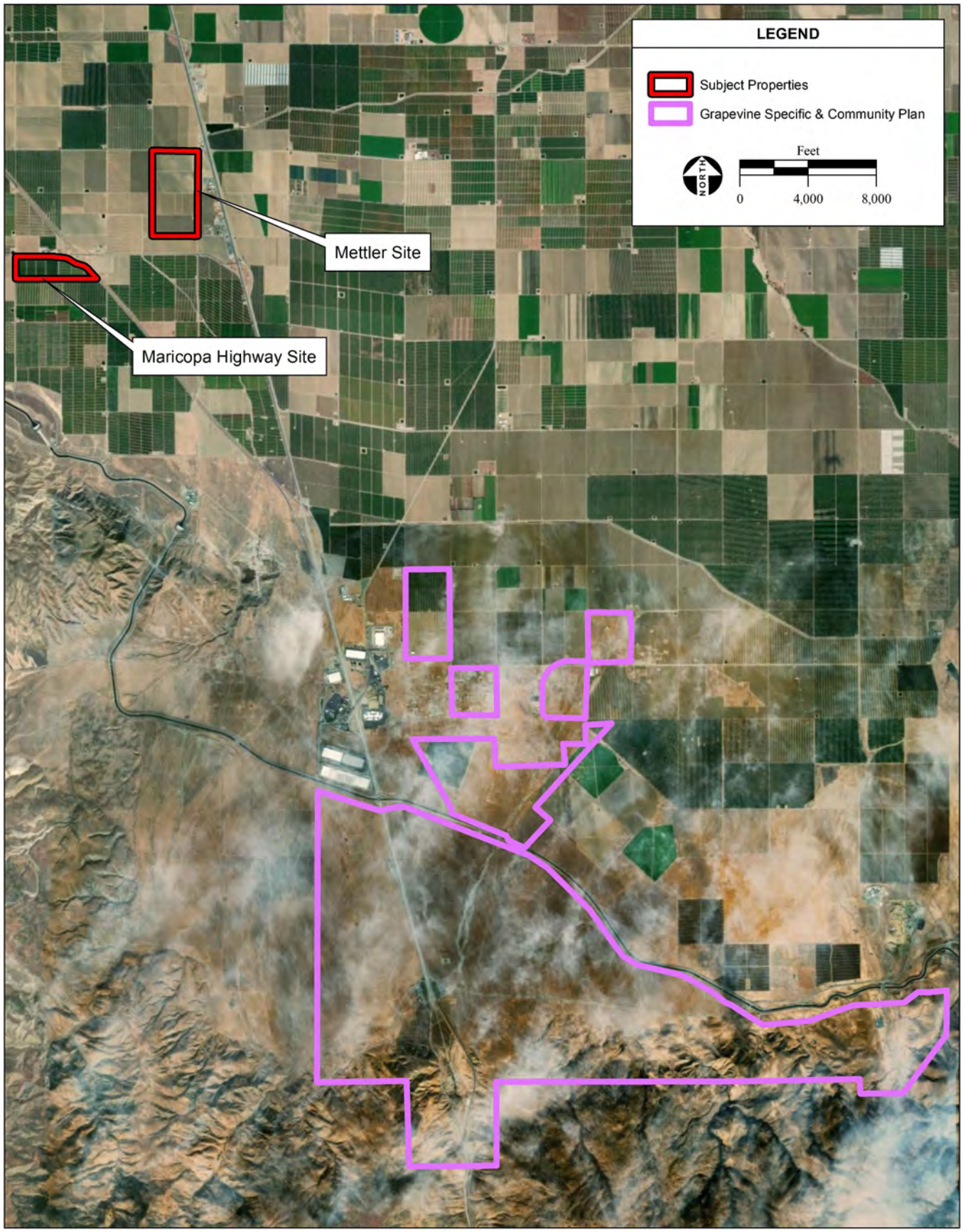
SOURCE: AES, 5/21/2019

Figure 3.5-4
Maricopa Highway Site Photographs



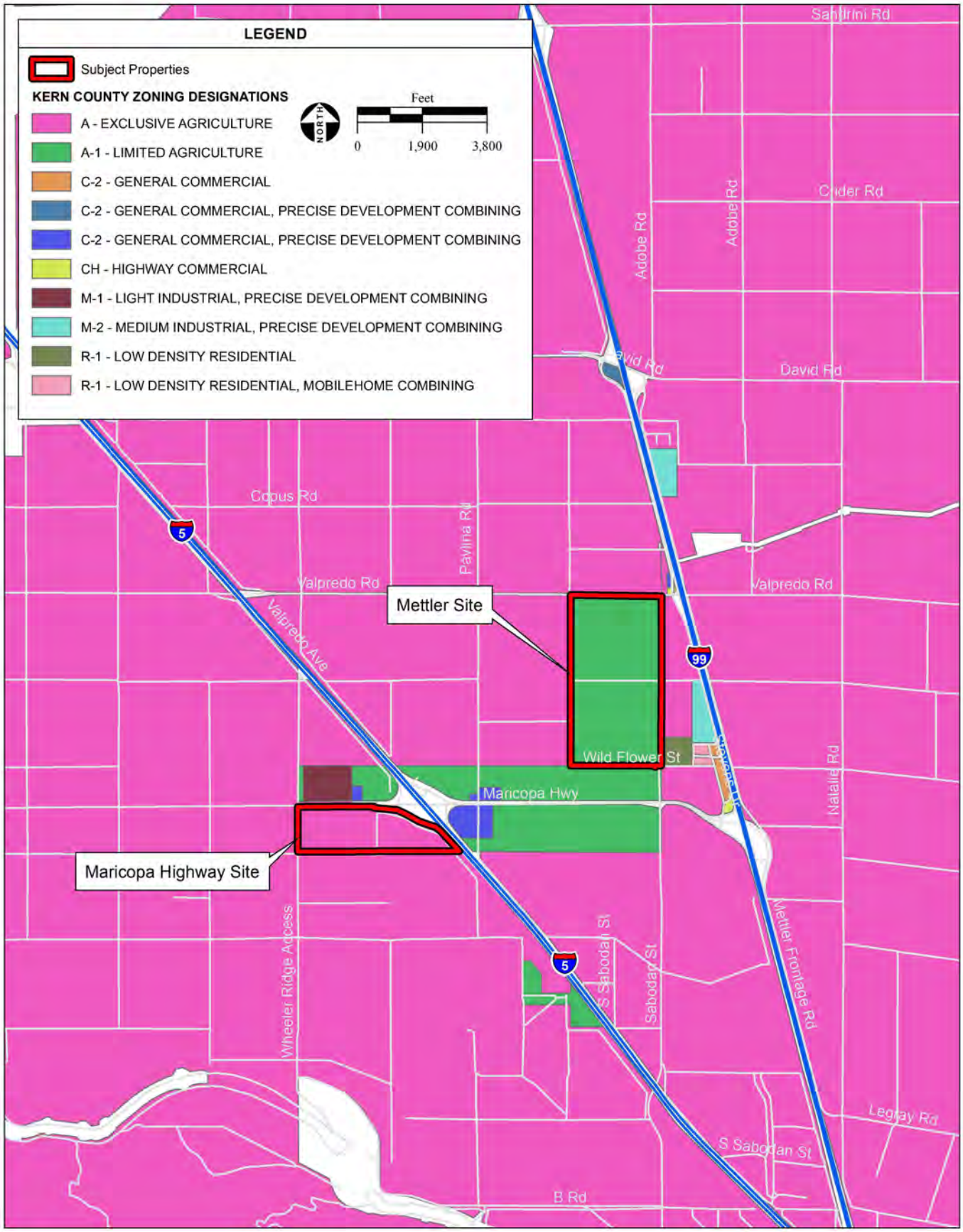
SOURCE: US Census, 2010; NatGeo, 2019; AES, 6/3/2019

Figure 3.7-1
Census Tract Map - Maricopa Highway and Mettler Sites



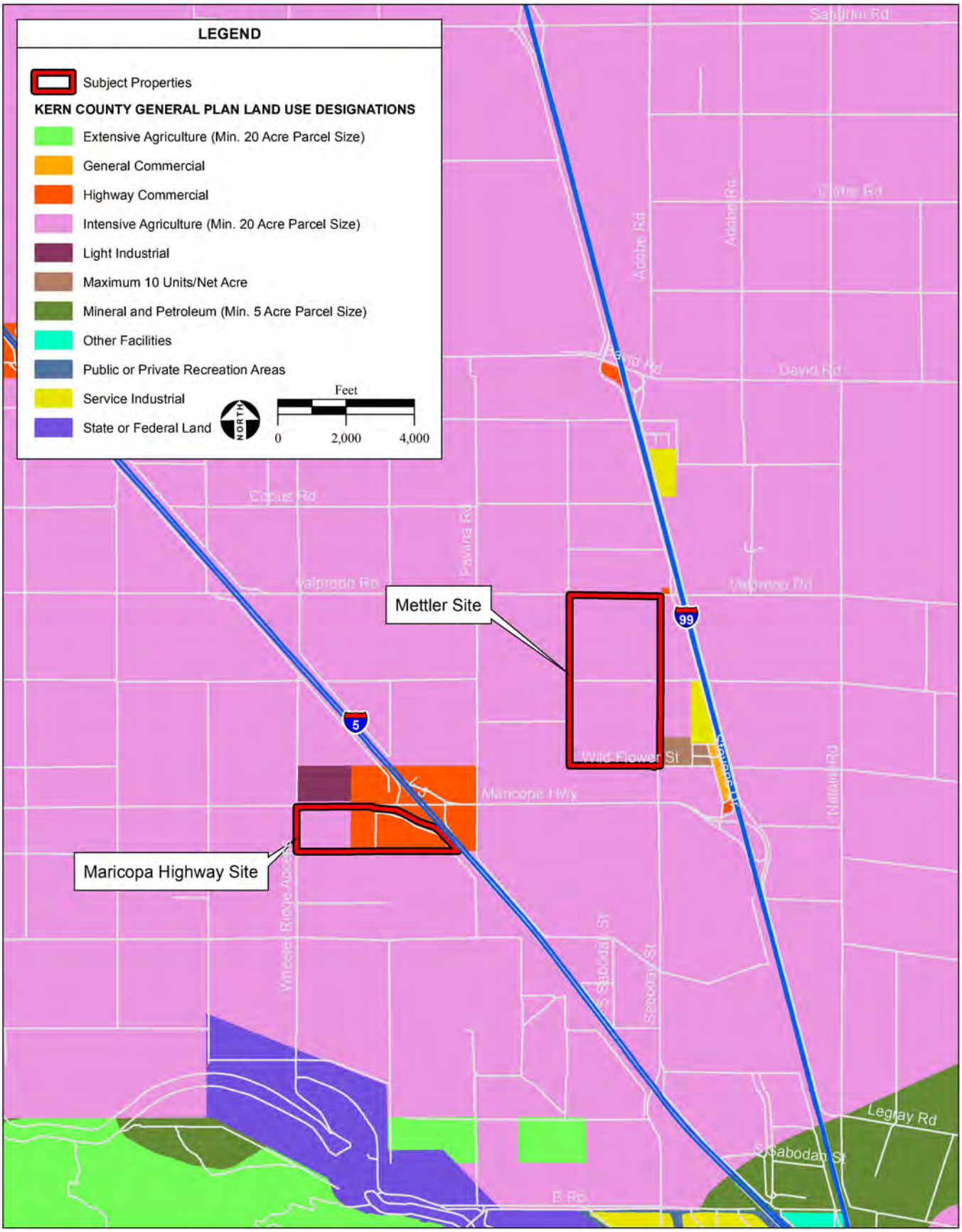
SOURCE: Kern County Planning and Natural Resources Dept, 4/2019;
DigitalGlobe Aerial Photograph, 11/3/2017; AES, 5/31/2019

Figure 3.9-1
Grapevine Specific and Community Plan



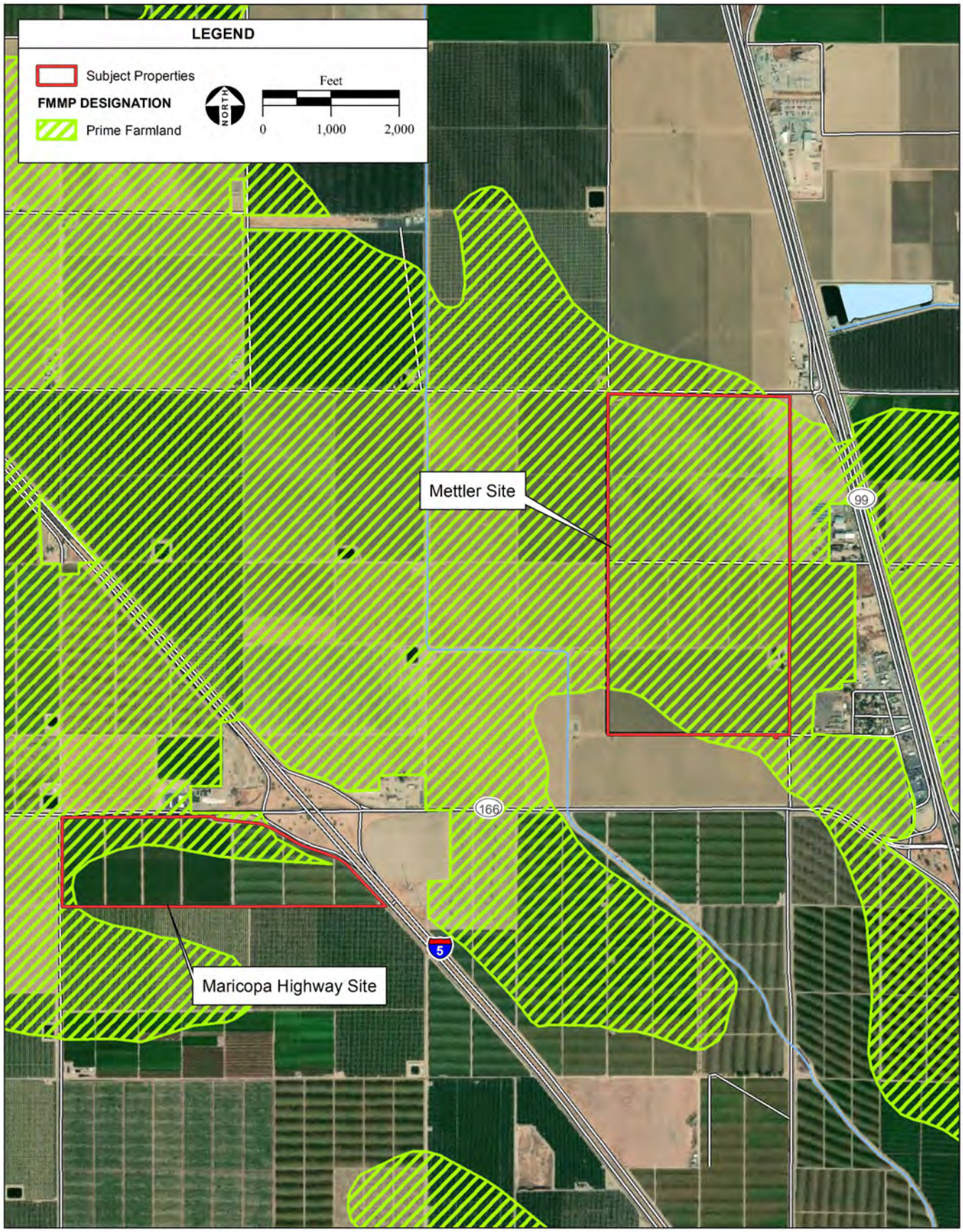
SOURCE: Kern County Planning and Community Development Department, 3/2013; AES, 5/31/2019

Figure 3.9-2
Zoning Designations



SOURCE: Kern County General Plan, Planning and Community Development Department, 3/2013; AES, 5/31/2019

Figure 3.9-3
Land Use Designations



SOURCE: CA Dept. of Conservation, FMMP Kern County 2010;
DigitalGlobe Aerial Photograph, 8/8/2016; AES, 5/31/2019

Figure 3.9-4
Prime Farmland Designations

PHOTO 1: View of the Mettler Site from the northwest corner facing southeast.

PHOTO 2: View of the Mettler Site from the southeast corner facing west.

PHOTO 3: View of the Mettler Site from the southeast corner facing north.

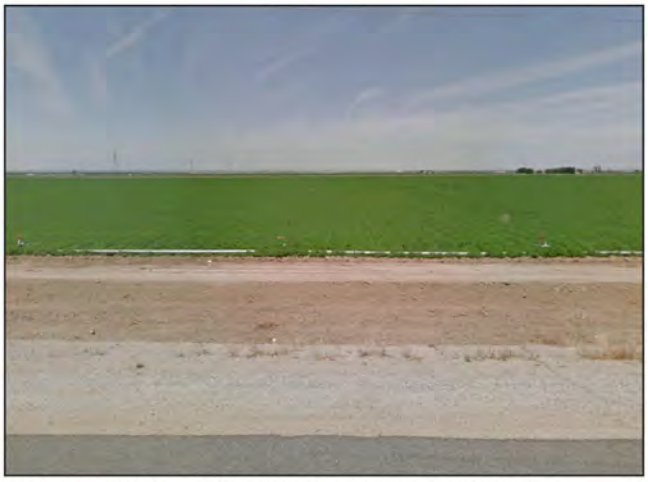


PHOTO 4: View of the Mettler Site from SR-166.

PHOTO 5: View of the Mettler Site from SR-99.

SOURCE: Google Earth Street View, 2018; AES, 6/25/2019

Figure 3.13-1
Mettler Site Photographs

PHOTO 1: View of drainage ditch, access road and agricultural vine rows along SR-166. Photograph taken from the northwestern corner of the project site facing east.

PHOTO 2: View of access road and agricultural vine rows. Photograph taken from the north western corner of the project site facing south.

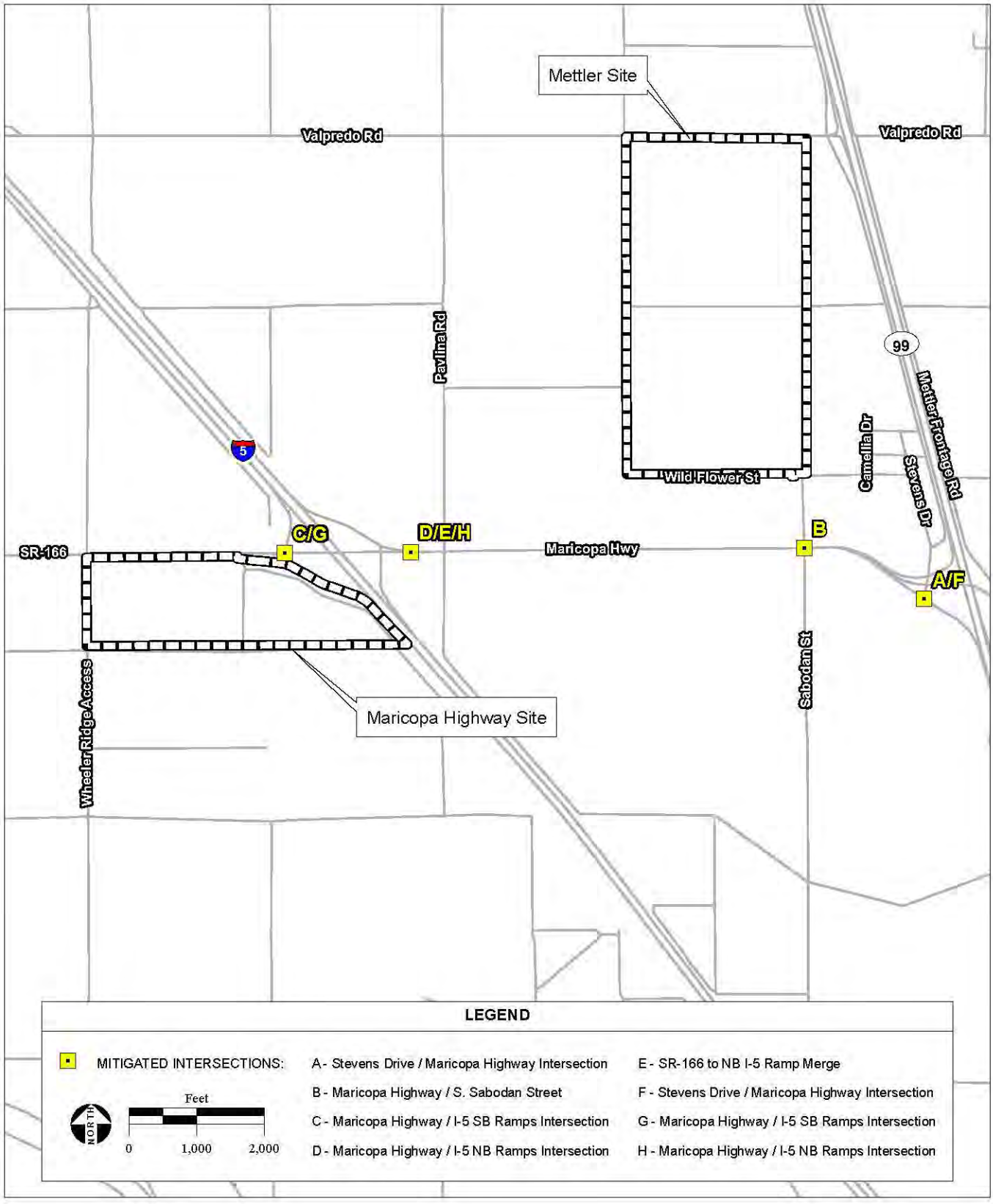
PHOTO 3: View of drainage ditch and access road along the north central boundary of the project site facing east.

PHOTO 4: View of agricultural vine rows and ruderal/disturbed habitat.

PHOTO 5: View of drainage ditch and access road along Wheeler Ridge Access Rd facing north.

SOURCE: AES, 5/21/2019

Figure 3.13-2
Maricopa Highway Site Photographs



SOURCE: Linscott Law & Greenspan, 5/23/19; Caltrans California Road Study Maps, 2019; AES, 7/31/2019

Figure 4-1

Location of Mitigation Measures for Alternatives A1, A2, and B

APPENDIX F

TRAFFIC IMPACT ANALYSIS

LINSCOTT LAW & GREENSPAN
engineers

TRANSPORTATION IMPACT ANALYSIS

TEJON CASINO

Kern County, California
October 30, 2019

LLG Ref. 3-18-3004

Prepared by:
Narasimha Prasad
Senior Transportation Engineer

Under the Supervision of:
John Boarman, P. E.
Principal

Linscott, Law & Greenspan, Engineers
4542 Ruffner Street
Suite 100
San Diego, CA 92111
858.300.8800 T
858.300.8810 F
www.llgengineers.com

TABLE OF CONTENTS

SECTION		PAGE
Appendices		**vi**
List of Figures		**vii**
List of Tables		**ix**
1.0	**Introduction**	**1**
2.0	**Project Description**	**2**
2.1	Project Alternatives	2
2.1.1	Alternative A1 - Casino Resort on the Mettler Site	2
2.1.2	Alternative A2 - Reduced Casino Resort on the Mettler Site	2
2.1.3	Alternative B - Casino Resort on Maricopa Highway Site	4
3.0	**Existing Conditions**	**10**
3.1	Existing Street Network	10
3.2	Existing Traffic Volumes	10
3.2.1	Daily Segment Volumes	10
3.2.2	Peak Hour Intersection Volumes	10
4.0	**Study Area, Analysis Approach and Methodology**	**15**
4.1	Study Area	15
4.2	Analysis Scenarios	16
4.3	Analysis Methodology	16
4.3.1	Signalized Intersections	17
4.3.2	Unsignalized Intersections	18
4.3.3	Roadway Segments	20
4.3.4	Ramp Merge/Diverge Sections	20
5.0	**Significance Criteria**	**21**
6.0	**Analysis of Existing Conditions**	**23**
6.1	Peak Hour Intersection Levels of Service	23
6.2	Daily Street Segment Levels of Service	23
6.3	Ramp Merge Analysis	23
6.4	Ramp Diverge Analysis	23
7.0	**Opening Year (2023) Traffic Volumes**	**29**
7.1	Cumulative Projects	29
7.2	Background Growth	32

TABLE OF CONTENTS (CONTINUED)

SECTION	PAGE
8.0 Trip Generation Rates	**35**
8.1 Casino	35
8.1.1 Methodology to Determine Trip Generation for Casinos	35
8.1.2 Calculating the Trip Generation Rates for the Existing Casinos	37
8.2 Hotel	40
8.3 R. V. Parking	42
8.4 Organic Farm	42
8.5 Single Family Homes	42
8.6 Community Park	43
8.7 Community Center	43
8.8 Health Center	44
8.9 Tribal Administration	44
8.10 County Fire / Sheriff Station	44
ALTERNATIVE A1	**45**
9.0 Alternative A1 Trip Generation/Distribution/Assignment	**46**
9.1 Trip Generation	46
9.1.1 Weekday	46
9.1.2 Saturday	46
9.2 Trip Distribution/Assignment	46
10.0 Analysis of Near-Term Scenarios – Alternative A1	**59**
10.1 Existing + Project Alternative A1 Phase 1	59
10.1.1 Intersection Analysis	59
10.1.2 Daily Street Segment Levels of Service	59
10.1.3 Ramp Merge Analysis	59
10.1.4 Ramp Diverge Analysis	60
10.2 Opening Year (2023) without Project	60
10.2.1 Intersection Analysis	60
10.2.2 Daily Street Segment Levels of Service	60
10.2.3 Ramp Merge Analysis	61
10.2.4 Ramp Diverge Analysis	61
10.3 Opening Year (2023) + Project Phase 1	61
10.3.1 Intersection Analysis	61
10.3.2 Daily Street Segment Levels of Service	62
10.3.3 Ramp Merge Analysis	62
10.3.4 Ramp Diverge Analysis	62

TABLE OF CONTENTS (CONTINUED)

SECTION	PAGE
11.0 Analysis of Long-Term (Year 2040) Scenarios – Alternative A1	**74**
11.1 Year 2040 Traffic Volumes	74
11.2 Year 2040 without Project Analysis	74
11.2.1 Intersection Analysis	74
11.2.2 Daily Street Segment Levels of Service	74
11.2.3 Ramp Merge Analysis	74
11.2.4 Ramp Diverge Analysis	74
11.3 Year 2040 with Entire Project Analysis	75
11.3.1 Intersection Analysis	75
11.3.2 Daily Street Segment Levels of Service	75
11.3.3 Ramp Merge Analysis	75
11.3.4 Ramp Diverge Analysis	75
ALTERNATIVE A2	**83**
12.0 Alternative A2 Trip Generation/Distribution/Assignment	**84**
12.1.1 Weekday	84
12.1.2 Saturday	84
12.2 Trip Distribution	84
13.0 Analysis of Near-Term Scenarios – Alternative A2	**96**
13.1 Existing + Project Alternative A2 Phase 1	96
13.1.1 Intersection Analysis	96
13.1.2 Daily Street Segment Levels of Service	96
13.1.3 Ramp Merge Analysis	96
13.1.4 Ramp Diverge Analysis	97
13.2 Opening Year (2023) without Project	97
13.3 Opening Year (2023) + Project Phase 1	97
13.3.1 Intersection Analysis	97
13.3.2 Daily Street Segment Levels of Service	98
13.3.3 Ramp Merge Analysis	98
13.3.4 Ramp Diverge Analysis	98
14.0 Analysis of Long-Term (Year 2040) Scenarios – Alternative A2	**108**
14.1 Year 2040 Traffic Volumes	108
14.2 Year 2040 without Project Analysis	108
14.3 Year 2040 with Project Analysis	108
14.3.1 Intersection Analysis	108
14.3.2 Daily Street Segment Levels of Service	108
14.3.3 Ramp Merge Analysis	108

TABLE OF CONTENTS (CONTINUED)

SECTION	PAGE
14.3.4 Ramp Diverge Analysis	109
ALTERNATIVE B	**114**
15.0 Alternative B Trip Generation/Distribution/Assignment	**115**
15.1.1 Weekday	115
15.1.2 Saturday	115
15.2 Trip Distribution	115
16.0 Analysis of Near-Term Scenarios – Alternative B	**128**
16.1 Existing + Project	128
16.1.1 Intersection Analysis	128
16.1.2 Daily Street Segment Levels of Service	128
16.1.3 Ramp Merge Analysis	128
16.1.4 Ramp Diverge Analysis	129
16.2 Opening Year (2023) without Project	129
16.3 Opening Year (2023) + Project Phase 1	129
16.3.1 Intersection Analysis	129
16.3.2 Daily Street Segment Levels of Service	130
16.3.3 Ramp Merge Analysis	130
16.3.4 Ramp Diverge Analysis	131
17.0 Analysis of Long-Term Scenarios – Alternative B	**140**
17.1 Year 2040 Traffic Volumes	140
17.2 Year 2040 without Project Analysis	140
17.3 Year 2040 with Project Analysis	140
17.3.1 Intersection Analysis	140
17.3.2 Daily Street Segment Levels of Service	140
17.3.3 Ramp Merge Analysis	140
17.3.4 Ramp Diverge Analysis	141
18.0 Access Discussion	**146**
18.1 Alternatives A1 and A2	146
18.2 Alternative B	147
19.0 Significance of Impacts and Mitigation Measures	**150**
19.1 Significance of Impacts	150
19.1.1 Alternative A1	150
19.1.2 Alternative A2	150
19.1.3 Alternative B	150

TABLE OF CONTENTS (CONTINUED)

SECTION	PAGE
19.2 Mitigation Measures	151
19.2.1 Alternative A1	151
19.2.2 Alternative A2	152
19.2.3 Alternative B	153
19.3 Fair Share Calculations	153
19.3.1 Alternative A1	154
19.3.2 Alternative A2	154
19.3.3 Alternative B	154
19.4 Project Traffic Contribution at all Impacted Locations	154
19.5 Post Mitigation Analysis	155
19.5.1 Alternative A1	155
19.5.2 Alternative A2	155
19.5.3 Alternative B	155
19.6 Signal Warrant Analysis	167
19.6.1 Alternative A1	167
19.6.2 Alternative A2	173
19.6.3 Alternative B	178
19.6.4 Signal Warrant Summary	181

APPENDICES

APPENDIX

A. Intersection and Segment Manual Count Sheets – Weekday and Weekend; Kern County Standards for Traffic Engineering, Caltrans Traffic Impact Study (TIA) guidelines, City of San Diego Guidelines for Traffic Impact Studies and pages from the 2014 Regional Transportation Plan/Sustainable Communities Strategy, Kern County Council of Governments.

B. Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Existing

C. Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Existing + Project Phase 1 (Alternative A1)

D. Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Opening Year (2023)

E. Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Opening Year (2023) + Project Phase 1 (Alternative A1)

F. Intersection and Ramp Merge / Diverge Analysis Worksheets – Year 2040 Without Project

G. Intersection and Ramp Merge / Diverge Analysis Worksheets – Year 2040 With Entire Project (Alternative A1)

H. Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Existing + Project Phase 1 (Alternative A2)

I. Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Opening Year (2023) + Project Phase 1 (Alternative A2)

J. Intersection and Ramp Merge / Diverge Analysis Worksheets – Year 2040 With Entire Project (Alternative A2)

K. Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Existing + Project Phase 1 (Alternative B)

L. Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Opening Year (2023) + Project Phase 1 (Alternative B)

M. Intersection and Ramp Merge / Diverge Analysis Worksheets – Year 2040 With Entire Project (Alternative B)

N. Mitigation Analysis Worksheets

LIST OF FIGURES

SECTION—FIGURE #		PAGE
Figure 2–1	Vicinity Map	5
Figure 2–2	Project Area Map	6
Figure 2–3	Conceptual Site Plan – Alternative A1	7
Figure 2–4	Conceptual Site Plan – Alternative A2	8
Figure 2–5	Conceptual Site Plan – Alternative B	9
Figure 3–1	Existing Conditions Diagram	12
Figure 3–2	Existing Traffic Volumes - Weekday	13
Figure 3–3	Existing Traffic Volumes - Saturday	14
Figure 7–1	Opening Year (2023) Traffic Volumes - Weekday	33
Figure 7–2	Opening Year (2023) Traffic Volumes - Saturday	34
Figure 9–1	Alternative A1 Project Traffic Distribution	50
Figure 9–2	Alternative A1 Weekday Project Phase 1 Traffic Volumes	51
Figure 9–3	Alternative A1 Saturday Project Phase 1 Traffic Volumes	52
Figure 9–4	Alternative A1 Weekday Entire Project Traffic Volumes	53
Figure 9–5	Alternative A1 Saturday Entire Project Traffic Volumes	54
Figure 9–6	Existing + Alternative A1 Weekday Project Phase 1 Traffic Volumes	55
Figure 9–7	Existing + Alternative A1 Saturday Project Phase 1 Traffic Volumes	56
Figure 9–8	Opening Year (2023) + Alternative A1 Weekday Project Phase 1 Traffic Volumes	57
Figure 9–9	Opening Year (2023) + Alternative A1 Saturday Project Phase 1 Traffic Volumes	58
Figure 11–1	Year 2040 Traffic Volumes	81
Figure 11–2	Year 2040 + Alternative A1 Project Traffic Volumes	82
Figure 12–1	Alternative A2 Project Traffic Distribution	87
Figure 12–2	Alternative A2 Weekday Project Phase 1 Traffic Volumes	88
Figure 12–3	Alternative A2 Saturday Project Phase 1 Traffic Volumes	89
Figure 12–4	Alternative A2 Weekday Entire Project Traffic Volumes	90
Figure 12–5	Alternative A2 Saturday Entire Project Traffic Volumes	91
Figure 12–6	Existing + Alternative A2 Weekday Project Phase 1 Traffic Volumes	92
Figure 12–7	Existing + Alternative A2 Saturday Project Phase 1 Traffic Volumes	93
Figure 12–8	Opening Year (2023) + Alternative A2 Weekday Project Phase 1 Traffic Volumes	94

LIST OF FIGURES (CONTINUED)

SECTION—FIGURE #		PAGE
Figure 12–9	Opening Year (2023) + Alternative A2 Saturday Project Phase 1 Traffic Volumes	95
Figure 14–1	Year 2040 + Alternative A2 Project Traffic Volumes	113
Figure 15–1	Alternative B Project Traffic Distribution	119
Figure 15–2	Alternative B Weekday Project Phase 1 Traffic Volumes	120
Figure 15–3	Alternative B Saturday Project Phase 1 Traffic Volumes	121
Figure 15–4	Alternative B Weekday Entire Project Traffic Volumes	122
Figure 15–5	Alternative B Saturday Entire Project Traffic Volumes	123
Figure 15–6	Existing + Alternative B Weekday Project Phase 1 Traffic Volumes	124
Figure 15–7	Existing + Alternative B Saturday Project Phase 1 Traffic Volumes	125
Figure 15–8	Opening Year (2023) + Alternative B Weekday Project Phase 1 Traffic Volumes	126
Figure 15–9	Opening Year (2023) + Alternative B Saturday Project Phase 1 Traffic Volumes	127
Figure 17–1	Year 2040 + Alternative B Project Traffic Volumes	145
Figure 18–1	Alternatives A1 and A2 Phase 1 Access Recommendations	148
Figure 18–2	Alternative B Phase 1 Access Recommendations	149

LIST OF TABLES

SECTION—TABLE #	PAGE
Table 2-1 Comparison of Project Alternative Land Uses	3
Table 3–1 Existing Traffic Volumes	11
Table 4–1 Intersection Level of Service Descriptions	19
Table 4–2 Intersection LOS & Delay Ranges	19
Table 4–3 Roadway Capacity Threshold Table	20
Table 5-1 Traffic Impact Significance Thresholds	22
Table 6–1 Existing Intersection Operations	24
Table 6–2 Existing Weekday Street Segment Operations	25
Table 6–3 Existing Saturday Street Segment Operations	26
Table 6–4 Existing Weekday Ramp Merge /Diverge Operations	27
Table 6–5 Existing Saturday Ramp Merge /Diverge Operations	28
Table 8-1 Comparison of Casinos	36
Table 8-2 Trip Generation Rate Comparison	41
Table 8-3 Trip Generation Equations	41
Table 9-1 Alternative A1 - Weekday Trip Generation	48
Table 9-2 Alternative A1 - Saturday Trip Generation	49
Table 10–1 Near-Term with Project Phase 1 Intersection Operations - Alternative A1	64
Table 10–2 Near-Term with Project Phase 1 Weekday Street Segment Operations - Alternative A1	66
Table 10–3 Near-Term with Project Phase 1 Saturday Street Segment Operations - Alternative A1	67
Table 10–4 Existing + Project Phase I Weekday Ramp Merge /Diverge Operations – Alternative A1	68
Table 10–5 Existing + Project Phase I Saturday Ramp Merge /Diverge Operations – Alternative A1	69
Table 10–6 Opening Day (2023) Weekday Ramp Merge /Diverge Operations	70
Table 10–7 Opening Day (2023) Saturday Ramp Merge /Diverge Operations	71
Table 10–8 Opening Day (2023) + Project Phase 1 Weekday Ramp Merge /Diverge Operations – Alternative A1	72
Table 10–9 Opening Day (2023) + Project Phase 1 Saturday Ramp Merge /Diverge Operations – Alternative A1	73
Table 11–1 Year 2040 Weekday Intersection Operations – Alternative A1	77

LIST OF TABLES (CONTINUED)

SECTION—TABLE #	PAGE
Table 11–2 Year 2040 Weekday Street Segment Operations - Alternative A1	78
Table 11–3 Year 2040 Weekday Ramp Merge /Diverge Operations	79
Table 11–4 Year 2040 + Entire Project Weekday Ramp Merge /Diverge Operations – Alternative A1	80
Table 12-1 Alternative A2 - Weekday Trip Generation	85
Table 12-2 Alternative A2 - Saturday Trip Generation	86
Table 13–1 Near-Term with Project Phase 1 Intersection Operations - Alternative A2	100
Table 13–2 Near-Term with Project Phase 1 Weekday Street Segment Operations - Alternative A2	102
Table 13–3 Near-Term with Project Phase 1 Saturday Street Segment Operations - Alternative A2	103
Table 13–4 Existing + Project Phase I Weekday Ramp Merge /Diverge Operations – Alternative A2	104
Table 13–5 Existing + Project Phase I Saturday Ramp Merge /Diverge Operations – Alternative A2	105
Table 13–6 Opening Year + Project Phase I Weekday Ramp Merge /Diverge Operations – Alternative A2	106
Table 13–7 Opening Year + Project Phase I Saturday Ramp Merge /Diverge Operations – Alternative A2	107
Table 14–1 Year 2040 Weekday Intersection Operations – Alternative A2	110
Table 14–2 Year 2040 Weekday Street Segment Operations - Alternative A2	111
Table 14–3 Year 2040 + Entire Project Weekday Ramp Merge /Diverge Operations – Alternative A2	112
Table 15-1 Alternative B - Weekday Trip Generation	117
Table 15-2 Alternative B - Saturday Trip Generation	118
Table 16–1 Near-Term with Project Phase 1 Intersection Operations - Alternative B	132
Table 16–2 Near-Term with Project Phase 1 Weekday Street Segment Operations - Alternative B	134
Table 16–3 Near-Term with Project Phase 1 Saturday Street Segment Operations - Alternative B	135
Table 16–4 Existing + Project Phase I Weekday Ramp Merge /Diverge Operations – Alternative B	136
Table 16–5 Existing + Project Phase I Saturday Ramp Merge /Diverge Operations – Alternative B	137

LIST OF TABLES (CONTINUED)

SECTION—TABLE # **PAGE**

Table 16–6 Opening Year + Project Phase I Weekday Ramp Merge /Diverge Operations – Alternative B 138

Table 16–7 Opening Year + Project Phase I Saturday Ramp Merge /Diverge Operations – Alternative B 139

Table 17–1 Year 2040 Weekday Intersection Operations – Alternative B 142

Table 17–2 Year 2040 Weekday Street Segment Operations - Alternative B..... 143

Table 17–3 Year 2040 + Entire Project Weekday Ramp Merge /Diverge Operations – Alternative B 144

Table 19-1 Fair Share Calculations..... 156

Table 19–2 Existing with Project Phase 1 Intersection Mitigation Analysis - Alternative A1 158

Table 19–3 Opening Day (2023) with Project Phase 1 Intersection Mitigation Analysis - Alternative A1 159

Table 19–4 Year 2040 with Entire Project Intersection Mitigation Analysis - Alternative A1 160

Table 19–5 Existing with Project Phase 1 Intersection Mitigation Analysis - Alternative A2 161

Table 19–6 Opening Day (2023) with Project Phase 1 Intersection Mitigation Analysis - Alternative A2 162

Table 19–7 Year 2040 with Entire Project Intersection Mitigation Analysis - Alternative A2 163

Table 19–8 Existing with Project Phase 1 Intersection Mitigation Analysis - Alternative B..... 164

Table 19–9 Opening Day (2023) with Project Phase 1 Intersection Mitigation Analysis - Alternative B 165

Table 19–10 Year 2040 with Entire Project Intersection Mitigation Analysis - Alternative B..... 166

Table 19–11 Peak Hour Volume Warrant Summary..... 181

TRANSPORTATION IMPACT ANALYSIS

TEJON CASINO

Kern County, California
October 28, 2019

1.0 INTRODUCTION

This traffic study is being conducted to determine the impacts, if any due to the proposed Tejon Casino. This casino will be built in two phases. This study examines three alternatives on two sites are analyzed in this study. The first Alternative Site (Alternatives A1 and A2) is located south of Valpredo Avenue, west of the Mettler Frontage Road West. The second Alternative Site (Alternative B) is located on the south side of Maricopa Highway, between Wheeler Ridge Access Road and I-5

In all three alternatives, Phase 1 consists of a casino and hotel. Phase 2 will include an Organic Farm, a Residential Community, a Community Park, a Community Center, a Health Center and a Tribal Administration office. This study will include analysis of intersections, segments and freeway mainline segments to determine if the project has any potential impact in any of the analysis scenarios.

The Project includes the following:

- Project Description
- Existing Conditions
- Study Area, Analysis Approach and Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Opening Year (2023) Traffic Volumes
- Trip Generation Discussion
- Analysis of Near-Term Scenarios
- Analysis of Long-Term (Year 2040) Scenarios
- Analysis of the three Project Alternatives
- Significance of Impacts and Mitigation Measures, Post-Mitigation Analysis and Signal Warrant Analysis

2.0 PROJECT DESCRIPTION

Three alternatives are proposed for the Project. Each of the three alternatives are planned to be built in two phases. Phase 1 will include a Casino, hotel, and in two of the three alternatives, a R.V. Park. Phase 2 will include an Organic Farm, a Residential Community, a Community Park, a Community Center, a Health Center and a Tribal Administration office. The size of each of these will vary in each of the alternatives. The three alternatives are described below.

Table 2-1 summarizes the proposed land uses in each of these alternatives.

2.1 Project Alternatives

2.1.1 *Alternative A1 - Casino Resort on the Mettler Site*

The Tribe currently owns an approximately 306-acre site near the community of Mettler in Kern County, California, herein referred to as the Mettler Site. Alternative A1 consists of the development of a portion of the trust property with a variety of commercial uses including, but not limited to, a casino, hotel and spa, meeting rooms, live entertainment venue, restaurants, bars, retail facilities, parking, and other supporting facilities. The remainder of the Mettler Site would remain undeveloped in the near term but could eventually developed at the discretion of the Tribe. Potential future land uses on the Mettler Site could include residential, commercial, and agricultural uses, as well as a community park, tribal administration office, health center, or public areas.

As seen in *Table 2-1*, Alternative A1 includes, a casino with a gaming area of 166,500 SF, a 400-room hotel, 4,500 parking spaces, a 22-acre R.V. park, a 43-acre organic farm, 92 single family homes, a 29-acre community park, a 68,000 SF community center, a 43,000 SF health center and a 42,500 SF tribal administration office.

Primary access to the Alternative A1 Project site will be on SR 166 (Maricopa Highway). This site has convenient access to I-5 and SR 99.

2.1.2 *Alternative A2 - Reduced Casino Resort on the Mettler Site*

Alternative A2 will also be located at the Mettler site. However, most project components would be reduced in size under this alternative. The remainder of the Mettler Site would remain undeveloped in the near term but could eventually be developed at the discretion of the Tribe.

As seen in *Table 2-1*, Alternative A2 includes, a casino with a gaming area of 147,500 SF, a 300-room hotel, 3,600 parking spaces, a 43-acre organic farm, 92 single family homes, a 52-acre community park, a 68,000 SF community center, a 43,000 SF health center and a 42,500 SF tribal administration office.

Primary access to the Alternative A2 Project site will be on SR 166 (Maricopa Highway). This site has convenient access to I-5 and SR 99.

TABLE 2-1
COMPARISON OF PROJECT ALTERNATIVE LAND USES

Description	Alternative A1		Alternative A2		Alternative B	
Casino	**166,500**	**SF**	**147,000**	**SF**	**166,500**	**SF**
Main Floor	153,000	SF	133,500	SF	153,000	SF
High Limit and Asian Gaming	13,500	SF	13,500	SF	13,500	SF
Restaurants	**73,300**	**SF**	**56,700**	**SF**	**73,300**	**SF**
Hotel	**226,000**	**SF**	**177,500**	**SF**	**226,000**	**SF**
Standard / Suites	400	Rooms	300	Rooms	400	Rooms
Entertainment and Retail	38,000	SF	33,000	SF	38,000	SF
Meeting Rooms	53,000	SF	32,000	SF	53,000	SF
Pool	66,000	SF	47,000	SF	66,000	SF
Spa and Fitness	16,000	SF	1,200	SF	16,000	SF
Back of House	77,000	SF	58,000	SF	77,000	SF
Total Casino-Related Development	***715,800***	***SF***	***552,400***	***SF***	***715,800***	***SF***
Parking	4,500	Spaces	3,600	Spaces	4,500	Spaces
Water and Wastewater Facilities	13	acres	13	acres	2	acres
RV Parking	22	acres	-		5	acres
Potential Future Development						
Organic Farm	43	acres	43	acres	30	acres
Residential Community	92	DU	92	DU	15	DU
Community Park	29	acres	52	acres	2.5	acres
Community Center	68,000	SF	68,000	SF	9,000	SF
Health Center	43,000	SF	43,000	SF	9,000	SF
Tribal Administration	42,500	SF	42,500	SF	12,000	SF

General Note: Line items do not precisely add to total due to rounding.

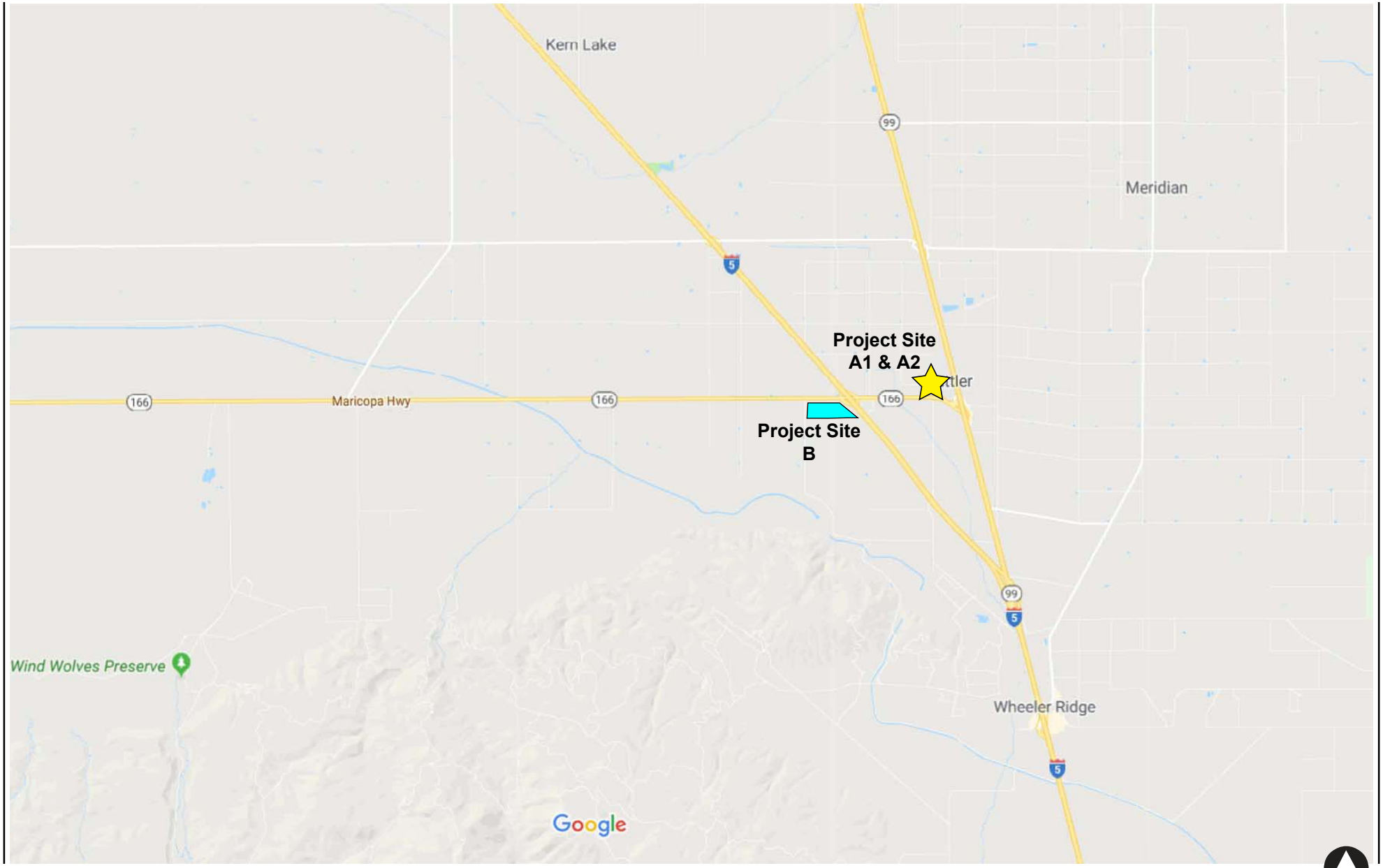
2.1.3 *Alternative B - Casino Resort on Maricopa Highway Site*

Alternative B is an approximately 118-acre Maricopa Highway Site located within the Historic 1851 Tejon Treaty Area, approximately 0.75 west of the Mettler Site at the southwest corner of the I-5 and State Route 166 (SR-166) interchange.

As seen in *Table 2-1*, Alternative B includes, a casino with a gaming area of 166,500 SF, a 400-room hotel, 4,500 parking spaces, a 5-acre R.V. park, a 30-acre organic farm, 15 single family homes, a 2.5-acre community park, a 9,000 SF community center, a 9,000 SF health center and a 12,000 SF tribal administration office.

Primary access to the Alternative B Project site will be on SR 166 (Maricopa Highway). This site has convenient access to I-5 and SR 99.

Figure 2–1 depicts the Project vicinity while ***Figure 2–2*** depicts the Project area. ***Figure 2–3*** depicts the Conceptual Site Plan for the Project Alternative A1. ***Figure 2–4*** depicts the Conceptual Site Plan for the Project Alternative A2 and ***Figure 2–5*** depicts the Conceptual Site Plan for the Project Alternative B.



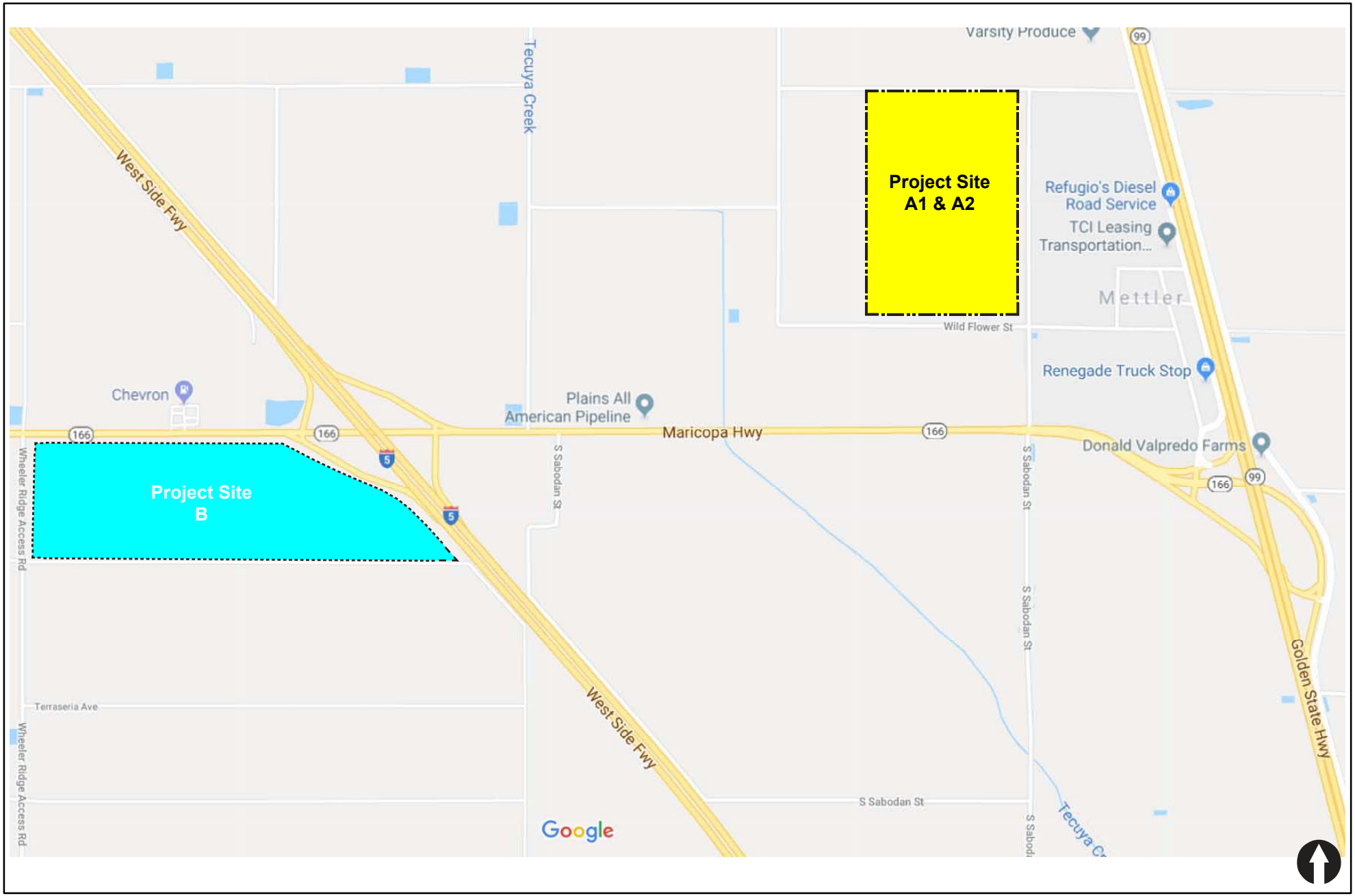
LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 04/25/19

Figure 2-1

Vicinity Map

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 04/25/19

Figure 2-2

Project Area Map

TEJON CASINO

LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/21/19

Figure 2-3

Conceptual Site Plan - Alternative A1

TEJON CASINO

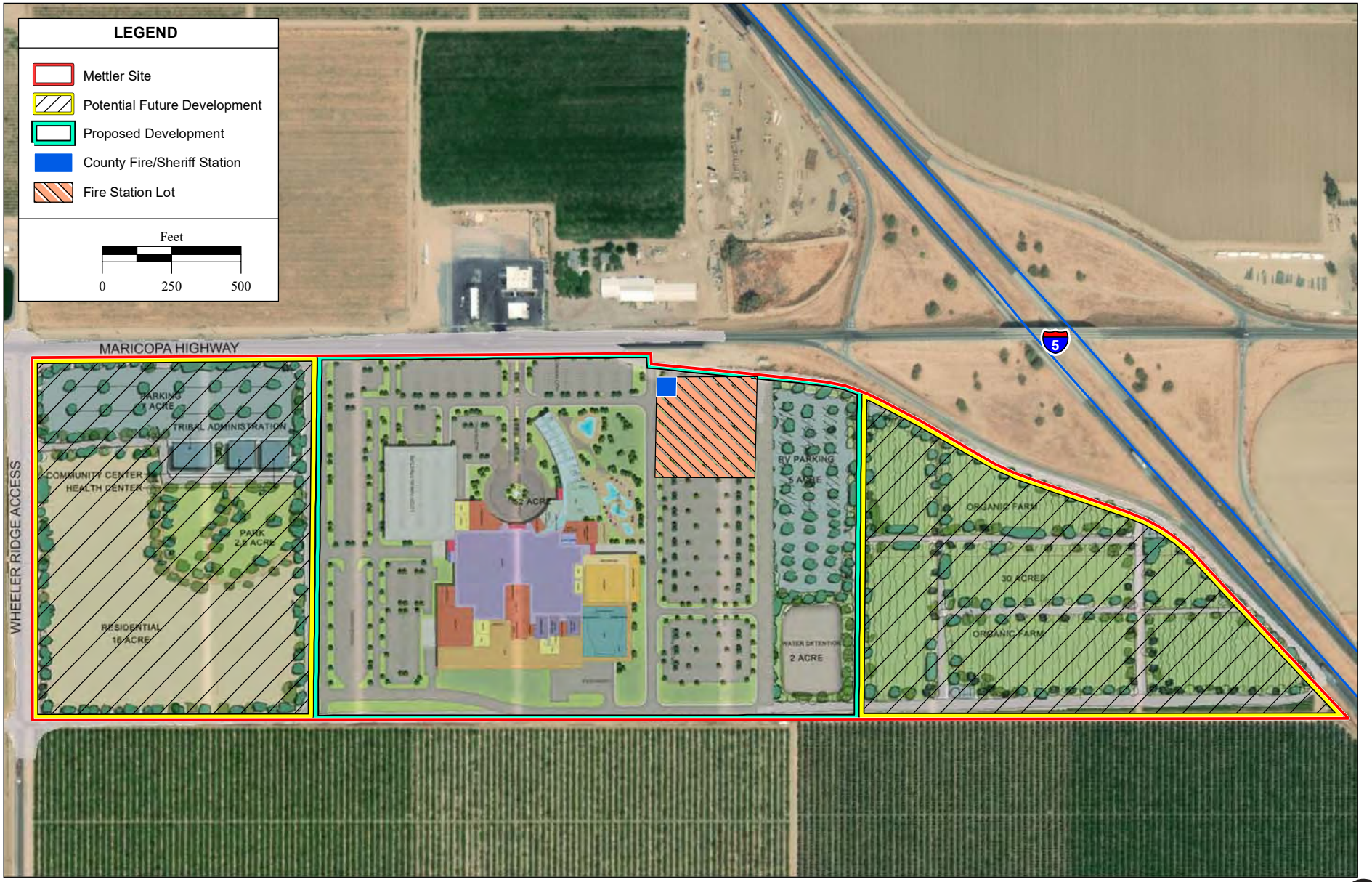
LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/21/19

Figure 2-4

Conceptual Site Plan - Alternative A2

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/21/19

Figure 2-5

Conceptual Site Plan - Alternative B

TEJON CASINO

3.0 EXISTING CONDITIONS

Effective evaluation of the traffic impacts associated with the proposed Project requires an understanding of the existing transportation system within the project area. ***Figure 3–1*** shows an existing conditions diagram, including intersection traffic controls and lane configurations.

3.1 Existing Street Network

The following is a description of the existing street network in the study area.

Interstate Route 5 (I-5) extends from the Mexican border north through Kern County to the Canadian Border in Washington State. In the Project vicinity, I-5 is a four-lane freeway.

State Route 99 begins south of Bakersfield branching off I-5 and continuing north to Sacramento. Most of State Route 99 is six -lane freeway in Kern County and in the Project vicinity. Sections through Bakersfield have eight lanes. Sections north of McFarland and south of White Lane, in Bakersfield, have four lanes.

State Route 166 (Maricopa Highway) is a 2-lane state highway with 8-foot paved shoulders. No median is provided. The Maricopa Highway begins at Interstate 5 in Mettler Station. State Route 166 continues west through Maricopa into Santa Barbara County where it eventually reaches US 101.

Mettler Frontage Road W. is a 2-lane road with dirt shoulders. No median is provided. Mettler Frontage Road W. begins at Interstate 5 in Mettler Station. State Route 166 continues west through Maricopa into Santa Barbara County where it eventually reaches US 101.

Valpredo Avenue is a 2-lane road with dirt shoulders. No median is provided. Valpredo Avenue begins at I-5 in Mettler Station.

S. Sabodan Street is a 2-lane local road with dirt shoulders. No median is provided. S. Sabodan Street begins at SR 166 and continues south.

3.2 Existing Traffic Volumes

The proposed project is a Casino generating a higher amount of traffic during on Saturdays. Hence, weekday and Saturday counts were conducted.

3.2.1 *Daily Segment Volumes*

Table 3–1 is a summary of the most recent average daily traffic (ADT) volume machine counts conducted on November 1, 2018 (weekday) and December 15, 2018 (Saturday).

3.2.2 *Peak Hour Intersection Volumes*

Manual hand counts at the study area intersections, including bicycle and pedestrian counts, were conducted on November 1, 2018 (weekday) and December 15, 2018 (Saturday).

TABLE 3–1
EXISTING TRAFFIC VOLUMES

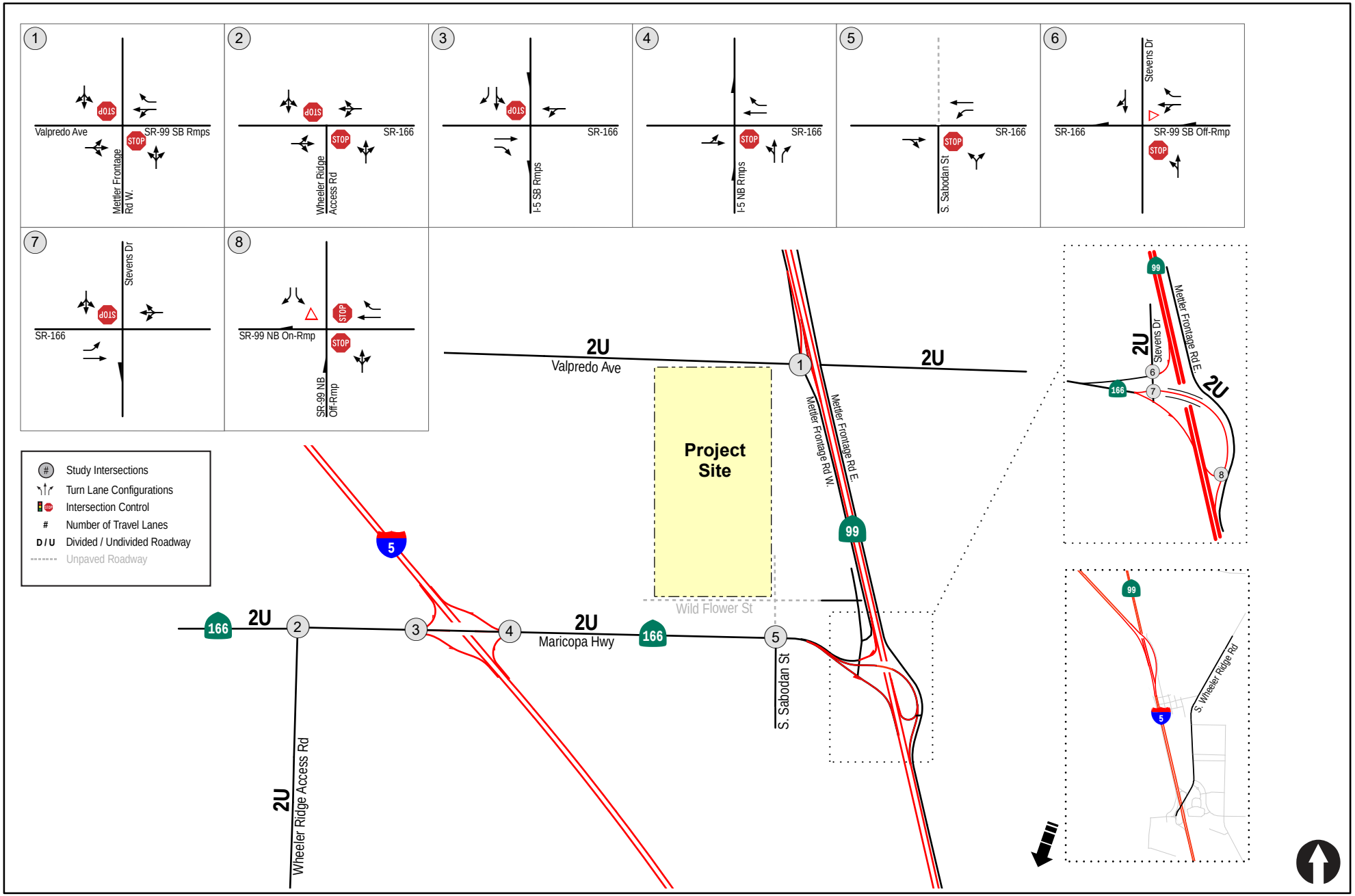
Street Segment	Weekday ADT [a]	Saturday ADT [b]
I-5 [c]		
Copus Rd to SR 166 (Maricopa Hwy)	33,600	39,560
SR 166 (Maricopa Hwy) to SR 99	33,600	39,560
SR 99 to S. Wheeler Ridge Rd	76,340	97,140
SR 99 [c]		
Valpredo Rd to SR 166 (Maricopa Hwy)	42,920	56,110
SR 166 (Maricopa Hwy) to I-5	42,420	56,020
Mettler Frontage Rd W		
Copus Rd to Valpredo Ave	860	1,160
Valpredo Ave to Maricopa Hwy	410	1,360
Valpredo Ave		
I-5 Ramps to SR-99 Ramps	340	220
Maricopa Highway		
East of Wheeler Ridge Access Rd	3,620	2,930
Wheeler Ridge Access Rd to I-5 SB Ramps	3,860	3,060
I-5 NB Ramps to S Sabodan St	3,330	3,040
S Sabodan St to SR-99 Ramps	4,380	3,820

Footnotes:

a. Weekday Average Daily Traffic Volumes, November 1, 2018.

b. Saturday Average Daily Traffic Volumes, December 15, 2018.

Figure 3–2 depicts the Existing Weekday Traffic Volumes, while, ***Figure 3–3*** depicts the Existing Saturday Traffic Volumes. ***Appendix A*** contains the machine and manual count sheets.



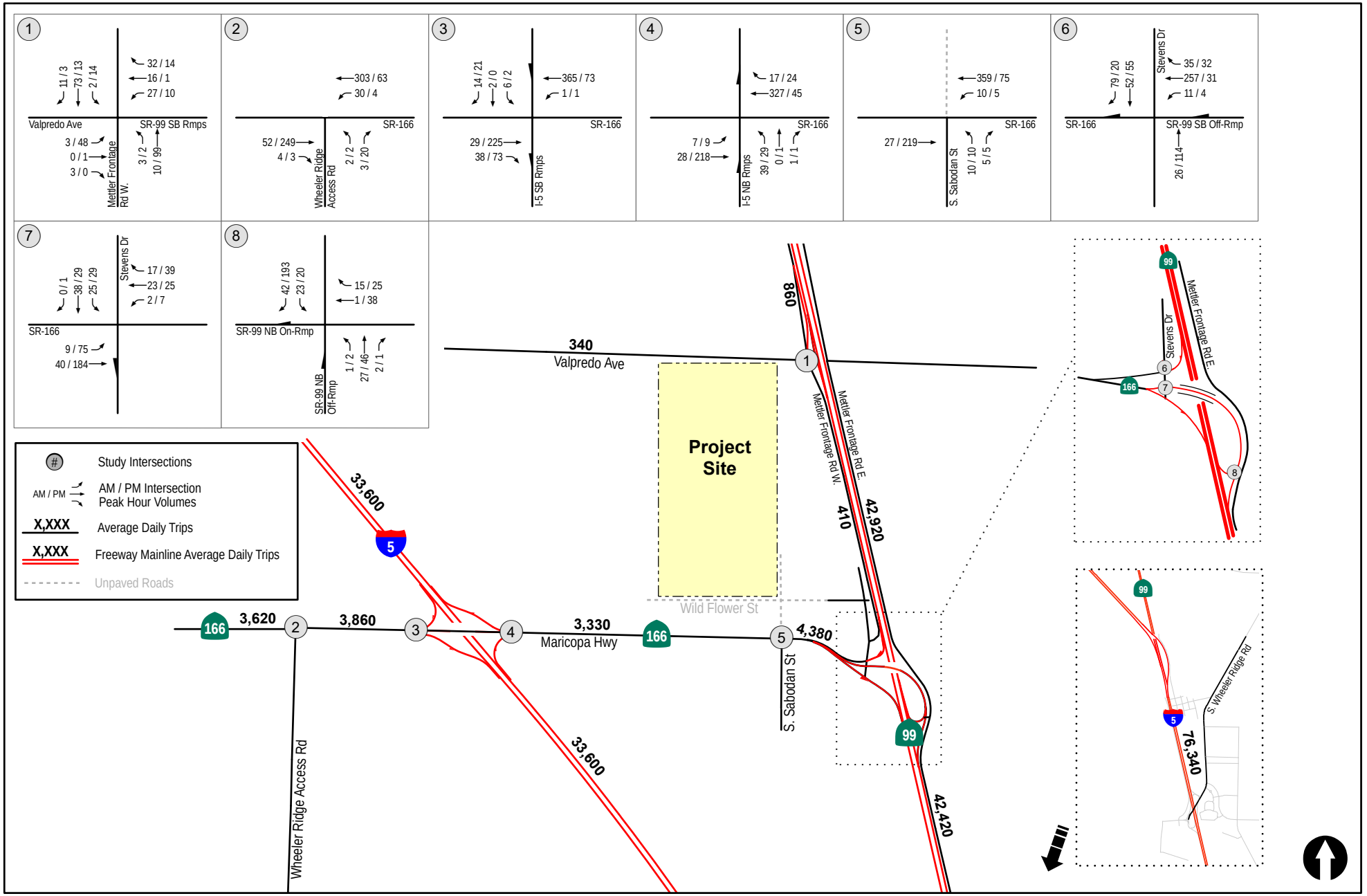
LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/02/19

Figure 3-1

Existing Conditions Diagram

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

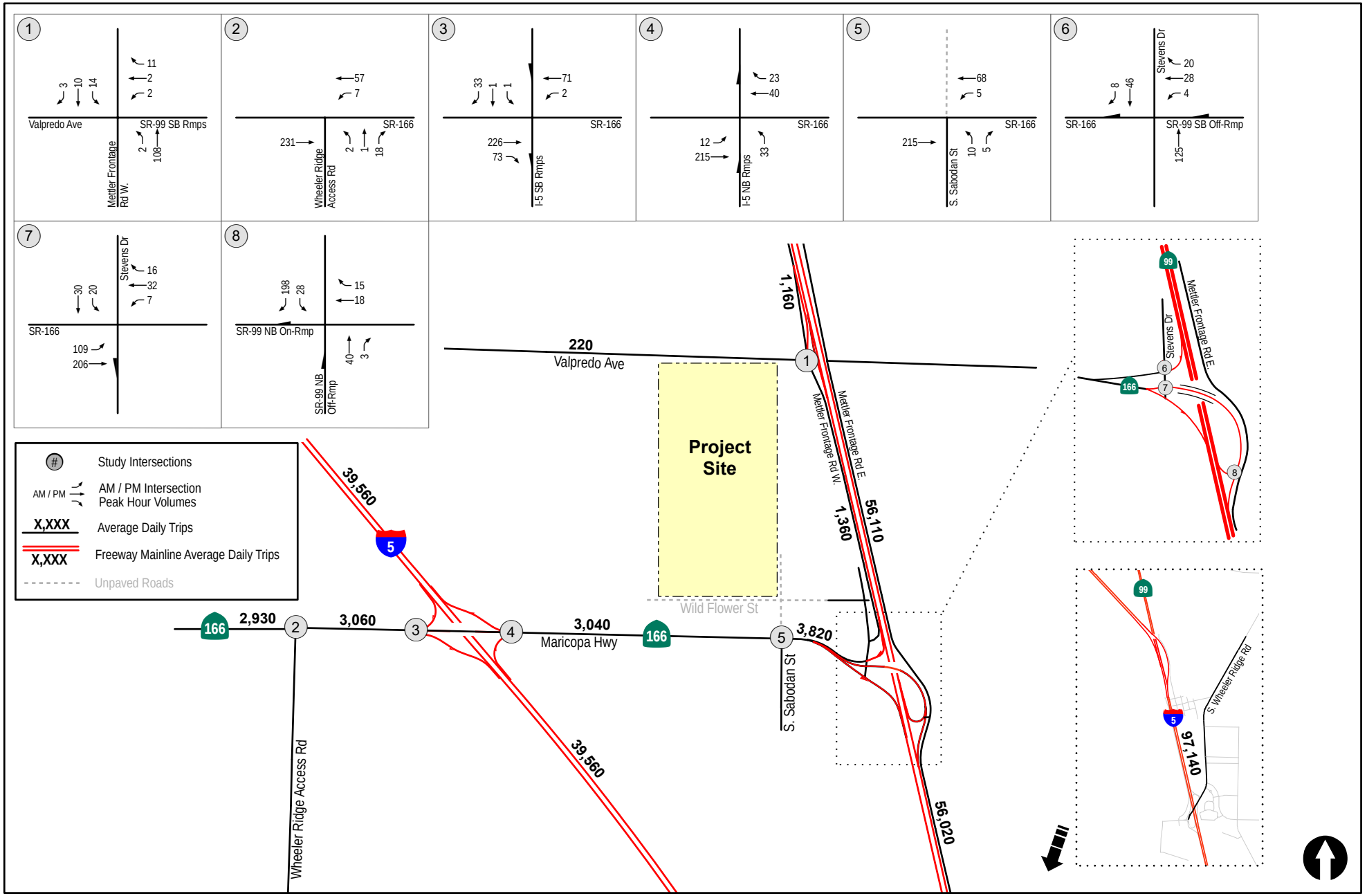
N:\3004\Figures
Date: 05/17/19

Figure 3-2

Existing Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/17/19

Figure 3-3

Existing Traffic Volumes

Saturday

TEJON CASINO

4.0 STUDY AREA, ANALYSIS APPROACH AND METHODOLOGY

4.1 Study Area

The study area was determined based on Sec. 902-2 Traffic Study Format, from the *Standards for Traffic Engineering*, Kern County.

The Facilities to be studied shall include any City, State or County facility (mainline, interchange, structure, intersection or any project on the Transportation Impact Fee (TIF) list) when the peak hour trip generation onto said facility exceeds 50 trips. For those facilities currently experiencing level-of-service (LOS) "C" or less, the following "sliding scale" of "added peak project trips" shall be applied as the procedure to determine whether the facility should be included:

Existing LOS	Added Peak Project Trips
"C"	50
"D"	40
"E"	20
"F"	10

Since this is casino Project, substantial traffic is generated by the casino on Saturdays. Hence, in addition to weekday AM (7:00 AM to 9:00 AM) and PM (4:00 PM to 6:00 PM) peak hours, this study includes analysis of the Saturday PM (4:00 PM to 6:00 PM) peak hour. Based on the above standards, the following study area was established based on the Project trip generation and distribution.

INTERSECTIONS

1. Mettler Frontage Road W. / Valpredo Avenue / SR 99 SB Ramps
2. Maricopa Highway / Wheeler Ridge Access Road
3. Maricopa Highway / I-5 SB Ramps
4. Maricopa Highway / I-5 NB Ramps
5. Maricopa Highway / S. Sabodan Street
6. SR 99 SB Off Ramp / Stevens Drive
7. Maricopa Highway / Stevens Drive
8. Maricopa Highway / SR 99 NB Ramps

SEGMENTS

1. **Mettler Frontage Road West:** Copus Road to Valpredo Avenue
2. **Mettler Frontage Road West:** Valpredo Avenue to Maricopa Highway
3. **Valpredo Ave:** I-5 Ramps to SR-99 Ramps
4. **Maricopa Highway:** East of Wheeler Ridge Access Road
5. **Maricopa Highway:** Wheeler Ridge Access Road to I-5 SB Ramps

6. **Maricopa Highway:** I-5 NB Ramps to S Sabodan Street
7. **Maricopa Highway:** S. Sabodan Street to SR-99 Ramps

FREEWAY MAINLINE SEGMENTS

1. **I-5:** Copus Road to Maricopa Highway
2. **I-5:** Maricopa Highway to SR 99
3. **I-5:** SR 99 to Wheeler Ridge Road
4. **SR 99:** Valpredo Avenue to Maricopa Highway
5. **SR 99:** Maricopa Highway to I-5

4.2 Analysis Scenarios

This study includes analysis of the following scenarios for each alternative:

- Existing
- Existing + Project Phase 1
- Opening Year (2023) No Project
- Opening Year (2023) + Project Phase 1
- Long-Term (Year 2040) No Project
- Year 2040 With Entire Project

4.3 Analysis Methodology

Operational analysis of existing and proposed streets and intersections was performed using methods outlined in the "Transportation Research Board, National Research Council", Highway Capacity Manual, (HCM 6). A "Level of Service" designation is the generally accepted gauge for describing the quality of operation of either a roadway segment or intersection. Other attributes of operational quality associated with each level of service are v/c (volume to capacity ratio) for street segments and vehicle delay through an intersection. For each type of street segment or intersection analysis, the criteria to arrive at a particular Level of Service vary slightly. Levels of Service for every type of roadway or intersection are described thoroughly in the Highway Capacity Manual.

LOS is a qualitative measure used to describe a quantitative analysis considering factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. Level of service provides an index to the operational qualities of a roadway segment or an intersection. Levels of service designations range from A to F, with LOS A representing the best operating conditions and LOS F representing the worst. Level of service designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments. The level of service analysis results in seconds of delay expressed in terms of letters A through F. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time.

Table 4–1 summarizes the signalized intersections levels of service descriptions. ***Table 4–2*** depicts

the intersection LOS and corresponding delay ranges, which are based on overall intersection delay (signalized intersections) and the average control delay for any particular minor movement (unsignalized intersections), respectively. LOS relative to signalized and unsignalized intersection is further described below.

4.3.1 *Signalized Intersections*

Signalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay was determined utilizing the methodology found in Chapter 19 of the *Highway Capacity Manual 6th Edition (HCM 6),* with the assistance of the *Synchro 10* computer software. The delay values (represented in seconds) were qualified with a corresponding intersection Level of Service (LOS).

In the Highway Capacity Manual 6th Edition (HCM 6), Level of Service for signalized intersections is defined in terms of delay. Delay is a measure of driver discomfort, frustration, fuel consumption, and lost travel time. Specifically, Level of Service criteria are stated in terms of the average control delay per vehicle for a 15-minute analysis period. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay.

Delay is a complex measure, and is dependent on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group or approach in question.

Level of Service A describes operations with very low delay, (i.e. less than 10.0 seconds per vehicle). This occurs when progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with delay in the range of 10.1 to 20.0 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.

Level of Service C describes operations with delay in the range of 20.1 to 35.0 seconds per vehicle. These higher delays may result from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in the level. The number of vehicles stopping is significant at this level, although many still pass through the intersections without stopping.

Level of Service D describes operations with delay in the range of 35.1 to 55.0 seconds per vehicle. 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 the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

Level of Service E describes operations with delay in the range of 55.1 to 80.0 seconds per vehicle. This is considered 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 occurrences.

Level of Service F describes operations with delay in excess of 80.0 seconds per vehicle. This is considered to be unacceptable to most drivers. This condition often occurs with over-saturation (i.e. when arrival flow rates exceed the capacity of the intersection). It may also occur at high v/c ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

It may be noted that there are no signalized intersections in the Project study area.

4.3.2 *Unsignalized Intersections*

Unsignalized intersections were analyzed under AM and PM peak hour conditions. Average vehicle delay and Levels of Service (LOS) was determined based upon the procedures found in Chapter 20 and Chapter 21 of the *HCM 6* with the assistance of the *Synchro 10* computer software.

For unsignalized intersections, level of service is determined by the computed or measured control delay and is defined for each minor movement: level of service is not defined for the intersection as a whole. Level of Service F exists when there are insufficient gaps of suitable size to allow a side street demand to safely cross through a major street traffic stream. This level of service is generally evident from extremely long control delays experienced by side-street traffic and by queuing on the minor-street approaches. The method, however, is based on a constant critical gap size; that is, the critical gap remains constant no matter how long the side-street motorist waits. LOS F may also appear in the form of side-street vehicles selecting smaller-than-usual gaps. In such cases, safety may be a problem, and some disruption to the major traffic stream may result. It is important to note that LOS F may not always result in long queues but may result in adjustments to normal gap acceptance behavior, which are more difficult to observe in the field than queuing.

TABLE 4–1
INTERSECTION LEVEL OF SERVICE DESCRIPTIONS

Level of Service	Description
A	Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Generally, occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Generally, results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Generally, results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.
F	Considered to be unacceptable to most drivers. This condition often occurs with over saturation i.e. when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels

TABLE 4–2
INTERSECTION LOS & DELAY RANGES

LOS	Delay (seconds/vehicle)	
	Signalized Intersections	Unsignalized Intersections
A	≤ 10.0	≤ 10.0
B	10.1 to 20.0	10.1 to 15.0
C	20.1 to 35.0	15.1 to 25.0
D	35.1 to 55.0	25.1 to 35.0
E	55.1 to 80.0	35.1 to 50.0
F	≥ 80.1	≥ 50.1

Source: 2010 Highway Capacity Manual

4.3.3 *Roadway Segments*

Street segment analysis for streets is based upon the comparison of daily traffic volumes (ADTs) to the *Roadway Classification, Level of Service, and ADT*. The roadway capacities and levels of service are based on the Highway Capacity Manual (HCM6). This information is reproduced in ***Table 4–3*** below. This table provides segment capacities for various street classifications, based on traffic volumes and roadway characteristics.

TABLE 4–3
ROADWAY CAPACITY THRESHOLD TABLE

Configuration	LOS			
	B	C	D	E
2 Lane Undivided State Signalized Arterials	N/A	9,800	13,000	13,900
4 Lane Divided State Signalized Arterials	N/A	23,300	28,000	29,900
2 Lane Undivided	7,800	14,200	20,000	25,600
2 Lane Divided	8,190	14,910	21,000	26,880
4 Lane Undivided	17,850	27,900	36,000	40,950
4 Lane Divided	23,800	37,200	48,000	54,600
6 Lane Divided	35,600	55,800	72,000	82,000
4 Lane Freeway	37,100	49,900	59,400	63,700
6 Lane Freeway	54,800	74,600	89,000	98,300
8 Lane Freeway	74,200	99,800	118,800	127,400

4.3.4 *Ramp Merge/Diverge Sections*

Ramp merge/diverge ramp operations were analyzed under AM and PM peak hour conditions. Operational characteristics were reported utilizing the methodology found in Chapter 25 of the *2010 Highway Capacity Manual (HCM),* with the assistance of the *Highway Capacity Software* (version 6.6).

Levels of service in merge and diverge influence areas are defined in terms of density for all cases of stable operations (LOS A through E). However, LOS F exists when the demand exceeds the capacity of upstream or downstream freeway sections or the capacity of the ramp.

The ramp merge / diverge analyses are included in this report for informational purposes only.

5.0 SIGNIFICANCE CRITERIA

The Kern County *Standards for Traffic Engineering* and the Caltrans *Traffic Impact Study (TIA)* guidelines (see *Appendix A*) were reviewed and utilized as the basis for determining the significance criteria. In addition., other area CEQA traffic studies were reviewed. Based on these documents, LOS D or better operations was considered acceptable and LOS E/F operations were considered unacceptable.

Hence, a significant impact is calculated if the Project traffic causes the facility to degrade from acceptable (LOS D or better) to unacceptable (LOS E or F) operations. If the degradation occurs in the near-term, the impact is considered direct and if the degradation occurs in the long-term, the impact is considered cumulative.

Neither the County nor Caltrans has criteria for the amount of delay, v/c ratio, or speed that a project can add to a facility operating below standards (LOS E/F) in the pre-project condition. Therefore, the City of San Diego criteria was utilized (***Table 5-1***) for cases where pre-project LOS was LOS E or F. *Appendix A* contains the complete City of San Diego guidelines. These guidelines do not address ramp merge / diverge analyses. Therefore, the threshold for the Freeway Mainline analysis in the SANTEC / ITE guidelines was used for the analysis. This criteria states that a decrease in speed on the freeway mainline of 1 mph due to the Project is significant, as seen in *Table 5-1*.

In addition, on Page 5-68, the *2014 Regional Transportation Plan/Sustainable Communities Strategy*, Kern County Council of Governments states that:

> "Level of service E has been established as the minimum system-wide LOS traffic standard in the Kern COG Congestion Management Plan."

Figure 5-10 from this document is a map of Kern County "Congestion Management Program Corridors". The map shows that I-5, SR 99 and SR 166 (Maricopa Highway) as corridors where LOS E operations are acceptable.

TABLE 5-1
TRAFFIC IMPACT SIGNIFICANCE THRESHOLDS

Level of Service with Project [b]	Allowable Increase Due to Project Impacts [a]					
	Freeways		Roadway Segments		Intersections	Ramp Metering [c]
	V/C	Speed (mph)	V/C	Speed (mph)	Delay (sec.)	Delay (min.)
E	0.010	1.0	0.02	1.0	2.0	2.0
F	0.005	0.5	0.01	0.5	1.0	1.0

Footnotes:

a. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are determined to be significant. The project applicant shall then identify feasible improvements (within the Traffic Impact Study) that will restore/and maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note b), or if the project adds a significant amount of peak-hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating the project's direct significant and/or cumulatively considerable traffic impacts.

b. All LOS measurements are based upon Highway Capacity Manual procedures for peak-hour conditions. However, V/C ratios for roadway segments are estimated on an ADT/24-hour traffic volume basis (using Table 2 of the City's Traffic Impact Study Manual). The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped locations). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

c. The allowable increase in delay at a ramp meter with more than 15 minutes delay and freeway LOS E is 2 minutes. The allowable increase in delay at a ramp meter with more than 15 minutes delay and freeway LOS F is 1 minute.

General Notes:

1. Delay = Average control delay per vehicle measured in seconds for intersections or minutes for ramp meters
2. LOS = Level of Service
3. V/C = Volume to Capacity ratio
4. Speed = Arterial speed measured in miles per hour

6.0 ANALYSIS OF EXISTING CONDITIONS

6.1 Peak Hour Intersection Levels of Service

Table 6-1 summarizes the Existing peak hour intersection operations during the weekday peak hours and the Saturday peak hour. As seen in *Table 6-1*, the minor street left-turn movements at all unsignalized intersections are calculated to currently operate at LOS B or better during the weekday and LOS C or better during the Saturday peak hours.

Appendix B contains the Existing Weekday and Saturday intersection analysis worksheets.

6.2 Daily Street Segment Levels of Service

Table 6-2 summarizes the Existing weekday segment operations. As seen in *Table 6-2*, all study area segments are calculated to currently operate at LOS C or better. ***Table 6-3*** summarizes the Existing Saturday segment operations. As seen in *Table 6-3*, all study area segments are calculated to currently operate at LOS C or better.

6.3 Ramp Merge Analysis

Table 6–4 summarizes the operations of the Ramp Merge sections under Existing Weekday scenario. As seen in *Table 6–4*, three of the four merge sections analyzed are calculated to currently operate at LOS D or better. The SR 166 to NB I-5 ramp merge is calculated to operate at LOS F during the PM peak hour.

Table 6–5 summarizes the operations of the Ramp Merge sections under Existing Saturday scenario. As seen in *Table 6–5*, two of the four merge sections analyzed are calculated to currently operate at LOS D or better. The following ramp diverge sections are calculated to operate at LOS E or F:

- SR 166 to SB I-5
- SR 166 to NB I-5

6.4 Ramp Diverge Analysis

Table 6–4 summarizes the operations of the Ramp Diverge sections under Existing Weekday scenario. As seen in *Table 6–4*, four of the five diverge sections analyzed are calculated to currently operate at LOS D or better. The NB I-5 to SR 166 ramp diverge is calculated to operate at LOS E during the PM peak hour. *Table 6–5* summarizes the operations of the Ramp Diverge sections under Existing Saturday scenario. As seen in *Table 6–5*, three of the five diverge sections analyzed are calculated to currently operate at LOS D or better. The following ramp diverge sections are calculated to operate at LOS E or F:

- SB I-5 to SR 166
- NB I-5 to SR 166

Appendix B contains the Existing Weekday and Saturday Ramp Merge and Diverge Section analysis worksheets.

TABLE 6–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Delay [a]	LOS [b]
1. Mettler Frontage Rd W. / Valpredo Ave / SR 99 SB Ramps	TWSC [c]	WkDay AM	10.1	B
		WkDay PM	10.2	B
		Saturday Pk	10.3	B
2. Maricopa Hwy / Wheeler Ridge Rd	TWSC	WkDay AM	10.4	B
		WkDay PM	10.3	B
		Saturday Pk	10.2	B
3. Maricopa Hwy / I-5 SB Ramps	TWSC	WkDay AM	11.9	B
		WkDay PM	10.6	B
		Saturday Pk	10.8	B
4. Maricopa Hwy / I-5 NB Ramps	TWSC	WkDay AM	11.8	B
		WkDay PM	10.8	B
		Saturday Pk	10.8	B
5. Maricopa Hwy / S. Sabodan St	TWSC	WkDay AM	10.9	B
		WkDay PM	10.4	B
		Saturday Pk	10.3	B
6. SR 99 SB Off Ramp / Stevens Dr	TWSC	WkDay AM	11.0	B
		WkDay PM	9.8	A
		Saturday Pk	10.4	B
7. Maricopa Hwy / Stevens Dr	TWSC	WkDay AM	9.7	A
		WkDay PM	13.1	B
		Saturday Pk	19.1	C
8. Maricopa Hwy / SR 99 NB Ramps	TWSC	WkDay AM	7.4	A
		WkDay PM	8.1	A
		Saturday Pk	8.3	A

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

WkDay AM – Weekday AM Peak Hour
WkDay AM – Weekday PM Peak Hour
Saturday Pk – Saturday Peak Hour

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

TABLE 6–2
EXISTING WEEKDAY STREET SEGMENT OPERATIONS

Street Segment	Functional Classification	Capacity (LOS E) [a]	ADT [b]	LOS [c]	V/C [d]
I-5					
Copus Rd to SR 166 (Maricopa Hwy)	4-Ln Rural Freeway	63,700	33,600	B	0.527
SR 166 (Maricopa Hwy) to SR 99	4-Ln Rural Freeway	63,700	33,600	B	0.527
SR 99 to S. Wheeler Ridge Rd	8-Ln Rural Freeway	127,400	76,340	C	0.599
SR 99					
Valpredo Ave to SR 166 (Maricopa Hwy)	6-Ln Rural Freeway	63,700	42,920	B	0.674
SR 166 (Maricopa Hwy) to I-5	6-Ln Rural Freeway	63,700	42,420	B	0.666
Mettler Frontage Rd W					
Copus Rd to Valpredo Ave	2-Ln Rural Highway	25,600	860	A	0.034
Valpredo Ave to Maricopa Hwy	2-Ln Rural Highway	25,600	410	A	0.016
Valpredo Ave					
I-5 Ramps to SR-99 Ramps	2-Ln Rural Highway	25,600	340	A	0.013
Maricopa Highway					
East of Wheeler Ridge Access Rd	2-Ln Rural Highway	25,600	3,620	A	0.141
Wheeler Ridge Access Rd to I-5 SB Ramps	2-Ln Rural Highway	25,600	3,860	A	0.151
I-5 NB Ramps to S Sabodan St	2-Ln Rural Highway	25,600	3,330	A	0.130
S Sabodan St to SR-99 Ramps	2-Ln Rural Highway	25,600	4,380	A	0.171

Footnotes:

a. Functional classification based on the Fresno County Roadway Evaluation Criteria.
b. Capacities based on the Fresno County Roadway Evaluation Criteria.
c. Average Daily Traffic Volumes.
d. Level of Service.
e. Volume to Capacity.

TABLE 6–3
EXISTING SATURDAY STREET SEGMENT OPERATIONS

Street Segment	Functional Classification	Capacity (LOS E) [a]	ADT [b]	LOS [c]	V/C [d]
I-5					
Copus Rd to SR 166 (Maricopa Hwy)	4-Ln Rural Freeway	63,700	39,560	C	0.621
SR 166 (Maricopa Hwy) to SR 99	4-Ln Rural Freeway	63,700	39,560	C	0.621
SR 99 to S. Wheeler Ridge Rd	8-Ln Rural Freeway	127,400	97,140	C	0.762
SR 99					
Valpredo Ave to SR 166 (Maricopa Hwy)	6-Ln Rural Freeway	63,700	56,110	C	0.881
SR 166 (Maricopa Hwy) to I-5	6-Ln Rural Freeway	63,700	56,020	C	0.879
Mettler Frontage Rd W					
Copus Rd to Valpredo Ave	2-Ln Rural Highway	25,600	1,160	A	0.045
Valpredo Ave to Maricopa Hwy	2-Ln Rural Highway	25,600	1,360	A	0.053
Valpredo Ave					
I-5 Ramps to SR-99 Ramps	2-Ln Rural Highway	25,600	220	A	0.009
Maricopa Highway					
East of Wheeler Ridge Access Rd	2-Ln Rural Highway	25,600	2,930	A	0.114
Wheeler Ridge Access Rd to I-5 SB Ramps	2-Ln Rural Highway	25,600	3,060	A	0.120
I-5 NB Ramps to S Sabodan St	2-Ln Rural Highway	25,600	3,040	A	0.119
S Sabodan St to SR-99 Ramps	2-Ln Rural Highway	25,600	3,820	A	0.149

Footnotes:

a. Functional classification based on the Fresno County Roadway Evaluation Criteria.
b. Capacities based on the Fresno County Roadway Evaluation Criteria.
c. Average Daily Traffic Volumes.
d. Level of Service.
e. Volume to Capacity.

TABLE 6–4
EXISTING WEEKDAY RAMP MERGE /DIVERGE OPERATIONS

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,703	204	2,907	62.4	19.1	B
	PM	3,390	204	3,594	61.5	23.4	C
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,541	44	2,585	62.7	16.9	B
	PM	2,738	233	2,971	62.3	19.8	B
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	1,869	41	1,910	62.2	20.1	C
	PM	2,852	74	2,926	58.3	30.5	D
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,714	24	2,738	59.1	29.2	D
	PM	3,384	34	3,418	**52.3**	**36.3**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	3,248	75	3,173	58.0	24.8	C
	PM	3,735	25	3,710	58.2	28.0	C
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,006	303	2,703	57.3	22.2	C
	PM	3,457	67	3,390	58.0	26.1	C
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	2,571	30	2,541	58.1	20.3	C
	PM	2,787	49	2,738	58.1	21.7	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	1,891	22	1,869	58.2	22.3	C
	PM	2,875	23	2,852	58.2	33.6	D
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,754	40	2,714	58.1	31.4	D
	PM	3,415	31	3,384	**58.1**	**39.0**	**E**

Footnotes:
a. Passenger cars / mile / lane

TABLE 6–5
EXISTING SATURDAY RAMP MERGE /DIVERGE OPERATIONS

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,467	204	4,671	58.5	30.1	D
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	3,668	216	3,884	60.8	25.5	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,350	76	3,426	**53.3**	**35.6**	**E**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,989	35	4,024	**37.9**	**42.7**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	PM	4,773	15	4,758	58.2	33.7	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	4,519	52	4,467	58.1	32.3	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	3,711	43	3,668	58.1	27.5	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	3,385	35	3,350	**58.1**	**39.4**	**E**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	4,022	33	3,989	**58.1**	**45.8**	**F**

Footnotes:
a. Passenger cars / mile / lane

7.0 OPENING YEAR (2023) TRAFFIC VOLUMES

In order to forecast Opening Year (2023) volumes, research was conducted to identify planned developments in the vicinity of the project that would add traffic to the study area intersections and segments. The following potential projects were provided by Kern County:

7.1 Cumulative Projects

Following are brief descriptions of the cumulative projects including which projects are included in the Opening Year (2023) analysis and the reason(s) for the same.

TRANSPORTATION PROJECTS

The following Transportation projects are identified within the influence area of the Tejon Project. However, a review of these projects indicates that they will not add traffic to the Project study area intersections, roadway segments or Freeway Mainline segments.

1. **I-5 Freight Corridor California Aqueduct:** South of the I-5 south of the I-5/SR-99 interchange, this project will improve the load rating of the aqueduct bridge.
2. I**-5 Fast Freight Corridor I-5/SR-99 Separation:** At the I-5/SR-99 interchange, this project will improve the vertical clearance of the separation bridge along SR-99 by lowering SR-99 by approximately 8 inches on the northbound (NB) site and 12 inches on the southbound (SB) side to achieve the standard vertical clearance of 16 feet and 6 inches.
3. **Zero Emissions Vehicle Charging Project:** This project will install zero emissions vehicle charging stations on pre-developed paved parking lots, including at the El Tejon Park and Ride (SB) south of the I-5/SR-99 interchange.
4. **Panama and White Lane Vertical Clearance Improvements:** Located along SR-99 between Union Avenue and White Lane Overcrossing (between the Mettler Site and Bakersfield), this project will rehabilitate pavement and improve the vertical clearance of two overcrossings along SR-99.
5. **Kern 99 NB Rehabilitation:** Located on SR-99 between I-5 and the Panama Lake Overcrossing, this project will rehabilitate the NB lanes of SR-99 with reinforced concrete pavement to increase the pavement life and restore the structural integrity of the truck lane.
6. **SR-99/Taft Highway Rehabilitation:** Located on SR-99 from north of Herring Road to the Pacheco Road undercrossing, this project will rehabilitate the outside SB lane of SR-99 and repave the shoulder.
7. **Bakersfield 99 Rehabilitation Project:** Along SR-99 within Bakersfield, this project will rehabilitate lanes with reinforced concrete pavement, widen and reconstruct the shoulder, adjust slopes, compact soil, and remove vegetation.

8. **California Aqueduct Bridge Replacement:** This project will replace the bridge along SR-166 located east of Maricopa and 5 miles west of I-5.
9. **Enos Lane CAPM and ADA Ramps Project:** This project will resurface pavement, replace guardrails, update curb ramps, and apply shoulder backing to SR-43 between SR-119 (Taft Highway) and SR-58.
10. **Manor Street Bridge Rehabilitation and Seismic Retrofit Project:** This project will rehabilitate, widen, and retrofit the Manor Street Bridge over the Kern River in the City of Bakersfield.
11. **Centennial Corridor:** This project will construct the Centennial Corridor as an east-west transportation corridor for SR-58 to provide route continuity with I-5. This will require bride widening, pipeline relocation, and work on three existing bridges.
12. **Accelerated Pavement Failure Repairs:** This project will remove/replace hot mix asphalt along I-5.
13. **Kern River Parkway Bike Trail Western Extension:** This project will construct 7 miles of bike path from the existing trail to the Buena Vista Recreational Area.

DEVELOPMENT PROJECTS

Kern County

The following projects are identified in Kern County to potentially be included as cumulative projects in the analysis.

1. The Recology Blossom Valley Organics South Project, is a public utilities project consisting of expanding an existing compost facility with 7 additional acres to a total of 197 acres, located approximately 9 miles north of the two alternative project sites.

   This project is not expected to add traffic to the Project study area intersections and is not included in the analysis.

2. The **San Emido Quarry Expansion** Project is a Mining project consisting of expanding a quarry by 3,209 acres to a total of 4,011 acres and is located approximately 10 miles west of the two alternative project sites.

   *This project is located along SR 166, one of the access roadways to the Project site and is expected to add traffic to the Project study area intersections. Hence it **is included** in the analysis.*

3. The **Grapevine Specific and Community Plan** is a Mixed-Use project consisting of 12,000 residences; 10,748,400 SF of commercial development on 8,010 acres and is approximately located 6 miles south of the two alternative project sites.

   *This project is expected to add traffic to I-5 and SR 99. Hence it **is included** in the analysis.*

City of Bakersfield

The following projects are identified in the City of Bakersfield to potentially be included as cumulative projects in the analysis.

1. **The Bakersfield Commons** project is a Mixed-Use project with 1,400,000 SF of retail commercial, 600,000 SF of office commercial, 345 multi-family residences, 80 single- family residences on a total of 255 acres, located approximately 22 miles north of the two alternative project sites.

   *This project is expected to add traffic to I-5 and SR 99. Hence it **is included** in the analysis.*

2. **Making Downtown Bakersfield Vision Plan** is a Mixed-Use development with 2,005,000 SF office, 8,750 residences, 906,000 retail, 2,400 hotel rooms, a high-speed rail station, located approximately 21 miles north of the two alternative project sites.

   *This project is expected to add traffic to I-5 and SR 99. Hence it **is included** in the analysis.*

3. The **Kern River Flow and Municipal Water Program** is a Public Utilities project to increase and enhance the City's water supply. This project is located approximately 21 miles north of the two alternative project sites.

   *This project is not expected to generate much traffic when completed. Also, this project is therefore **not** expected to add traffic to the Project study area intersections. Hence, this project is not included in the analysis.*

4. The **SR-99/Hosking Commercial Center** project is a Commercial project, including 800,000 SF retail, 240 hotel rooms on 85 acres, located approximately 14 miles north of the two alternative project sites.

   *This project is expected to add traffic to I-5 and SR 99. Hence it **is included** in the analysis.*

5. The **Moran Development GPA/Zone Change** is a Residential project with 613 residences on 38 acres, located approximately 16 miles north of the two alternative project sites.

   *This project is not expected to add traffic to the Project study area intersections and is therefore **not** included in the analysis.*

6. The Norris School District plans to build a **new elementary school** for 750 K-6 students. The School will include a 60,000-70,000 SF building on 16 acres, located greater than 20 miles north of the two alternative project sites.

   *This project is not expected to add traffic to the Project study area intersections and is therefore **not** included in the analysis.*

7. The Aurora Program plans to build a **new K-8 school** for 120 students for behavioral and mental health support services in a 38,500 SF building, located approximately 21 miles north of the two alternative project sites.

*This project is local serving and hence, is not expected to add traffic to the Project study area intersections and is therefore **not** included in the analysis.*

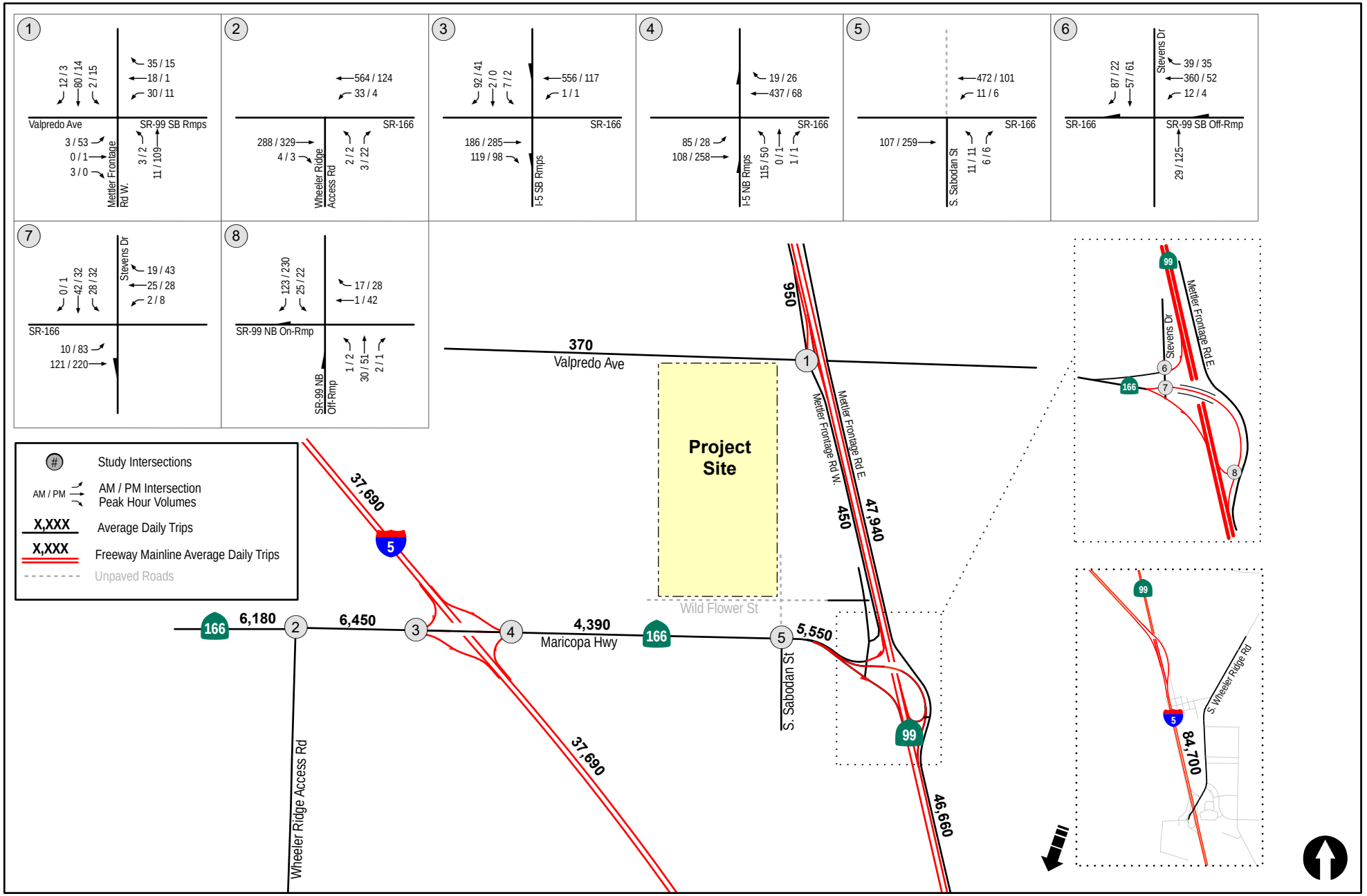
8. **A GPA/Zone Change** is proposed at SR-99 and Ashe Road for a 61,855 SF retail commercial Building on 5.68 acres, located approximately 14 miles north of the two alternative project sites.

   *This project is local serving and hence, is not expected to add traffic to the Project study area intersections and is therefore **not** included in the analysis.*

7.2 Background Growth

In addition to the cumulative projects listed above, a growth factor was applied to the existing traffic to account for any future development projects not yet known at this time. A growth of 2% per year for five (5) years from 2018 to 2023, was applied.

Figure 7–1 depicts the Opening Year (2023) Without Project Traffic Volumes for the Weekday, while ***Figure 7–2*** depicts the Opening Year (2023) Without Project Traffic Volumes on a Saturday.



LINSCOTT LAW & GREENSPAN engineers

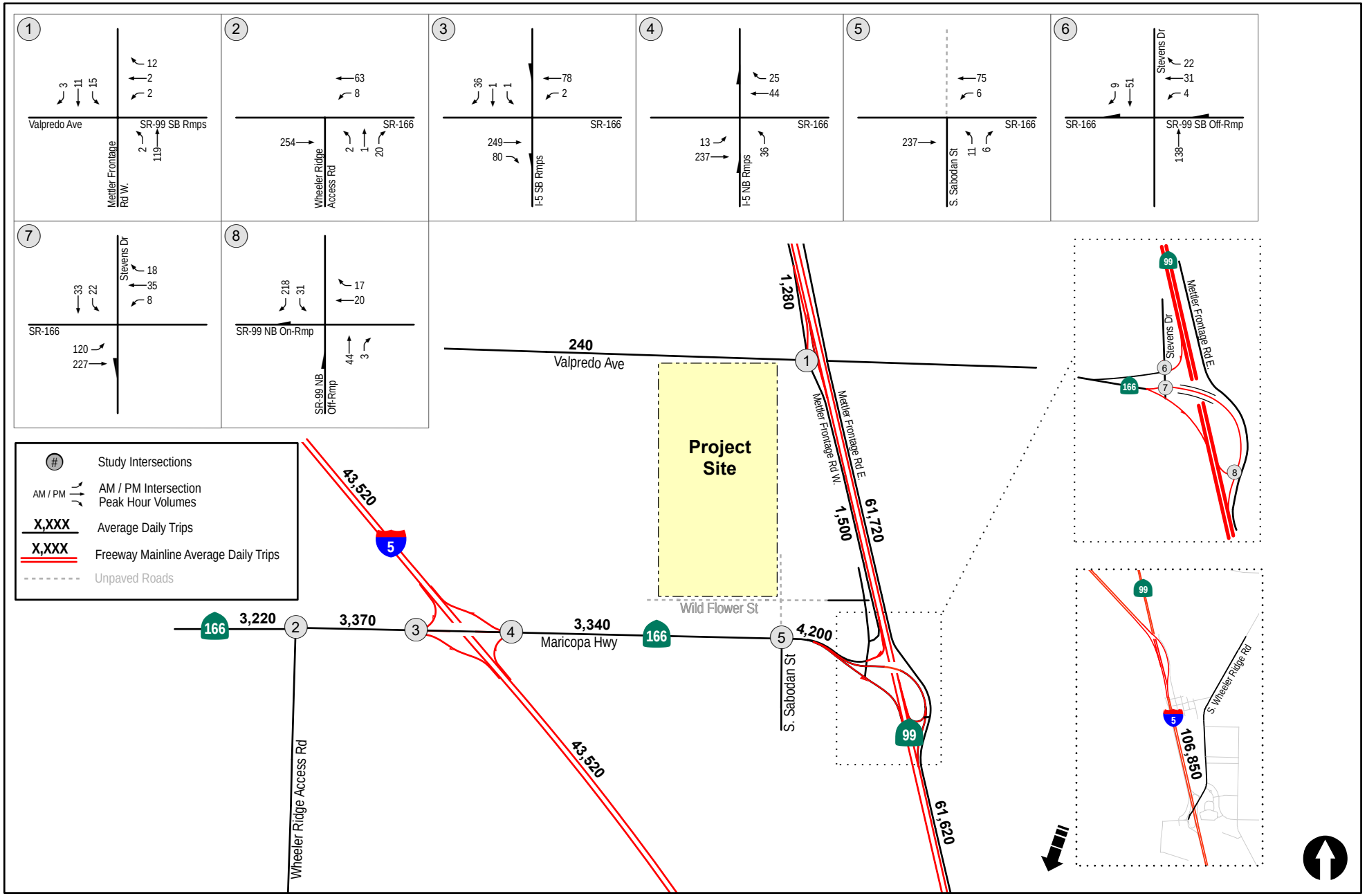
N:\3004\Figures
Date: 05/17/19

Figure 7-1

Opening Year (2023) Without Project Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/17/19

Figure 7-2

Opening Year (2023) Without Project Traffic Volumes

Saturday

TEJON CASINO

8.0 TRIP GENERATION RATES

The Institute of Transportation Engineers (ITE) *Trip Generation* Manual typically used to determine trip generation rates for various types of land uses. However, standard rates for Indian gaming casinos are not available in this manual. Therefore, trip generation rates was developed by LLG as explained below.

8.1 Casino

LLG Engineers previously developed a site-specific trip generation rate for a traffic study for similar casino in Amador County, California. That trip generation rate is proposed for use in the Tejon Casino traffic study. The methodology used to develop trip generation rates in that previous study is as follows:

Based on a review of several existing Indian Gaming Casinos, a list of three casinos was developed that are similar to the Proposed Project. Traffic counts were performed for multiple days at each of the following casinos:

- Harrah's Rincon Casino (Valley Center, San Diego County)
- Chukchansi Gold Casino (Madera County)
- Black Oak Casino (Tuolomne County)

Table 8-1 is a comparison of the various features provided at the three above casinos and the proposed Tejon Casino. The three casinos are each located in rural areas. Access to all these casinos is on two-lane roads. Based on trip generation analysis used to develop trip generation rates for other casinos, it has been determined that the gaming floor area (GFA) is a better predictor of vehicular trips than the total project area or the gaming positions. Therefore, the trip generation rates for the Proposed Project is determined based on the GFA.

As seen in *Table 8-1*, two of the three casinos where counts were conducted have event venues and all three have meeting rooms and restaurants. The observed trips include trips generated by the events venues and the meeting rooms. Trip rates calculated using these counts include the trips generated by the meeting rooms, restaurants and event venues. Hence, separate trip rates for the meeting rooms / restaurants / event venues are not required.

8.1.1 *Methodology to Determine Trip Generation for Casinos*

As mentioned above, The ITE *Trip Generation* Manual does not have trip rates for Casinos on Indian reservations. Trip rates for Casinos adjacent to freeways are not available. LLG conducted trip generation studies at the three casinos mentioned in the traffic study and obtained the trip generation data. An exact representation of the proposed Project is not available. The closest available is used.

While the proposed project is larger than the casinos where counts were conducted, with the fitted curve equation, the larger the size of the project, the lower the trip rate. Hence, the fitted curve equation is representative of the trip rates. These casinos were well established when counts were conducted. The facilities listed for each of the casinos were built at that time. We expect the traffic volumes to be representative.

Traffic counts were conducted for a period of seven days at two of the three existing casinos and for five days at the Chuckchansi Gold Casino. These counts were used to determine a trip generation rate. The methodology used to determine the weekday and Saturday daily and peak hour trip generation rates is detailed below. Counts were conducted at the Harrah's Rincon Casino between January 23rd through the 29th, 2006, the Chukchansi Gold Casino between August 4th through the 8th, 2005 and the Black Oak Casino between February 4th through the 10th, 2006.

TABLE 8-1
COMPARISON OF CASINOS

Description	Harrah's Rincon Casino	Chukchansi Gold Casino	Black Oak Casino	Tejon Casino
Location (County)	Valley Center, San Diego County, CA	Coarsegold, CA	Tuolumne, CA	Kern County
Major Access	Interstate 15 to SR 76	Interstate 5 to SR 41	Interstate 5 to SR 120	SR 99 to Maricopa Hwy (SR 166)
Gaming Area	59,000 SF	56,000 SF	43,000 SF	166,500 SF
Hotel	653 Rooms	200 Rooms	-	400 Rooms
Gaming Positions				
Slot Machines	1,600	1,800	1,000	
Card Tables	50	47	24	
Facilities				
Restaurants	7	7	4	6
Food Court	0	0	0	1
Bars	2	0	4	2
Buffet	0	0	0	1
Lounge	0	0	1	1
Pavilion	0	0	0	0
Spa	0	0	0	1 (16,000 SF)
Meeting Rooms	8	3	0	5 (53,000 SF)
Events Venue	Yes	Yes	No	Yes

8.1.2 *Calculating the Trip Generation Rates for the Existing Casinos*

Weekday

The weekday (Monday through Friday) daily traffic volumes were plotted versus the gaming area square footages (SF) for the three casinos and a fitted curve and equation was determined (***Chart 1***). As seen on *Chart 1*, the weekday daily trip generation rate is as follows:

> y = 2,666.1 Ln(x) – 5,464, where y = weekday Daily Traffic Volume, and x = Gaming Area in 1,000 SF.

Similarly, the weekday PM peak hour traffic volumes (generally 5:00 PM to 6:00 PM) on Mondays through Fridays at each of the casinos were plotted versus the gaming areas on ***Chart 2***. As seen on *Chart 2*, the weekday PM peak hour trip generation rate is as follows:

> = 318.37 Ln(x) – 921.31 where y = weekday PM Peak Hour Volume, and x = Gaming Area in 1,000 SF.

Saturday

The daily Saturday (Saturday and Sunday) traffic volumes were plotted versus the gaming area square footages (SF) for the three casinos and a fitted curve and equation was determined (***Chart 3***). As seen on Chart 3, the Saturday daily trip generation rate is as follows:

> y = 5159.1 Ln(x) - 12844, where y = Saturday Daily Traffic Volume, and x = Gaming Area in 1,000 SF.

Similarly, the Saturday peak hour traffic volumes (generally 12:00 Noon to 1:00 PM) on the Saturday at each of the casinos were plotted versus the gaming areas on ***Chart 4***. As seen on *Chart 4*, Saturday peak hour trip generation rate is as follows:

> y = 448.1 Ln(x) - 1374, where y = the Saturday PM peak hour volume, and x = Gaming Area in 1,000 SF.

Table 8-2 summarizes the calculated average Weekday and Saturday trip generation rates at the three casinos where traffic data was obtained. As seen in *Table 8-2*, the weekday daily rates are calculated to vary between 87.85 and 111.23 trips per 1,000 SF while the weekday PM peak hour rate is calculated to vary between 6.37 and 6.97 trips per 1,000 SF. The Saturday daily rates are calculated to vary between 130.81 and 160.84 trips per 1,000 SF while the Saturday peak hour rate is calculated to vary between 9.14 and 10.25 trips per 1,000 SF.

Table 8-3 summarizes the various trip generation rates for the weekday and Saturday, used to estimate the trip generation for the Tejon Casino.

The Casino is located adjacent to two freeways, I-5 and SR 99 which, together carry approximately 90,000 vehicles per day. Diverted link trips will be generated from the existing traffic on both, I-5 and SR 99. For the purposes of this analysis, the base daily and peak hour trip generation estimates are adjusted based on a conservative diverted link rate of 10%, which is less than the 15% identified by Caltrans' guidance for pass-by/diverted link trip reductions for retail-oriented development in the *Caltrans Guide for the Preparation of Traffic Impact Studies*, 2002. Since the average traffic volumes on the surface streets adjacent to the project site are low, no Diverted Link reductions are applied to the casino trip generation estimates.

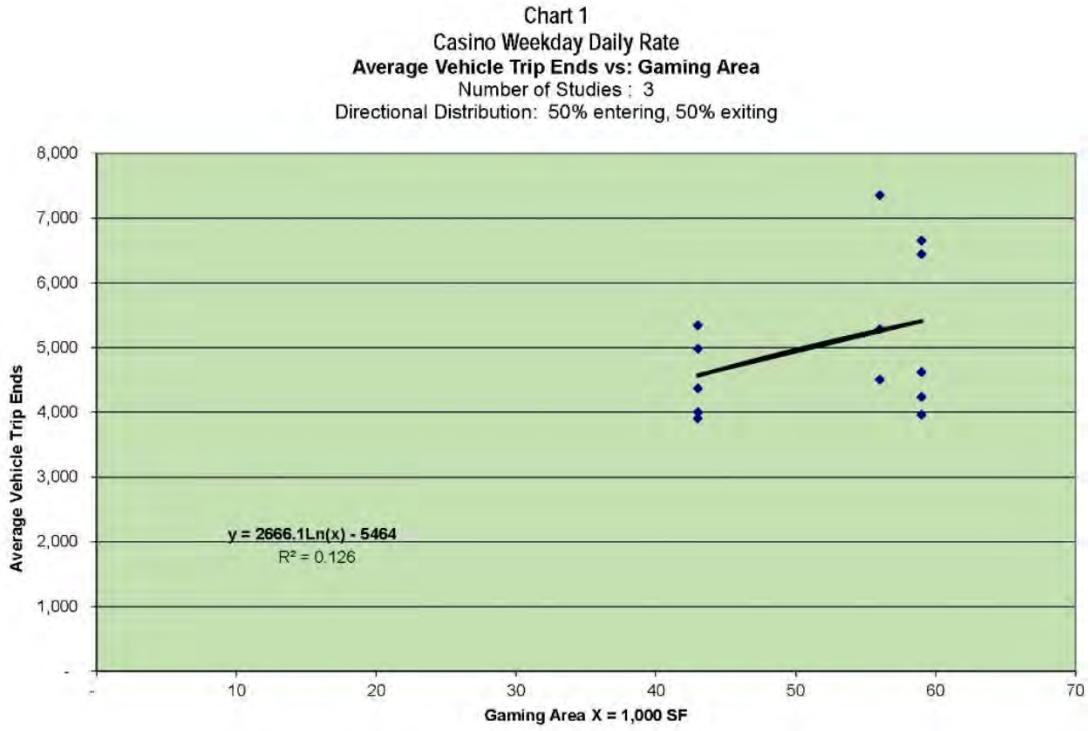


Chart 2
Casino Weekday Peak Hour
Average Vehicle Trip Ends vs: Gaming Area
PM Peak Hour of the Adjacent Street
Number of Studies : 3
Directional Distribution: 55% entering, 45% exiting

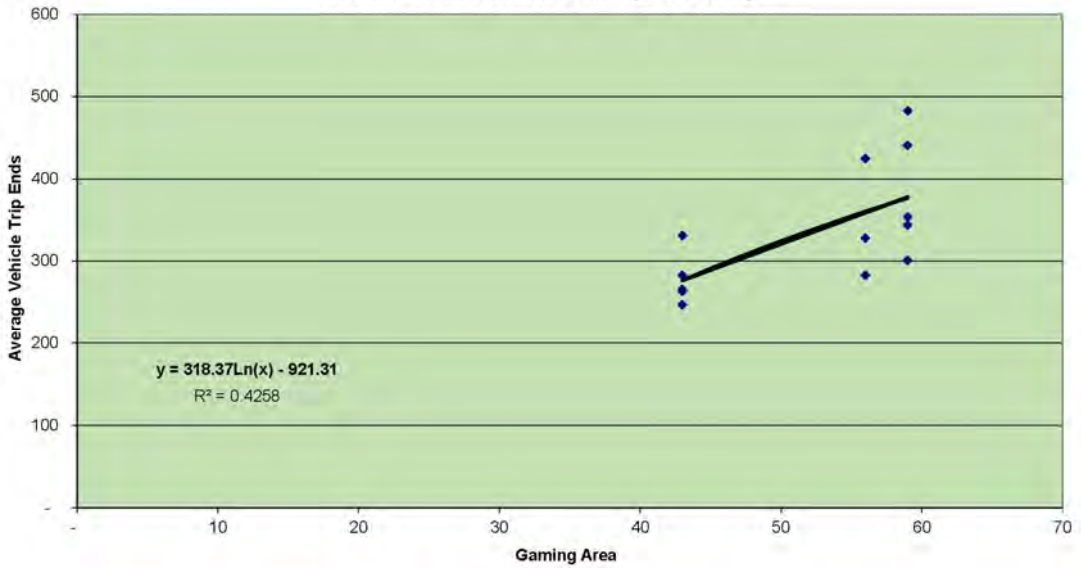
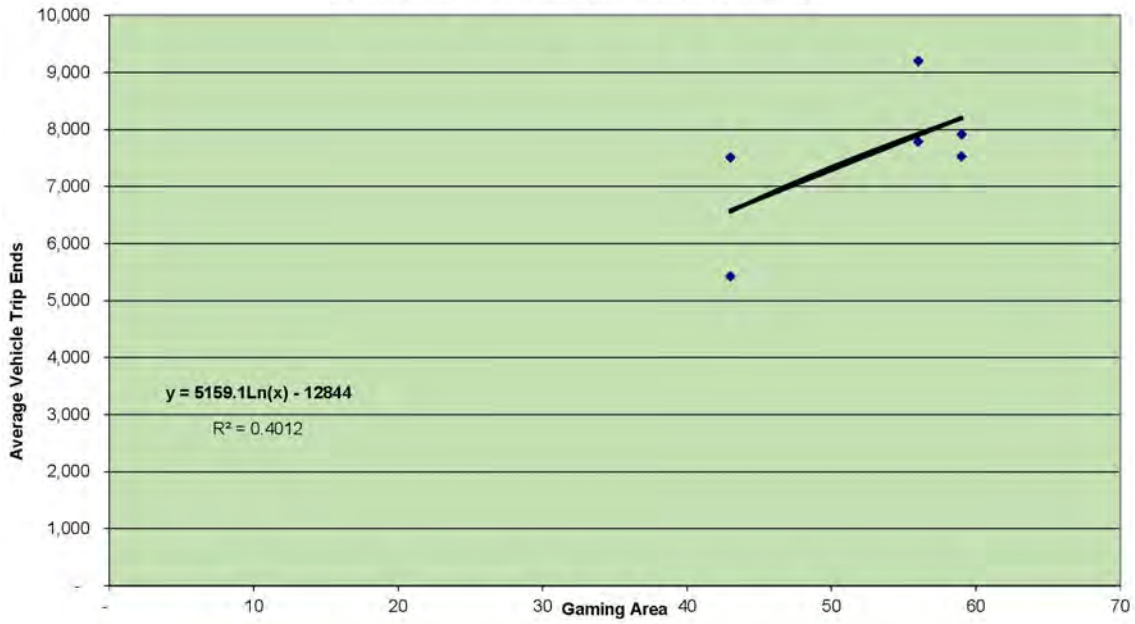
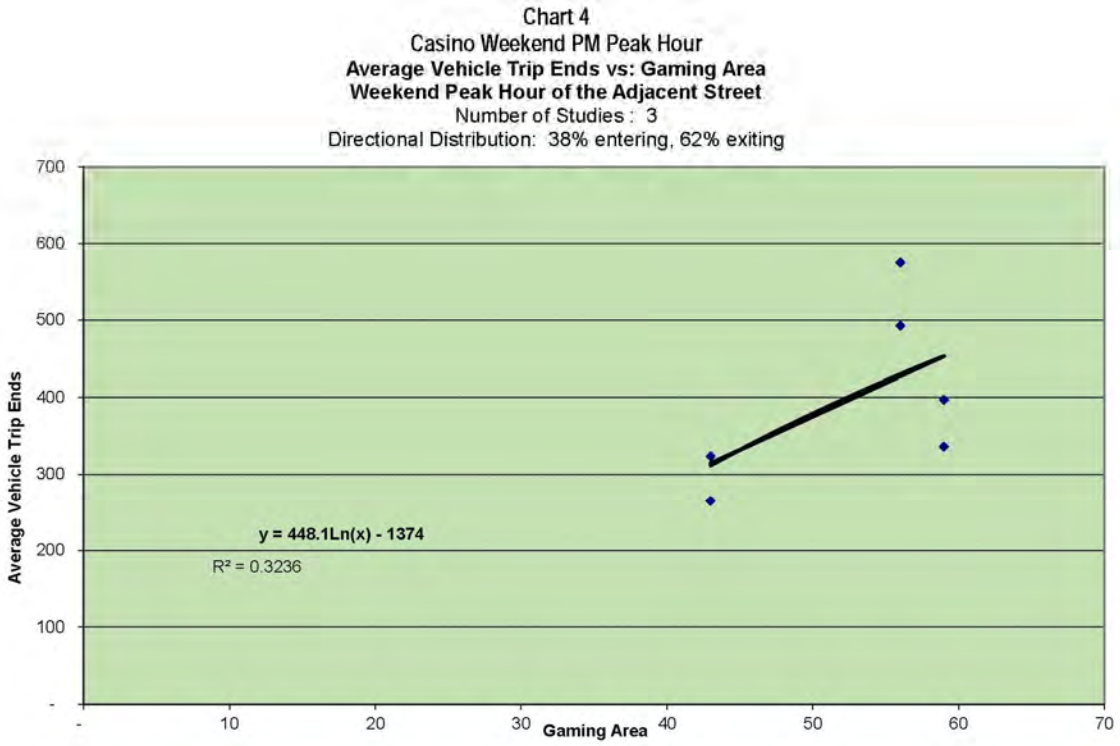


Chart 3
Weekend Daily Rate
Average Vehicle Trip Ends vs: Gaming Area
Number of Studies : 3
Directional Distribution: 50% entering, 50% exiting





8.2 Hotel

Unlike stand-alone hotels, guests of the Indian casino hotels are primarily attracted by the casino facilities, and the hotel facilities are a secondary attraction. Hence, the trip generation rates are lower than those for a stand-alone hotel. The *Traffic Needs Assessment of Tribal Development Projects in the San Diego Region* – March 2003 Update, by the San Diego Association of Governments (SANDAG) recommends a daily trip rate of 3 trips per occupied room for hotels. The rates used are as follows:

Weekday

- Daily – 3 per room
- AM Peak Hour – 5.62% of daily
- PM Peak Hour – 7.18% of daily

Saturday

- Daily – 3 per room
- PM Peak Hour – 8.41% of daily

TABLE 8-2
TRIP GENERATION RATE COMPARISON

Casino	Weekday (Average of Monday through Friday)				Saturday			
	Daily		PM Peak Hour		Daily		Peak Hour	
	ADT	Rate[a]	Volume	Rate [a]	ADT	Rate[a]	Volume	Rate[a]
Harrah's Rincon Casino	5,183	87.85	411	6.97	7,718	130.81	591	10.02
Chukchansi Gold, Madera County	6,229	111.23	385	6.88	9,007	160.84	574	10.25
Black Oak Casino, Tuolumne County	4,109	95.56	274	6.37	5,879	136.72	393	9.14

Footnote:

a. Per 1,000 SF of gaming area.

TABLE 8-3
TRIP GENERATION EQUATIONS

Casino	Daily Rate (Equation)	PM Peak Hour Rate (Equation)
Weekday	y = 2666.1Ln(x) – 5464	y = 318.37Ln(x) – 921.31
Saturday	y = 5159.1Ln(x) - 12844	y = 448.1Ln(x) -1374

8.3 R. V. Parking

Weekday trip rates for Land Use 416 Campground / Recreational Vehicle Park, from the 10th Edition of the *Trip Generation* Manual, Institute of Transportation Engineers (ITE) is used. Daily trip rates are not available. Hence, the daily rips were estimated based on the assumption that peak hour volumes are 10% of the daily trips. Thus, the daily trips were calculated using the average of the AM and PM peak hour volumes. Saturday trip rates are not available for RV park. The weekday PM peak hour rates were used for the Saturday peak hour. Saturday daily volume was calculated based on the assumption that peak hour volumes are 10% of the daily trips. The rates used are as follows:

Weekday

- Daily – 7.5 trips per acre (calculated)
- AM Peak Hour – 0.48 trips per acre
- PM Peak Hour – 0.98 trips per acre

Saturday

- Daily – 10 trips per acre (calculated)
- PM Peak Hour – 0.98 trips per acre

8.4 Organic Farm

Weekday rates for Organic Farm are based on SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, for Agriculture Land Use. Saturday trip rates are not available for Organic Farm. The weekday daily rate is used for Saturday. For the peak hour, 5% is used for the Saturday. The rates used are as follows:

Weekday

- Daily – 2 trips per acre
- AM Peak Hour – 10% of daily
- PM Peak Hour – 10% of daily

Saturday

- Daily – 2 trips per acre
- PM Peak Hour – 5% of daily

8.5 Single Family Homes

The weekday and Saturday trip rates for Land Use 210, *Trip Generation* Manual, 10th Edition, ITE are used for Single Family Homes. The rates used are as follows:

Weekday

- Daily - Ln(T) = 0.92 Ln(X) + 2.71, where T = total number of daily weekday trips and X is the number of single-family dwelling units.
- AM Peak Hour - T = 0.71(X) + 4.80, where T = total number of weekday AM peak hour trips and X is the number of single-family dwelling units.
- PM Peak Hour: Ln (T) = 0.96 Ln (X) + 0.20, where T = total number of weekday PM peak hour trips and X is the number of single-family dwelling units.

Saturday

- Daily - Ln(T) = 0.94 Ln(X) + 2.56, where T = total number of daily Saturday trips and X is the number of single-family dwelling units.
- Peak Hour: T = 0.84(X) + 17.99, where T = total number of Saturday peak hour trips and X is the number of single-family dwelling units.

8.6 Community Park

The weekday and Saturday trip rates for Community Park, Land Use 411, *Trip Generation* Manual, 10th Edition, ITE is used for Community Park. The rates in the *Trip Generation* Manual are considered too low and based on engineering judgement, the rate was adjusted. The rates used are as follows:

Weekday

- Daily – 7.8 per acre
- AM Peak Hour – 0.2 per acre
- PM Peak Hour – 1.1 per acre

Saturday

- Daily – 19.6 per acre
- PM Peak Hour – 1.1 per acre

8.7 Community Center

The weekday and Saturday trip rates for Recreational Community Center, Land Use 495, *Trip Generation* Manual, 10th Edition, ITE is used for Community Center. The community center is meant for the use of tribal members and members of the general public will not use generally this center. Hence the rates in the *Trip Generation* Manual are considered high. Therefore, 50% of the rate is used. The rates used are as follows:

Weekday

- Daily – 14.41 per KSF
- AM Peak Hour – 0.88 per KSF
- PM Peak Hour – 1.16 per KSF

Saturday

- Daily – 4.55 per acre
- PM Peak Hour – 0.54 per acre

8.8 Health Center

The weekday and Saturday trip rates for Medical-Dental office, Land Use 720, *Trip Generation* Manual, 10th Edition, ITE is used for Health Center. The Health Center is meant for the use of tribal members and members of the general public will not generally use this center. Hence the rates in the *Trip Generation* Manual are considered high. Therefore, 50% of the rate is used. The rates used are as follows:

Weekday

- Daily – 17.4 KSF
- AM Peak Hour – 1.39 per KSF
- PM Peak Hour – 1.73 per KSF

Saturday

- Daily – 4.285 per KSF
- PM Peak Hour – 1.55 per KSF

8.9 Tribal Administration

The weekday trip rates for Small Office building Land Use 712, *Trip Generation* Manual, 10th Edition, ITE is used for the Tribal Administration office. The Tribal Administration office is meant for the use of tribal members and members of the general public will not generally use this center. The tribal membership is small, approximately 900 members, which would be an equivalent of approximately 300 families. It may be noted that most members (families) would not visit the Tribal Administration office every day. Hence the rates in the *Trip Generation* Manual are considered high. Therefore, 50% of the rate is used. It is assumed that the tribal office will remain closed during the Saturday and hence no trips will be generated. The rates used are as follows:

Weekday

- Daily – per 8.095 KSF
- AM Peak Hour – 0.96 per KSF
- PM Peak Hour – 1.23 per KSF

8.10 County Fire / Sheriff Station

Trip rates for a sheriff station is not available. ITE provides only a weekday PM peak hour trip rate for a fire station. However, no daily rates are provided.

ALTERNATIVE A1

9.0 ALTERNATIVE A1 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

9.1 Trip Generation

Using the trip generation rates described in Section 8.0, Trip Generation Methodology, Weekday and Saturday trip generation was estimated for Alternative A1 as described below.

9.1.1 *Weekday*

Alternative A1 is planned to be developed in two Phases. ***Table 9-1*** summarizes the Alternative A1 Weekday trip generation. As seen in *Table 9-1*, in Phase 1 the proposed land uses in Alternative A1 are estimated to generate a total of 9,538 daily trips, with 502 AM peak hour trips (312 inbound / 190 outbound) and 815 PM peak hour trips (448 inbound / 367 outbound) during the weekdays. The casino is calculated to generate 817 daily *diverted link* trips with 42 AM peak hour trips (27 inbound / 16 outbound) and 71 PM peak hour trips (39 inbound / 32 outbound). The entire Alternative A1 land uses are estimated to generate a total of 12,885 daily trips, with 741 AM peak hour trips (458 inbound / 283 outbound) and 1,153 PM peak hour trips (593 inbound / 560 outbound) during the weekdays.

9.1.2 *Saturday*

Table 9-2 summarizes the Alternative A1 Saturday trip generation. As seen in *Table 9-2*, In Phase 1, the Alternative A1 land uses are estimated to generate a total of 14,965 daily trips, with 1,041 PM peak hour trips (416 inbound / 625 outbound) during the Saturday. The casino is calculated to generate 1,355 daily *diverted link* trips with 92 PM peak hour trips (35 inbound / 57 outbound).

The entire Alternative A1 land uses are estimated to generate a total of 17,020 daily Saturday trips, with 1,324 PM peak hour trips (565 inbound / 759 outbound) during the Saturday.

9.2 Trip Distribution/Assignment

The Proposed Alternative A1 site is well connected (accessed) from both I-5 and SR 99. There is little to no local traffic on the surface roadway network. Most of the traffic that will patronize the Casino is regional in nature and will utilize SR 99 and I-5 freeways to access the site. The Los Angeles Metropolitan area is located approximately 100 miles to the south and there are several smaller cities/population centers within 100 miles to the north of the Project. Hence it was assumed that 50% of the Project traffic would be oriented to the north and the remaining 50% to the south. The Project site is closer to SR 99, which is a 6-lane freeway, whereas, I-5 is a 4-Lane freeway. Hence, it is assumed that more project traffic from the south will utilize SR 99 than I-5.

Based on the above discussion, it is assumed that 50% of the Project traffic is oriented to the north, 25% each on I-5 and SR 99, 35% is oriented to the south on SR 99, 10% is to the south on I-5 and 5% to the west on Maricopa Highway.

Figure 9–1 depicts the Alternative A1 Project Traffic Distribution. ***Figure 9–2*** depicts the Alternative A1 Weekday Project Phase 1 Traffic Volumes, while ***Figure 9–3*** depicts the Alternative A1 Saturday Project Phase 1 Traffic Volumes. ***Figure 9–4*** depicts the Alternative A1 Weekday Entire Project Traffic Volumes, while ***Figure 9–5*** depicts the Alternative A1 Saturday Entire Project Traffic Volumes. ***Figure 9–6*** depicts the Existing + Alternative A1 Weekday Project Phase 1 Traffic Volumes. ***Figure 9–7*** depicts the Existing + Alternative A1 Saturday Project Phase 1 Traffic Volumes. ***Figure 9–8*** depicts the Opening Year (2023) + Alternative A1 Weekday Project Phase 1 Traffic Volumes, while ***Figure 9–9*** depicts the Opening Year (2023) + Alternative A1 Saturday Project Phase 1 Traffic Volumes.

TABLE 9-1
ALTERNATIVE A1 - WEEKDAY TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		Weekday AM Peak Hour					Weekday PM Peak Hour				
		Rate [a]	Volume	Rate	In:Out Split [a]	Volume			Rate	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Phase 1													
Casino Gaming Area [a]	KSF	49.09 [a]	8,173	2.55[a]	63 : 37	267	157	424	4.25[a]	55 : 45	389	318	707
Primary			*7,356*			*240*	*141*	*382*			*350*	*286*	*636*
Diverted link (10%) [b]	166.5		*817*			*27*	*16*	*42*			*39*	*32*	*71*
Hotel [c]	400 Rooms	3 /Room	1,200	5.62%	59 : 41	40	27	67	7.18%	51 : 49	44	42	86
RV Parking [d]	Acres	7.5[d]	165	0.48	42 : 58	5	6	11	0.98	69 : 31	15	7	22
Phase 1 Primary Trips			**8,721**			**285**	**174**	**460**			**409**	**335**	**744**
Phase 1 Total Trips			**9,538**			**312**	**190**	**502**			**448**	**367**	**815**
Phase 2													
Organic Farm [e]	43 Acres	2 /Acre	86	10%	90 : 10	8	1	9	10%	10 : 90	1	8	9
Single Family Homes	92 DU	10.47[f]		0.76[f]	25 : 75	18	52	70	1.02[f]	: 37	59	35	94
Community Park [g]	29 Acres	7.8 /Acre	226	0.20	67 : 33	4	2	6	1.10	40 : 60	13	19	32
Community Center [h]	68 KSF	14.41 /KSF	980	0.88	66 : 34	40	20	60	1.16	47 : 53	37	42	79
Health Center [i]	43 KSF	17.4 /KSF	748	1.39	78 : 22	47	13	60	1.73	28 : 72	21	53	74
Tribal Administration [j]	42.5 KSF	8.095 /KSF	344	0.96	83 : 17	34	7	41	1.23	28 : 72	15	37	52
Subtotal Phase 2			**3,347**			**151**	**95**	**246**			**146**	**194**	**340**
Entire Project Primary Trips			**12,068**			**436**	**269**	**706**			**555**	**529**	**1,084**
Entire Project Total Trips			**12,885**			**458**	**283**	**741**			**593**	**560**	**1,153**

22
963
63

Footnotes:

a. Casino Gaming Area: Weekday rates are based on trip generation rates developed using actual traffic counts at the Harrah's Rincon Casino in January 2006 (San Diego, CA), the Black Oak Casino in February 2006 (Tuolumne, CA) and the Chuckchansi Gold Casino August 2005 (Coarsegold, CA), in the Year 2007. Daily rate: y = 2666.1 Ln(x) - 5464; PM Rate: y = 318.37 Ln (x) - 921.31. AM rate: 60% of PM with 63% inbound / 37% outbound. Rates shown are average rates calculated by dividing the volume by the KSF.

b. Diverted link trips are generated by the Casino only. Diverted Link trip reduction is applied only to the freeway traffic volumes since they will utilize the ramps and the study area intersections.

c. Hotel: The weekday rates are based on the rates in the *Traffic Needs Assessment of Tribal Development Projects in the San Diego Region*- March 2003 Update, San Diego County.

d. RV Parking: Weekday trip rates for Land Use 416 Campground / Recreational Vehicle Park, ITE is used. Daily trip rates are not available. Hence, the daily rips were estimated assuming the peak hour volumes are 10% of the daily trips. Rates shown are average rates calculated by dividing the volume by the KSF.

e. Organic Farm: Weekday rates are based on SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, for Agriculture Land Use.

f. Single Family Home: Weekday rates are based on Land Use 210, *Trip Generation Manual*, 10th Edition, ITE. Daily Rate: Ln(T) = 0.92 Ln(X) + 2.71; AM Peak Hour: T = 0.71(X) + 4.80; and PM Peak Hour: Ln (T) = 0.96 Ln (X) + 0.20. Rates shown are average rates calculated by dividing the volume by the dwelling unit.

g. Community Park: 10 times the weekday rates are for Community Park, Land Use 411, *Trip Generation Manual,* 10th Edition, *ITE* are applied.

h. Community Center: Weekday rates are based on Recreational Community Center, Land Use 495, *Trip Generation Manual*, 10th Edition, ITE. However, since this is community center is meant for only tribe members, 50% of the rates is applied.

i. Health Center: Weekday trip rates for Medical-Dental office, Land Use 720, Trip Generation Manual, 10th Edition, ITE are used. However, since this is a health center for only tribe members, 50% of the rates is applied.

j. Tribal Administration: Since this Tribal office is meant for only tribe members, 50% of the weekday trip rates for Small Office building Land Use 712, Trip Generation Manual, 10th Edition, ITE is used.

TABLE 9-2
ALTERNATIVE A1 - SATURDAY TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		Saturday PM Peak Hour			
		Rate [a]	Volume	Rate	In:Out Split	Volume	
						In	Out	Total
Phase 1								
Casino Gaming Area [a]	166.5 KSF	81.35[a]	13,545	5.51[a]	38 : 62	349	569	918
Primary			*12,191*			*314*	*512*	*826*
Diverted link (10%) [c]			*1,355*			*35*	*57*	*92*
Hotel [b]	400 Rooms	3 /Room	1,200	8%	51 : 49	52	49	101
RV Parking [c]	22 Acres	10[c]	220	0.98	69 : 31	15	7	22
Phase 1 Primary Trips			**13,611**			**381**	**568**	**949**
Phase 1 Total Trips			**14,965**			**416**	**625**	**1,041**
Phase 2								
Organic Farm [d]	43 Acres	2 /Acre	86	5%	10 : 90	0	4	4
Single Family Homes	92 DU	9.86[e]	907	1.04[e]	54 : 46	51	44	95
Community Park [f]	29 Acres	19.6 /Acres	568	2.80	55 : 45	45	36	81
Community Center [g]	68 KSF	4.55 /KSF	309	0.54	54 : 46	19	17	36
Health Center [h]	43 KSF	4.285 /KSF	184	1.55	50 : 50	34	33	67
Tribal Administration [i]	42.5 KSF	- -	-	-	- -	-	-	-
Subtotal Phase 2			**2,055**			**149**	**134**	**283**
Entire Project Primary Trips			**15,666**			**530**	**702**	**1,232**
Entire Project Total Trips			**17,020**			**565**	**759**	**1,324**

Footnotes:

a. Casino Gaming Area: Saturday rates are based on trip generation rates developed using actual traffic counts at the Harrah's Rincon Casino in January 2006 (San Diego, CA), the Black Oak Casino in February 2006 (Tuolumne, CA) and the Chuckchansi Gold Casino August 2005 (Coarsegold, CA), in the Year 2007. Daily rate: y = 5159.1 Ln(x) - 12844; PM Rate: y = 448.1 Ln (x) - 1374. AM rate: 60% of PM with 63% inbound / 37% outbound. Rates shown are average rates calculated by dividing the volume by the KSF.

b. Diverted link trips are generated by the Casino and hotel only. Diverted link trip reduction is applied only to the freeway traffic volumes.

c. Hotel: The Saturday rates are based on the rates in the San Diego County Casino study. Peak hour rates are based on Hotel, Land Use 310, Trip Generation Manual, 10th Edition, Institute of Transportation Engineers (ITE). The peak hour split is not available and was assumed.

d. RV Parking: Saturday trip rates are not available and hence, weekday PM trip rates for Land Use 416 Campground / Recreational Vehicle Park is used. Daily trip rates are not available. Hence, the daily rips were estimated assuming the peak hour volumes are 10% of the daily trips. Rates shown are average rates calculated by dividing the volume by the KSF.

e. Organic Farm: Rates are based on SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, for Agriculture Land Use.

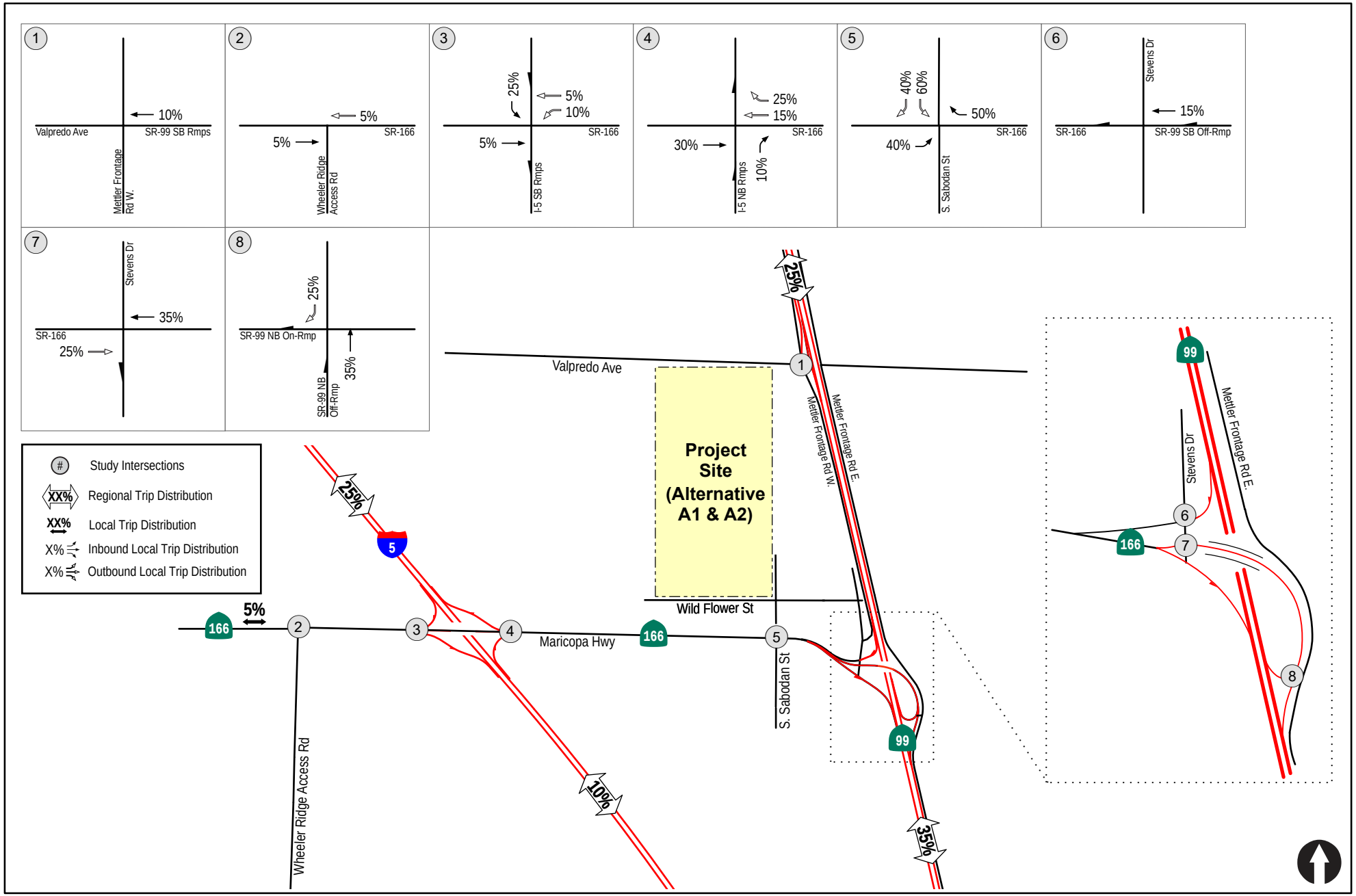
f. Single Family Homes: Saturday rates are based on Land Use 210, *Trip Generation Manual*, 10th Edition, (ITE). Daily Rate: Ln(T) = 0.94 Ln(X) + 2.56; Peak Hour: T = 0.84(X) + 17.99. Rates shown are average rates calculated by dividing the volume by the dwelling unit.

g. Community Park: Saturday rates are based on Public Park, Land Use 411, *Trip Generation Manual*, 10th Edition, (ITE). The ITE trip rates are very low and hence were increased by 10 times.

h. Community Center: Saturday rates are based on Recreational Community Center, Land Use 495, *Trip Generation Manual*, 10th Edition, ITE. However, since this is community center is meant for only tribe members, 50% of the rates is applied.

i. Health Center: Saturday trip rates for Medical-Dental office Land Use 720, Trip Generation Manual, 10th Edition, ITE are used. However, since this is a health center for only tribe members, 50% of the rates is applied.

j. Tribal Administration: This office is assumed to be closed during the Saturday.



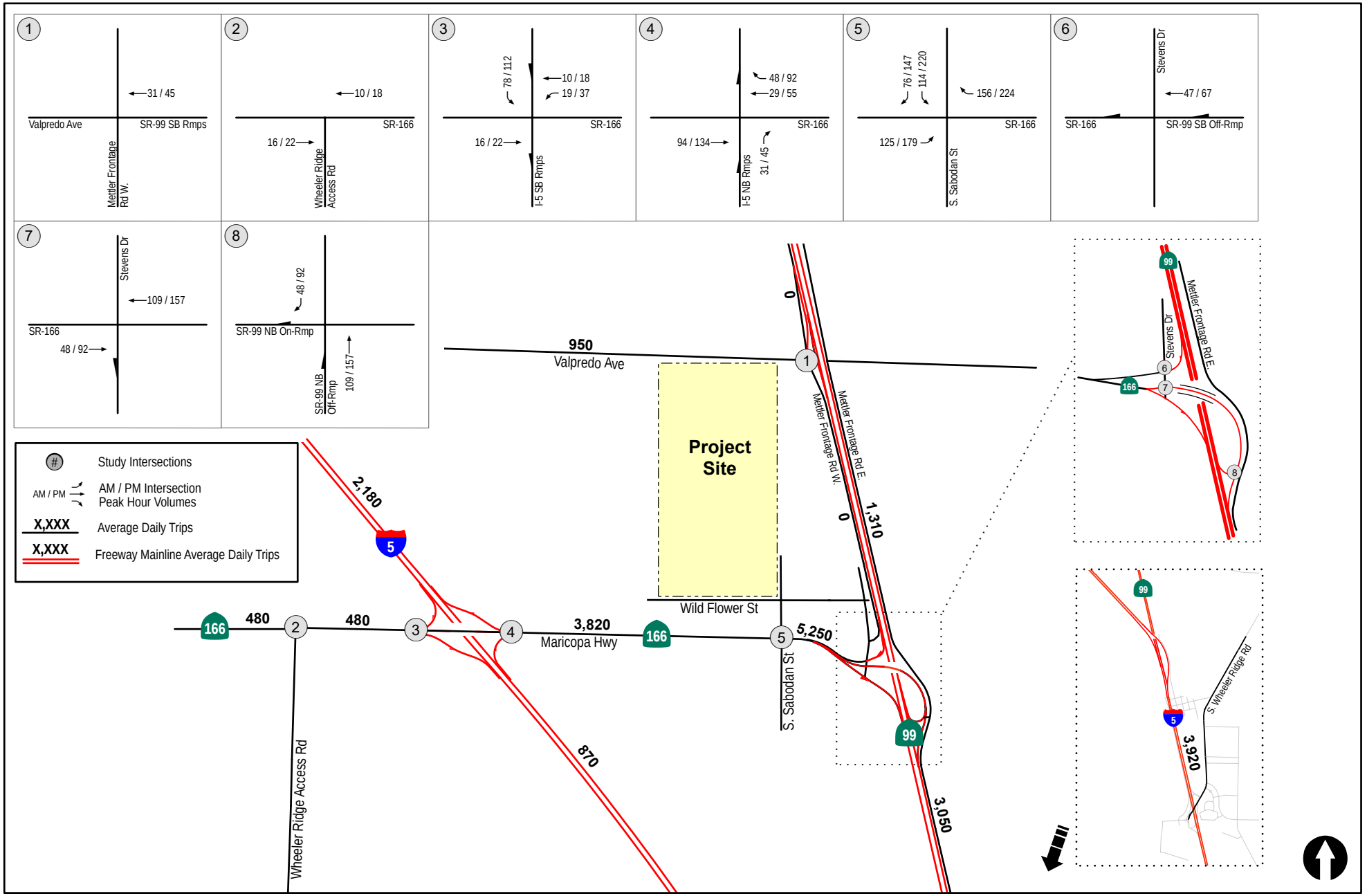
LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 04/25/19

Figure 9-1

Project Traffic Distribution

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

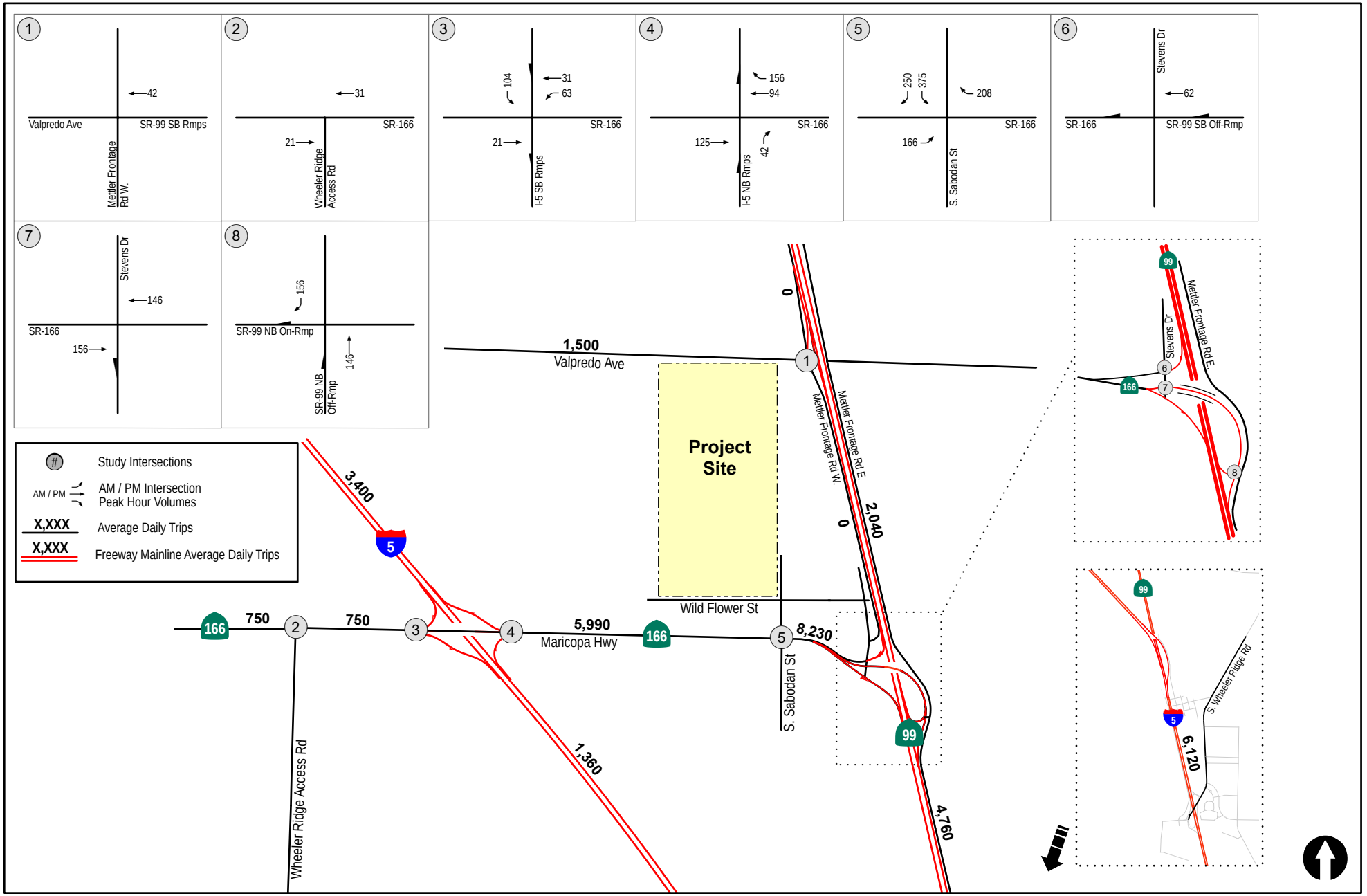
N:\3004\Figures
Date: 05/19/19

Figure 9-2

Alternative A1 Project Phase I Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

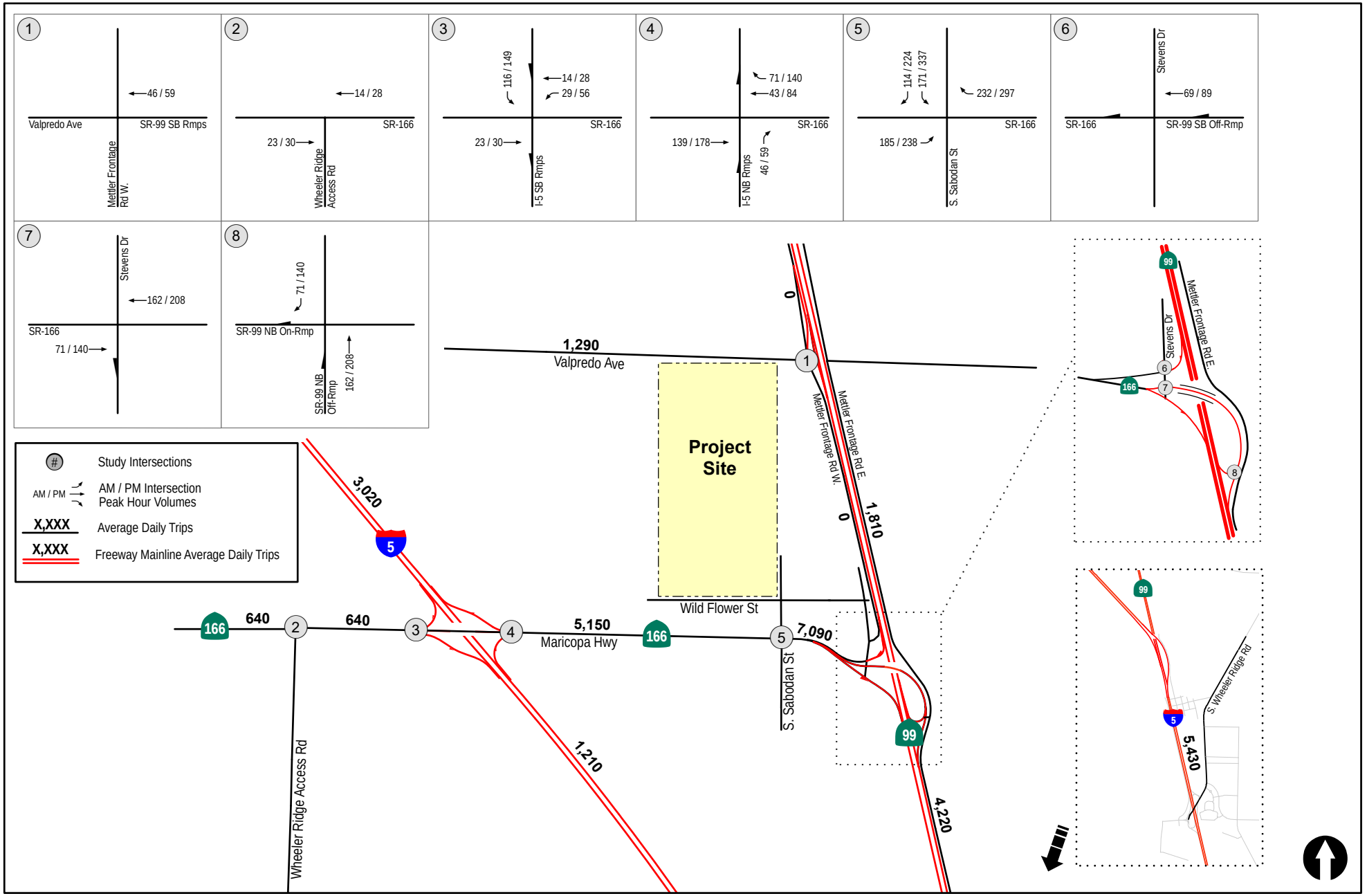
N:\3004\Figures
Date: 05/17/19

Figure 9-3

Alternative A1 Project Phase I Traffic Volumes

Saturday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

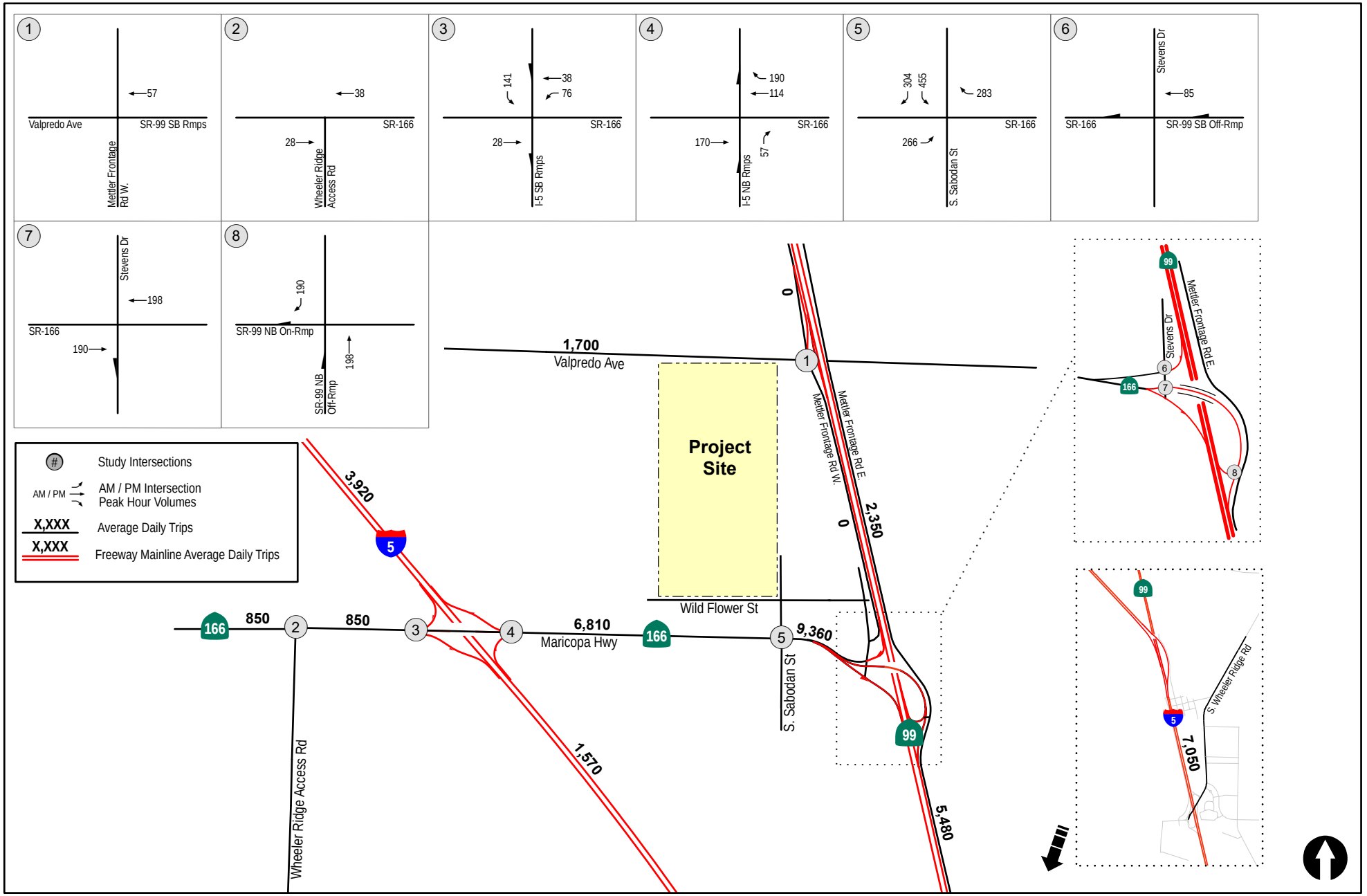
N:\3004\Figures
Date: 05/17/19

Figure 9-4

Alternative A1 Entire Project Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

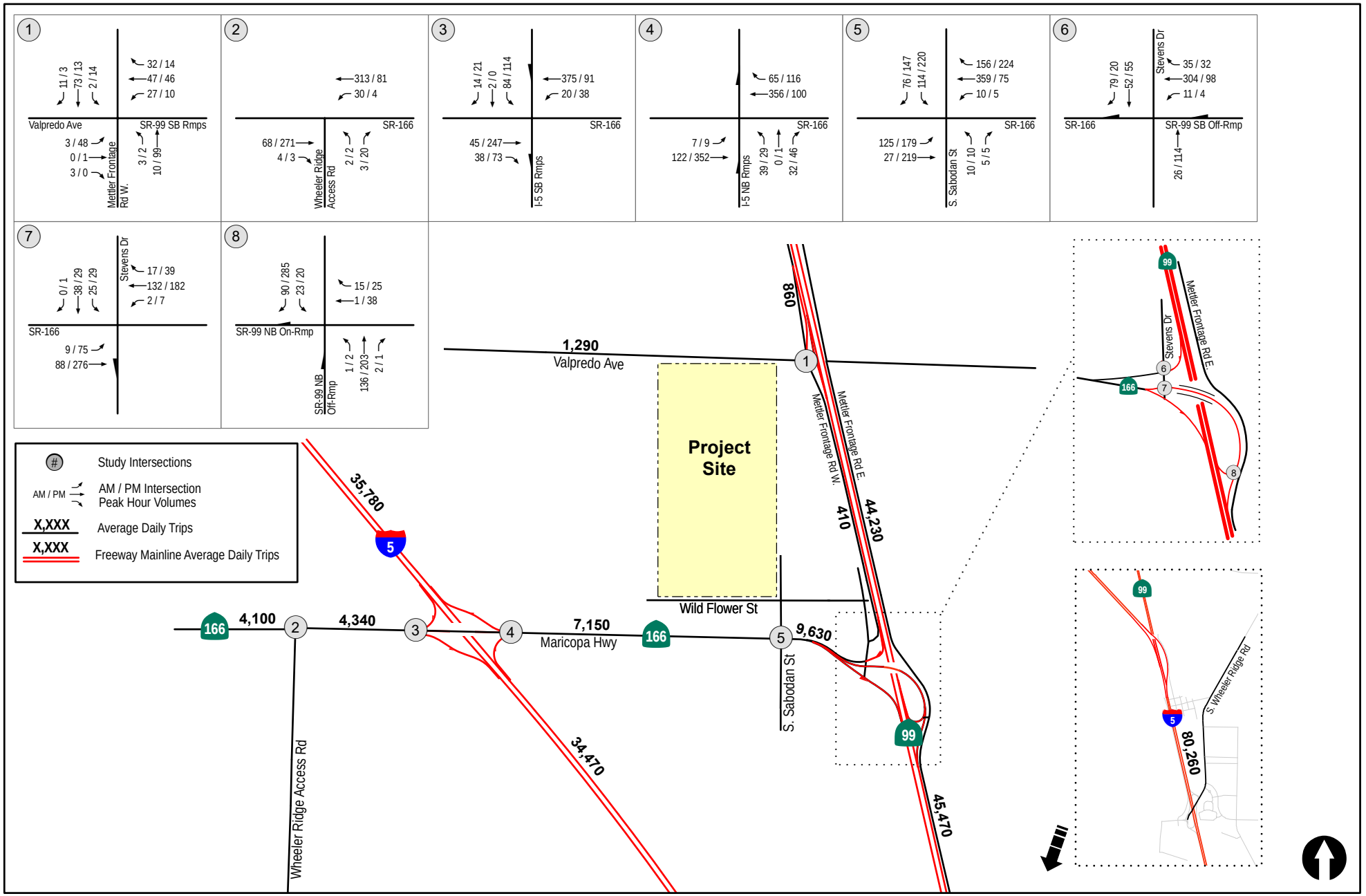
N:\3004\Figures
Date: 05/17/19

Figure 9-5

Alternative A1 Entire Project Traffic Volumes

Saturday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

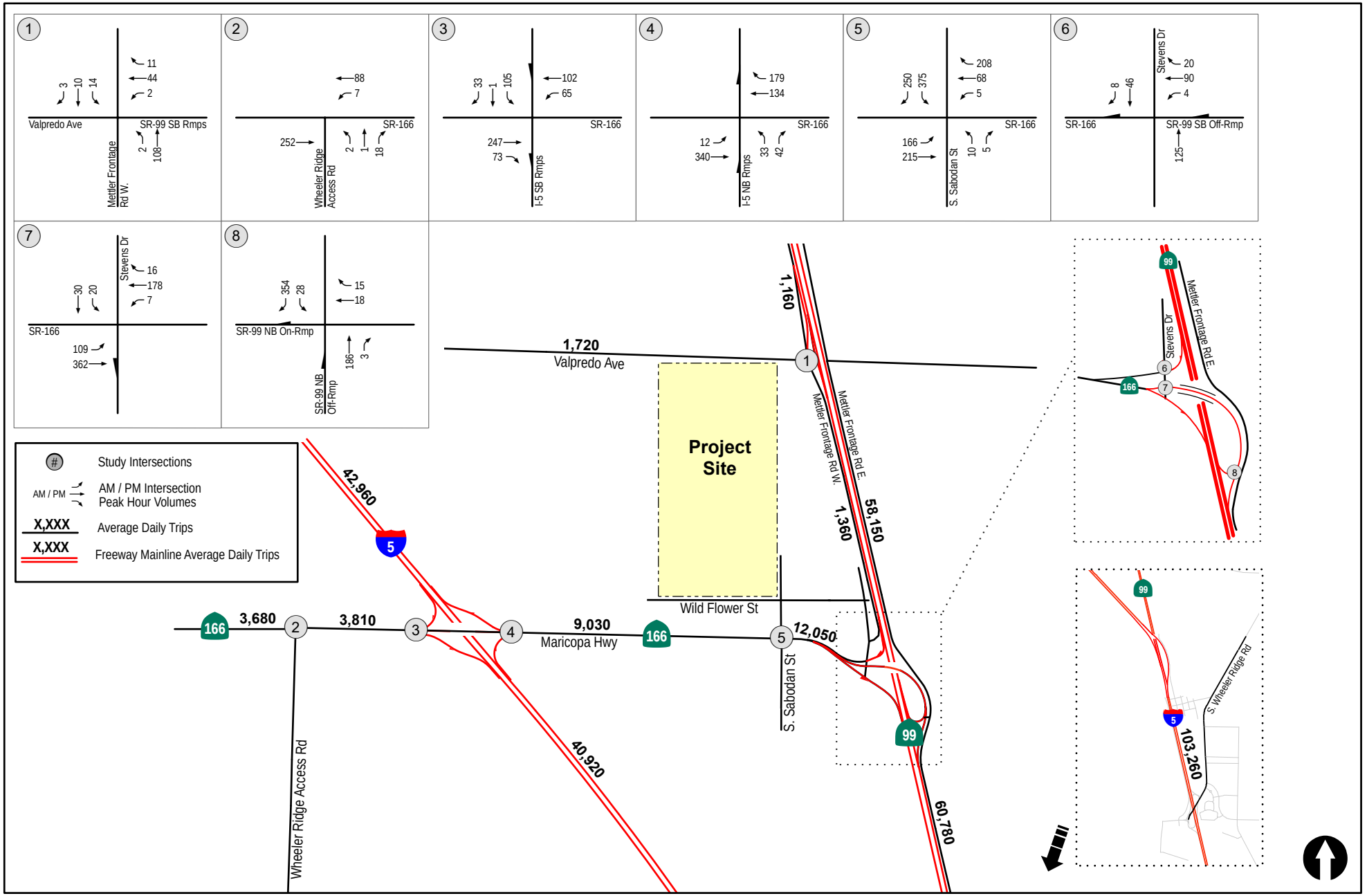
N:\3004\Figures
Date: 05/20/19

Figure 9-6

Existing + Alternative A1 Project Phase 1 Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

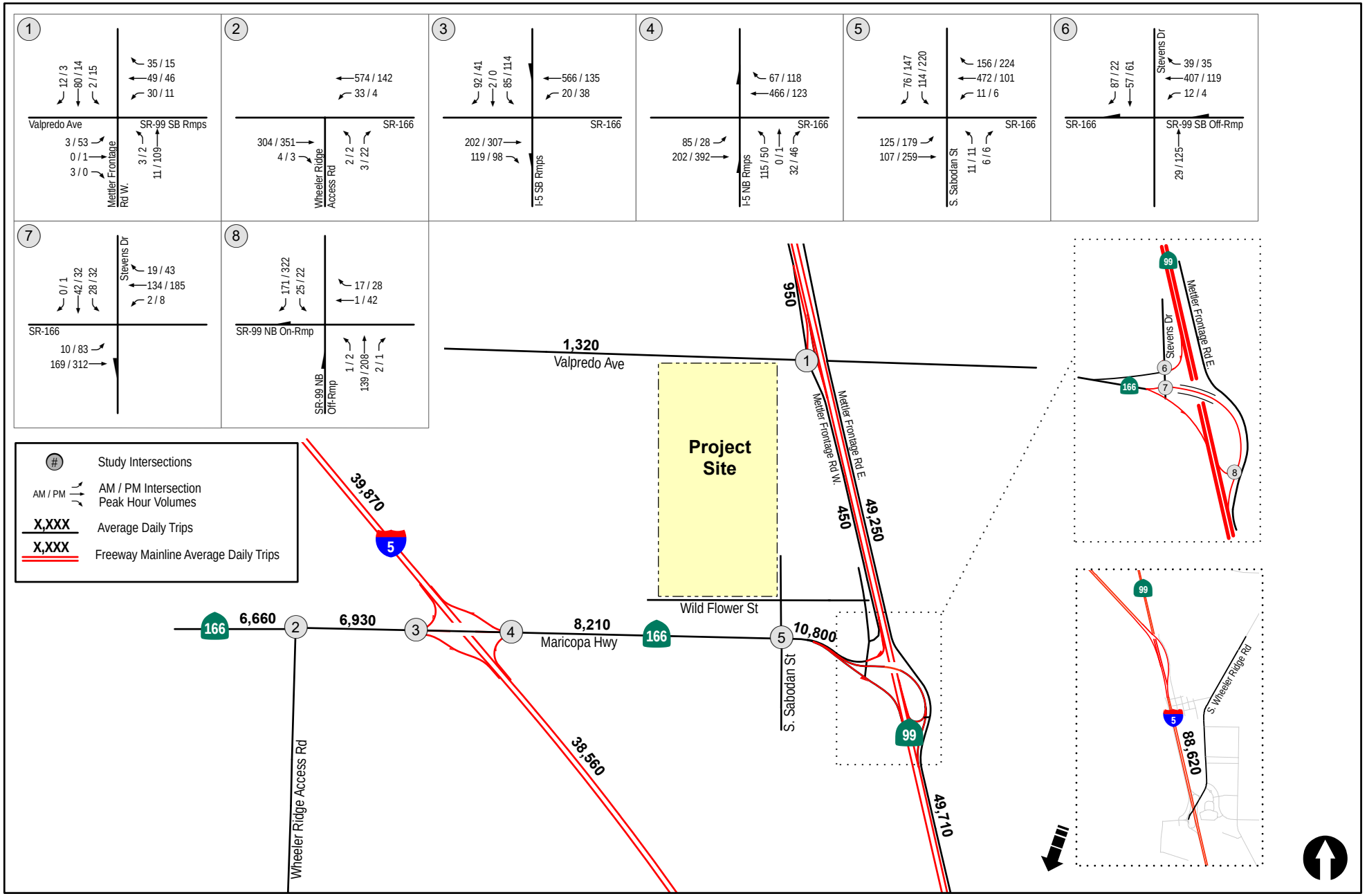
N:\3004\Figures
Date: 05/17/19

Figure 9-7

Existing + Alternative A1 Project Phase I Traffic Volumes

Saturday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

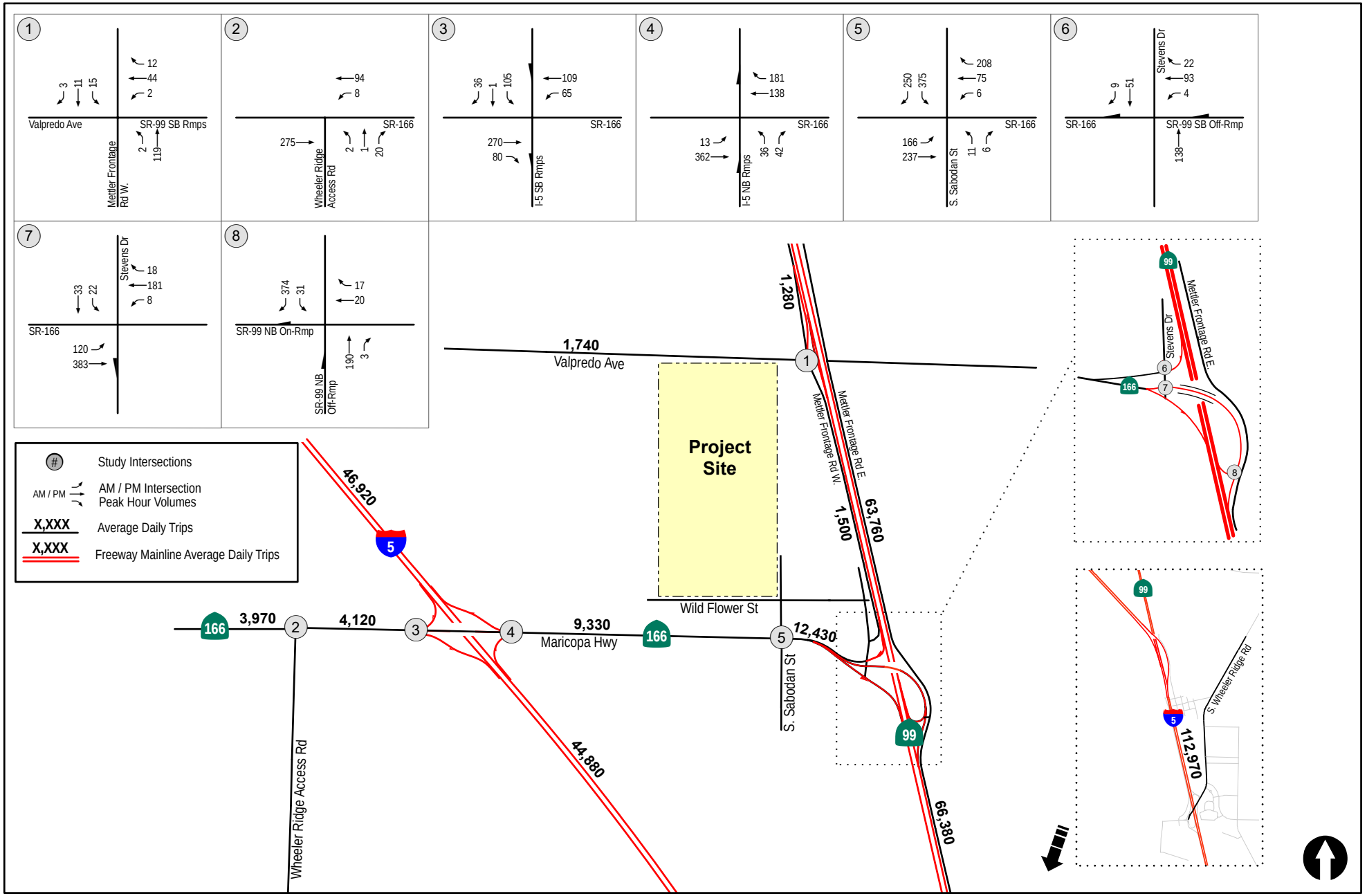
N:\3004\Figures
Date: 05/20/19

Figure 9-8

Opening Year (2023) + Alternative A1 Project Phase 1 Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/17/19

Figure 9-9

Opening Year (2023) + Alternative A1 Project Phase I Traffic Volumes

Saturday

TEJON CASINO

10.0 ANALYSIS OF NEAR-TERM SCENARIOS – ALTERNATIVE A1

10.1 Existing + Project Alternative A1 Phase 1

10.1.1 *Intersection Analysis*

Table 10-1 summarizes the Existing + Project Alternative A1 Phase 1 peak hour intersection operations during the Weekday peak hours and the Saturday peak hour. As seen in *Table 10-1*, with the addition of Project Alternative A1 Phase 1 traffic, the minor street left-turn movements the following intersections are calculated to operate at LOS E or worse:

- Maricopa Highway / S. Sabodan Street (LOS F during the Weekday PM peak hour and Saturday peak hour)
- Stevens Drive / Maricopa Highway (LOS E during the Saturday peak hour)

The Project has a direct impact at this intersection in Alternative A1.

Appendix C contains the Existing + Project Alternative A1 Phase 1 Weekday and Saturday intersection analysis worksheets.

10.1.2 *Daily Street Segment Levels of Service*

Table 10-2 summarizes the Existing + Project Alternative A1 Phase 1 Weekday segment operations. As seen in *Table 10-2*, with the addition of Project Alternative A1 Phase 1 traffic, all study area segments are calculated to operate at LOS C or better on a Weekday.

Table 10-3 summarizes the Existing + Project Alternative A1 Phase 1 Saturday segment operations. As seen in *Table 10-3*, with the addition of Project Alternative A1 Phase 1 traffic, all study area segments are calculated to operate at LOS D or better on a Saturday.

10.1.3 Ramp Merge Analysis

Table 10–4 summarizes the operations of the Ramp Merge sections under Existing + Project Alternative A1 Phase 1 Weekday scenario. As seen in *Table 10–4*, with the addition of Project Alternative A1 Phase 1 traffic, the following ramp diverge section is calculated to operate at LOS E:

- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 10–5 summarizes the operations of the Ramp Merge sections under Existing + Project Alternative A1 Phase 1 Saturday scenario. As seen in *Table 10–5*, with the addition of Project Alternative A1 Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB I-5 (LOS F during the PM peak hour)
- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

10.1.4 Ramp Diverge Analysis

Table 10–4 summarizes the operations of the Ramp Diverge sections under Existing + Project Alternative A1 Phase 1 Weekday scenario. As seen in *Table 10–4*, with the addition of Project Alternative A1 Phase 1 traffic, with the addition of Project Alternative A1 Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS E or worse:

- NB I-5 off ramp diverge to SR 166 ramp (LOS E during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 10–5 summarizes the operations of the Ramp Diverge sections under Existing + Project Alternative A1 Phase 1 Saturday scenario. As seen in *Table 10–5*, with the addition of Project Alternative A1 Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS E or F:

- SB I-5 off-ramp diverge to SR 166 (LOS E during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Appendix C contains the Existing + Project Alternative A1 Phase 1 Weekday and Saturday Ramp Merge and Diverge analysis worksheets.

10.2 Opening Year (2023) without Project

10.2.1 *Intersection Analysis*

Table 10-1 summarizes the Opening Year (2023) without Project peak hour intersection operations during the Weekday peak hours and the Saturday peak hour. As seen in *Table 10-1*, in the near-Term without Project traffic, the minor street left-turn movements at all unsignalized intersections are calculated to continue to operate at LOS D or better on a Weekday and LOS C or better on a Saturday.

Appendix D contains the Opening Year (2023) without Project Weekday and Saturday intersection analysis worksheets.

10.2.2 *Daily Street Segment Levels of Service*

Table 10-2 summarizes the Opening Year (2023) without Project Weekday segment operations. As seen in *Table 10-2*, in the near-Term without Project traffic, all study area segments are calculated to operate at LOS C or better on a Weekday.

Table 10-3 summarizes the Opening Year (2023) without Project Saturday segment operations. As seen in *Table 10-3*, in the near-Term without Project traffic, all study area segments are calculated to operate at LOS D or better on a Saturday:

The Project has no significant direct impact on this freeway segment in Alternative A1.

10.2.3 *Ramp Merge Analysis*

Table 10–6 summarizes the operations of the Ramp Merge sections under Opening Year (2023) without Project Weekday scenario. As seen in *Table 10–6*, the following ramp merge section is calculated to operate at LOS F:

- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour)

Table 10–7 summarizes the operations of the Ramp Merge sections under Opening Year (2023) without Project Saturday scenario. As seen in *Table 10–7*, the following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB I-5 (LOS F during the PM peak hour)
- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour)

10.2.4 *Ramp Diverge Analysis*

Table 10–6 summarizes the operations of the Ramp Diverge sections under Opening Year (2023) without Project Weekday scenario. As seen in *Table 10–6*, the following ramp diverge sections are calculated to operate at LOS E or F:

- SB I-5 off-ramp diverge to SR 166 (LOS E during the PM peak hour)
- NB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour)

Table 10–7 summarizes the operations of the Ramp Diverge sections under Opening Year (2023) without Project Saturday scenario. As seen in *Table 10–7*, the following ramp diverge sections are calculated to operate at LOS F:

- SB SR 99 off ramp diverge to Valpredo Avenue (LOS F during the PM peak hour)
- SB I-5 off ramp diverge to SR 166 (LOS F during the PM peak hour)
- NB I-5 off ramp diverge to SR 166 (LOS F during the PM peak hour)

Appendix D contains the Opening Year (2023) without Project Weekday and Saturday Ramp Merge and Diverge analysis worksheets.

10.3 Opening Year (2023) + Project Phase 1

10.3.1 *Intersection Analysis*

Table 10-1 summarizes the Opening Year (2023) + Project Alternative A1 Phase 1 peak hour intersection operations during the weekday peak hours and the Saturday peak hour. As seen in *Table 10-1*, with the addition of Project Alternative A1 Phase 1 traffic, the minor street left-turn movements the following intersections are calculated to operate at LOS D or worse:

- Maricopa Highway / S. Sabodan Street (LOS F during the Weekday AM and PM peak hours and Saturday peak hour)

- Stevens Drive / Maricopa Highway (LOS F during the Saturday peak hour)

The Project has a direct impact at these intersections in Alternative A1.

Appendix E contains the Opening Year (2023) + Project Alternative A1 Phase 1 Weekday and Saturday intersection analysis worksheets.

10.3.2 *Daily Street Segment Levels of Service*

Table 10-2 summarizes the Opening Year (2023) + Project Alternative A1 Phase 1 Weekday segment operations. As seen in *Table 10-2*, with the addition of Project Alternative A1 Phase 1 traffic, all study area segments are calculated to operate at LOS C or better on a Weekday.

Table 10-3 summarizes the Opening Year (2023) + Project Alternative A1 Phase 1 Saturday segment operations. As seen in *Table 10-3*, with the addition of Project Alternative A1 Phase 1 traffic, all study area segments are calculated to operate at LOS D or better on a Saturday.

10.3.3 *Ramp Merge Analysis*

Table 10–8 summarizes the operations of the Ramp Merge sections under Opening Year (2023) + Project Alternative A1 Phase 1 Weekday scenario. As seen in *Table 10–8*, with the addition of Project Alternative A1 Phase 1 traffic, the following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 10–9 summarizes the operations of the Ramp Merge sections under Opening Year (2023) + Project Alternative A1 Phase 1 Saturday scenario. As seen in *Table 10–9*, with the addition of Project Alternative A1 Phase 1 traffic, the following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB SR 99 (LOS F during the PM peak hour)
- SR 166 on-ramp merge to SB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

10.3.4 *Ramp Diverge Analysis*

Table 10–8 summarizes the operations of the Ramp Diverge sections under Opening Year (2023) + Project Alternative A1 Phase 1 Weekday scenario. As seen in *Table 10–8*, with the addition of Project Alternative A1 Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS E or F:

- SB I-5 off-ramp diverge to SR 166 (LOS E during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

- NB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 10–9 summarizes the operations of the Ramp Diverge sections under Opening Year (2023) + Project Alternative A1 Phase 1 Saturday scenario. As seen in *Table 10–9*, with the addition of Project Alternative A1 Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS F:

- SB SR 99 off Ramp diverge to Valpredo Avenue (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- SB I-5 off Ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off Ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Appendix E contains the Opening Year (2023) + Project Alternative A1 Phase 1 Weekday and Saturday Ramp Merge and Diverge analysis worksheets.

TABLE 10–1
NEAR-TERM WITH PROJECT PHASE 1 INTERSECTION OPERATIONS - ALTERNATIVE A1

Intersection	Control Type	Peak Hour	Existing		Existing + Project Phase 1		Δ Delay	Sig?	Opening Year (2023)		Opening Year (2023) + Project Phase 1		Δ [c] Delay	Sig?
			Delay [a]	LOS [b]	Delay	LOS			Delay	LOS	Delay	LOS		
1. Mettler Frontage Rd W. / Valpredo Ave / SR 99 SB Ramps	TWSC [d]	WkDay AM	10.1	B	10.5	B	0.4	No	10.2	B	10.7	B	0.5	No
		WkDay PM	10.2	B	10.7	B	0.5	No	10.4	B	10.9	B	0.5	No
		Saturday Pk	10.3	B	11.1	B	0.8	No	10.5	B	11.3	B	0.8	No
2. Maricopa Hwy / Wheeler Ridge Rd	TWSC	WkDay AM	10.4	B	10.6	B	0.2	No	16.0	C	16.5	C	0.5	No
		WkDay PM	10.3	B	10.5	B	0.2	No	11.0	B	11.2	B	0.2	No
		Saturday Pk	10.2	B	10.4	B	0.2	No	10.4	B	10.6	B	0.2	No
3. Maricopa Hwy / I-5 SB Ramps	TWSC	WkDay AM	11.9	B	15.0	B	3.1	No	17.6	C	28.4	D	10.8	No
		WkDay PM	10.6	B	14.2	B	3.6	No	11.6	B	16.5	C	4.9	No
		Saturday Pk	10.8	B	16.5	C	5.7	No	11.0	B	17.3	C	6.3	No
4. Maricopa Hwy / I-5 NB Ramps	TWSC	WkDay AM	11.8	B	13.4	B	1.6	No	25.3	D	34.2	D	8.9	No
		WkDay PM	10.8	B	12.8	B	2.0	No	12.2	B	15.0	B	2.8	No
		Saturday Pk	10.8	B	13.4	B	2.6	No	11.1	B	13.8	B	2.7	No
5. Maricopa Hwy / S. Sabodan St	TWSC	WkDay AM	10.9	B	32.7	D	21.8	No	12.6	B	**61.2**	**F**	**48.6**	**Yes**
		WkDay PM	10.4	B	**>100.0**	**F**	**>10.0**	**Yes**	10.9	B	**>100.0**	**F**	**>10.0**	**Yes**
		Saturday Pk	10.3	B	**>100.0**	**F**	**>10.0**	**Yes**	10.5	B	**>100.0**	**F**	**>10.0**	**Yes**
6. SR 99 SB Off Ramp / Stevens Dr	TWSC	WkDay AM	11.0	B	11.6	B	0.6	No	12.6	B	13.5	B	0.9	No
		WkDay PM	9.8	A	10.3	B	0.5	No	10.1	B	10.6	B	0.5	No
		Saturday Pk	10.4	B	11.2	B	0.8	No	10.6	B	11.6	B	1.0	No

CONTINUED ON THE NEXT PAGE

TABLE 10–1 (CONTINUED)
NEAR-TERM WITH PROJECT PHASE 1 INTERSECTION OPERATIONS - ALTERNATIVE A1

Intersection	Control Type	Peak Hour	Existing		Existing + Project Phase 1		Δ Delay	Sig?	Opening Year (2023)		Opening Year (2023) + Project Phase 1		Δ Delay	Sig?
			Delay [a]	LOS [b]	Delay	LOS			Delay		Delay			
7. Maricopa Hwy / Stevens Dr	TWSC	WkDay AM	9.7	A	11.1	B	1.4	No	10.4	LOS B	12.1	LOS C	1.7	No
		WkDay PM	13.1	B	17.9	C	4.8	No	14.2	B	20.1	C	5.9	No
		Saturday Pk	19.1	C	**41.8**	**E**	**22.7**	**Yes**	22.0	B	**54.8**	**F**	**32.8**	**Yes**
8. Maricopa Hwy / SR 99 NB Ramps	TWSC	WkDay AM	7.4	A	8.4	A	1.0	No	7.6	C	8.6	A	1.0	No
		WkDay PM	8.1	A	9.7	A	1.6	No	8.4	A	10.2	B	1.8	No
		Saturday Pk	8.3	A	11.4	B	3.1	No	8.6	A	12.1	B	3.5	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

General Notes:

WkDay AM – Weekday AM Peak Hour
WkDay AM – Weekday PM Peak Hour
Saturday Pk – Saturday Peak Hour

TABLE 10–2
NEAR-TERM WITH PROJECT PHASE 1 WEEKDAY STREET SEGMENT OPERATIONS - ALTERNATIVE A1

Street Segment	Existing Capacity (LOS E)[a]	Existing			Existing + Project Phase 1			Δ V/C	Sig?	Opening Year (2023)			Opening Year (2023) + Project Phase 1			Δ V/C	Sig?
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C			ADT	LOS	V/C	ADT	LOS	V/C		
I-5																	
Copus Rd to SR 166 (Maricopa Hwy)	63,700	33,600	B	0.527	35,780	B	0.562	0.035	No	37,690	C	0.592	39,870	C	0.626	0.034	No
SR 166 (Maricopa Hwy) to SR 99	63,700	33,600	B	0.527	34,470	B	0.541	0.014	No	37,690	C	0.592	38,560	C	0.605	0.014	No
SR 99 to S. Wheeler Ridge Rd	127,400	76,340	C	0.599	80,260	C	0.630	0.031	No	84,700	C	0.665	88,620	C	0.696	0.031	No
SR 99																	
Valpredo Ave to SR 166 (Maricopa Hwy)	63,700	42,920	B	0.674	44,230	C	0.694	0.020	No	47,940	C	0.753	49,250	C	0.773	0.021	No
SR 166 (Maricopa Hwy) to I-5	63,700	42,420	B	0.666	45,470	C	0.714	0.048	No	46,660	C	0.732	49,710	C	0.780	0.048	No
Mettler Frontage Rd W																	
Copus Rd to Valpredo Ave	25,600	860	A	0.034	860	A	0.034	0.000	No	950	A	0.037	950	A	0.037	0.000	No
Valpredo Ave to Maricopa Hwy	25,600	410	A	0.016	410	A	0.016	0.000	No	450	A	0.018	450	A	0.018	0.000	No
Valpredo Ave																	
I-5 Ramps to SR-99 Ramps	25,600	340	A	0.013	1,290	A	0.050	0.037	No	370	A	0.014	1,320	A	0.052	0.037	No
Maricopa Highway																	
East of Wheeler Ridge Access Rd	25,600	3,620	A	0.141	4,100	A	0.160	0.019	No	6,180	B	0.241	6,660	B	0.260	0.019	No
Wheeler Ridge Access Rd to I-5 SB Ramps	25,600	3,860	A	0.151	4,340	A	0.170	0.019	No	6,450	B	0.252	6,930	B	0.271	0.019	No
I-5 NB Ramps to S Sabodan St	25,600	3,330	A	0.130	7,150	B	0.279	0.149	No	4,390	A	0.171	8,210	C	0.321	0.149	No
S Sabodan St to SR-99 Ramps	25,600	4,380	A	0.171	9,630	C	0.376	0.205	No	5,550	B	0.217	10,800	C	0.422	0.205	No

Footnotes:

a. Capacities based on Kern County Roadway Classification & LOS table (See *Table 4-3*).
b. Average Daily Traffic
c. Level of Service
d. Volume to Capacity
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

BOLD typeface indicates a potentially significant impact.
Sig? – Significant Impact?

TABLE 10–3
NEAR-TERM WITH PROJECT PHASE 1 SATURDAY STREET SEGMENT OPERATIONS - ALTERNATIVE A1

Street Segment	Existing Capacity (LOS E)[a]	Existing			Existing + Project Phase 1			Δ V/C	Sig?	Opening Year (2023)			Opening Year (2023) + Project Phase 1			Δ V/C	Sig?
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C			ADT	LOS	V/C	ADT	LOS	V/C		
I-5																	
Copus Rd to SR 166 (Maricopa Hwy)	63,700	39,560	C	0.621	42,960	C	0.674	0.053	No	43,520	C	0.683	46,920	C	0.737	0.053	No
SR 166 (Maricopa Hwy) to SR 99	63,700	39,560	C	0.621	40,920	C	0.642	0.021	No	43,520	C	0.683	44,880	C	0.705	0.021	No
SR 99 to S. Wheeler Ridge Rd	127,400	97,140	C	0.762	103,260	D	0.811	0.049	No	106,850	D	0.839	112,970	D	0.887	0.048	No
SR 99																	
Valpredo Ave to SR 166 (Maricopa Hwy)	63,700	56,110	C	0.881	58,150	C	0.913	0.032	No	61,720	C	0.969	63,760	C	1.001	0.032	No
SR 166 (Maricopa Hwy) to I-5	63,700	56,020	C	0.879	60,780	C	0.954	0.075	No	61,620	C	0.967	66,380	D	1.042	0.075	No
Mettler Frontage Rd W																	
Copus Rd to Valpredo Ave	25,600	1,160	A	0.045	1,160	A	0.045	0.000	No	1,280	A	0.050	1,280	A	0.050	0.000	No
Valpredo Ave to Maricopa Hwy	25,600	1,360	A	0.053	1,360	A	0.053	0.000	No	1,500	A	0.059	1,500	A	0.059	0.000	No
Valpredo Ave																	
I-5 Ramps to SR-99 Ramps	25,600	220	A	0.009	1,720	A	0.067	0.058	No	240	A	0.009	1,740	A	0.068	0.059	No
Maricopa Highway																	
East of Wheeler Ridge Access Rd	25,600	2,930	A	0.114	3,680	A	0.144	0.030	No	3,220	A	0.126	3,970	A	0.155	0.029	No
Wheeler Ridge Access Rd to I-5 SB Ramps	25,600	3,060	A	0.120	3,810	A	0.149	0.029	No	3,370	A	0.132	4,120	A	0.161	0.029	No
I-5 NB Ramps to S Sabodan St	25,600	3,040	A	0.119	9,030	C	0.353	0.234	No	3,340	A	0.130	9,330	C	0.364	0.234	No
S Sabodan St to SR-99 Ramps	25,600	3,820	A	0.149	12,050	C	0.471	0.322	No	4,200	A	0.164	12,430	C	0.486	0.321	No

Footnotes:

a. Capacities based on Kern County Roadway Classification & LOS table (See *Table 4-3*).
b. Average Daily Traffic
c. Level of Service
d. Volume to Capacity
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

BOLD typeface indicates a potentially significant impact.
Sig? – Significant Impact?

TABLE 10–4
EXISTING + PROJECT PHASE I WEEKDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A1

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,703	270	2,973	62.3	19.7	B
	PM	3,390	332	3,722	61.1	24.5	C
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,541	92	2,633	62.7	17.3	B
	PM	2,738	325	3,063	62.1	20.6	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	1,869	60	1,929	62.2	20.2	C
	PM	2,852	111	2,963	58.0	30.8	D
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,714	72	2,786	58.8	29.6	D
	PM	3,384	126	3,510	**51.0**	**37.1**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	3,279	106	3,173	57.9	24.8	C
	PM	3,780	70	3,710	58.0	28.0	C
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,053	350	2,703	57.2	22.2	C
	PM	3,524	134	3,390	57.8	26.2	C
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	2,680	139	2,541	57.8	20.5	C
	PM	2,944	206	2,738	57.6	22.0	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	1,969	100	1,869	57.9	22.3	C
	PM	2,987	135	2,852	57.8	33.6	D
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,785	71	2,714	58.0	31.4	D
	PM	3,460	76	3,384	**58.0**	**39.0**	**E**

Footnotes:
a. Passenger cars / mile / lane

TABLE 10–5
EXISTING + PROJECT PHASE I SATURDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A1

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,467	423	4,890	57.0	32.0	D
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	3,668	372	4,040	60.2	26.8	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,350	139	3,489	**52.5**	**36.1**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,989	191	4,180	**32.8**	**44.0**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	PM	4,815	57	4,758	58.1	33.8	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	4,581	114	4,467	57.9	32.4	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	3,857	189	3,668	57.7	27.7	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	3,489	139	3,350	**57.8**	**39.4**	**E**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	4,064	75	3,989	**58.0**	**45.8**	**F**

Footnotes:
a. Passenger cars / mile / lane

TABLE 10–6
OPENING DAY (2023) WEEKDAY RAMP MERGE /DIVERGE OPERATIONS

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,970	220	3,190	62.1	20.9	C
	PM	3,730	220	3,950	60.7	25.6	C
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,800	127	2,927	62.4	19.3	B
	PM	3,010	278	3,288	61.9	21.9	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,060	127	2,187	61.7	22.8	C
	PM	3,140	98	3,238	55.6	33.6	D
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,990	107	3,097	56.4	32.8	D
	PM	3,720	58	3,778	**45.3**	**40.1**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	3,570	80	3,490	58.0	26.7	C
	PM	4,110	30	4,080	58.1	30.1	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,387	407	2,980	57.0	24.2	C
	PM	3,818	88	3,730	58.0	28.2	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	2,907	107	2,800	57.9	22.2	C
	PM	3,088	68	3,020	58.0	23.5	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,157	97	2,060	57.9	24.5	C
	PM	3,178	48	3,130	**58.1**	**36.9**	**E**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	3,107	117	2,990	57.9	34.5	D
	PM	3,778	48	3,730	**58.1**	**42.9**	**F**

Footnotes:
a. Passenger cars / mile / lane

TABLE 10–7
OPENING DAY (2023) SATURDAY RAMP MERGE /DIVERGE OPERATIONS

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,910	220	5,130	56.2	33.0	D
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,030	240	4,270	59.7	28.0	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,690	80	3,770	**47.3**	**39.1**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	4,390	40	4,430	**19.3**	**46.9**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	PM	5,250	20	5,230	**58.2**	**38.0**	**F**
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	4,970	60	4,910	58.0	34.5	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	4,080	50	4,030	58.1	29.6	D
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	3,720	40	3,680	**58.1**	**43.2**	**F**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	4,420	40	4,380	**58.1**	**50.2**	**F**

Footnotes:
a. Passenger cars / mile / lane

TABLE 10–8
OPENING DAY (2023) + PROJECT PHASE 1 WEEKDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A1

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,970	286	3,256	62.0	21.5	C
	PM	3,730	348	4,078	60.3	26.7	C
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,800	175	2,975	62.3	19.7	B
	PM	3,010	370	3,380	61.7	22.7	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,060	146	2,206	61.6	22.9	C
	PM	3,140	135	3,275	55.2	33.9	D
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,990	155	3,145	56.0	33.2	D
	PM	3,720	150	3,870	**43.2**	**40.8**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	3,601	111	3,490	57.9	26.8	C
	PM	4,155	75	4,080	58.0	30.2	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,434	454	2,980	56.8	24.2	C
	PM	3,885	155	3,730	57.7	28.3	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,016	216	2,800	57.6	22.4	C
	PM	3,245	225	3,020	57.5	23.8	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,235	175	2,060	57.7	24.5	C
	PM	3,290	160	3,130	**57.7**	**36.9**	**E**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	3,138	148	2,990	57.8	34.5	D
	PM	3,823	93	3,730	**58.0**	**42.9**	**F**

Footnotes:
a. Passenger cars / mile / lane

TABLE 10–9
OPENING DAY (2023) + PROJECT PHASE 1 SATURDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A1

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,910	439	5,349	**54.0**	**34.9**	**F**
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,030	396	4,426	58.9	29.3	D
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,690	143	3,833	**46.1**	**39.6**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	4,390	196	4,586	**10.5**	**48.3**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	PM	5,292	62	5,230	**58.0**	**38.0**	**F**
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	5,032	122	4,910	57.9	34.6	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	4,226	196	4,030	57.6	29.8	D
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	3,824	144	3,680	**57.8**	**43.2**	**F**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	4,462	82	4,380	**58.0**	**50.2**	**F**

Footnotes:
a. Passenger cars / mile / lane

11.0 ANALYSIS OF LONG-TERM (YEAR 2040) SCENARIOS – ALTERNATIVE A1

11.1 Year 2040 Traffic Volumes

Long-Term traffic volumes for the Study area intersections and segments are not available. Hence, a growth factor was applied to the Near-Term volumes to forecast future volumes. Growth factors are determined using historical traffic volumes. Based on the historical growth of traffic on the surrounding roadways, SR 99 and I-5, a 1% per annum growth factor was applied to the Opening Year (2023) volumes to obtain the Year 2040 without Project traffic volumes, based on LLG's vast experience in conducting traffic studies. The Project Traffic volumes were then added to obtain the Year 2040 + Project traffic volumes.

Figure 11-1 depicts the Year 2040 without Project traffic volumes, while ***Figure 11-2*** depicts the Year 2040 with Alternative A1 Entire Project traffic volumes.

11.2 Year 2040 without Project Analysis

11.2.1 *Intersection Analysis*

Table 11-1 summarizes the Long-Term (Year 2040) without Project peak hour intersection operations during the weekday peak hours. As seen in *Table 11-1*, in the Year 2040 without Project traffic, the minor street left-turn movements at all unsignalized intersections are calculated to continue to operate at LOS C or better except the following:

- Maricopa Highway / I-5 NB Ramps (LOS E during the AM peak hour)

Appendix F contains the Year 2040 without Project intersection analysis worksheets.

11.2.2 *Daily Street Segment Levels of Service*

Table 11-2 summarizes the Year 2040 without Project segment operations. As seen in *Table 11-2*, in the Year 2040 without Project traffic, all study area segments are calculated to operate at LOS C or better.

11.2.3 *Ramp Merge Analysis*

Table 11–3 summarizes the operations of the Ramp Merge sections under Year 2040 without Project scenario. As seen in *Table 11–3*, two of the four merge sections analyzed are calculated to operate at LOS D or better. The following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB I-5 (LOS F during the AM peak hour)
- SR 166 on-ramp merge to NB I-5 (LOS F during the AM and PM peak hours)

11.2.4 *Ramp Diverge Analysis*

Table 11–4 summarizes the operations of the Ramp Diverge sections under Year 2040 without Project scenario. As seen in *Table 11–3*, three of the five diverge sections analyzed are calculated to operate at LOS D or better. The following ramp diverge sections are calculated to operate at LOS F:

- SB I-5 off-ramp diverge to SR 166 (LOS F during the AM peak hour)
- NB I-5 off-ramp diverge to SR 166 (LOS F during the AM and PM peak hours)

Appendix F contains the Year 2040 without Project Ramp Merge and Diverge analysis worksheets.

11.3 Year 2040 with Entire Project Analysis

11.3.1 *Intersection Analysis*

Table 11-1 summarizes the Year 2040 + Project Alternative A1 peak hour intersection operations during the weekday peak hours. As seen in *Table 11-1*, with the addition of Alternative A1 Project traffic, with the addition of Entire Alternative A1 traffic, the minor street left-turn movements the following intersections are calculated to operate at LOS E or worse:

- Maricopa Highway / S. Sabodan Street (LOS F during the weekday AM and PM peak hours)
- Maricopa Highway / I-5 SB Ramps (LOS F during the AM peak hour)
- Maricopa Highway / I-5 NB Ramps (LOS F during the AM peak hour)

The Project has a cumulative impact at these intersections in Alternative A1.

Appendix G contains the Year 2040 + Entire Alternative A1 Project intersection analysis worksheets.

11.3.2 *Daily Street Segment Levels of Service*

Table 11-2 summarizes the Year 2040 + Project Alternative A1 segment operations. As seen in *Table 11-2*, with the addition of Project Alternative A1 Project traffic, all study area segments are calculated to operate at LOS D or better.

11.3.3 *Ramp Merge Analysis*

Table 11–4 summarizes the operations of the Ramp Merge sections under Year 2040 + Project Alternative A1 scenario. As seen in *Table 11–4*, with the addition of the Entire Project Alternative A1 traffic, the following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB I-5 (LOS F during the AM peak hour) - There is no change in LOS with the addition of Project traffic.
- SR 166 on-ramp merge to NB I-5 (LOS F during the AM and PM peak hours) - There is no change in LOS with the addition of Project traffic.

11.3.4 *Ramp Diverge Analysis*

Table 11–4 summarizes the operations of the Ramp Diverge sections under Year 2040 + Project Alternative A1 scenario. As seen in *Table 11–4*, with the addition of the Entire Project Alternative A1 traffic, the following ramp diverge sections are calculated to operate at LOS F:

- SB I-5 off-ramp diverge to SR 166 (LOS F during the AM peak hour) - There is no change in LOS with the addition of Project traffic.

- NB I-5 off-ramp diverge to SR 166 (LOS F during the AM and PM peak hours) - There is no change in LOS with the addition of Project traffic.

Appendix G contains the Year 2040 + Entire Alternative A1 Project Ramp Merge and Diverge analysis worksheets.

TABLE 11–1
YEAR 2040 WEEKDAY INTERSECTION OPERATIONS – ALTERNATIVE A1

Intersection	Control Type	Peak Hour	Year 2040 Without Project		Year 2040 With Entire Project		Δ [c] Delay	Sig?
			Delay [a]	LOS [b]	Delay	LOS		
1. Mettler Frontage Rd W. / Valpredo Ave / SR 99 SB Ramps	TWSC [d]	AM	10.5	B	11.2	B	0.7	No
		PM	10.8	B	11.6	B	0.8	No
2. Maricopa Hwy / Wheeler Ridge Rd	TWSC	AM	17.6	C	18.4	C	0.8	No
		PM	11.6	B	12.0	B	0.4	No
3. Maricopa Hwy / I-5 SB Ramps	TWSC	AM	20.8	C	**73.1**	**F**	**52.3**	**Yes**
		PM	12.3	B	24.6	C	12.3	No
4. Maricopa Hwy / I-5 NB Ramps	TWSC	AM	**42.6**	**E**	**90.4**	**F**	**47.8**	**Yes**
		PM	13.3	B	18.5	C	5.2	No
5. Maricopa Hwy / S. Sabodan St	TWSC	AM	13.8	B	**>100.0**	**F**	**>10.0**	**Yes**
		PM	11.4	B	**>100.0**	**F**	**>10.0**	**Yes**
6. SR 99 SB Off Ramp / Stevens Dr	TWSC	AM	14.3	B	16.5	C	2.2	No
		PM	10.4	B	11.3	B	0.9	No
7. Maricopa Hwy / Stevens Dr	TWSC	AM	10.9	B	14.0	B	3.1	No
		PM	16.1	C	29.1	D	13.0	Yes
8. Maricopa Hwy / SR 99 NB Ramps	TWSC	AM	7.8	A	9.5	A	1.7	No
		PM	8.8	A	12.2	B	3.4	No

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

Sig? – Significant Impact?

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

TABLE 11–2
YEAR 2040 WEEKDAY STREET SEGMENT OPERATIONS - ALTERNATIVE A1

Street Segment	Existing Capacity (LOS E)[a]	Year 2040 Without Project			Year 2040 With Entire Project			Sig?
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C	
I-5								
Copus Rd to SR 166 (Maricopa Hwy)	63,700	44,100	C	0.692	47,120	C	0.740	No
SR 166 (Maricopa Hwy) to SR 99	63,700	44,100	C	0.692	45,310	C	0.711	No
SR 99 to S. Wheeler Ridge Rd	127,400	99,100	C	0.778	104,530	D	0.820	No
SR 99								
Valpredo Ave to SR 166 (Maricopa Hwy)	63,700	56,090	C	0.881	57,900	C	0.909	No
SR 166 (Maricopa Hwy) to I-5	63,700	54,590	C	0.857	58,810	C	0.923	No
Mettler Frontage Rd W								
Copus Rd to Valpredo Ave	25,600	1,110	A	0.043	1,110	A	0.043	No
Valpredo Ave to Maricopa Hwy	25,600	530	A	0.021	530	A	0.021	No
Valpredo Ave								
I-5 Ramps to SR-99 Ramps	25,600	430	A	0.017	1,720	A	0.067	No
Maricopa Highway								
East of Wheeler Ridge Access Rd	25,600	7,230	B	0.282	7,870	C	0.307	No
Wheeler Ridge Access Rd to I-5 SB Ramps	25,600	7,550	B	0.295	8,190	C	0.320	No
I-5 NB Ramps to S Sabodan St	25,600	5,140	B	0.201	10,290	C	0.402	No
S Sabodan St to SR-99 Ramps	25,600	6,490	B	0.254	13,580	C	0.530	No

Footnotes:

a. Capacities based on Kern County Roadway Classification & LOS table (See *Table 4-3*).
b. Average Daily Traffic
c. Level of Service
d. Volume to Capacity ratio
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

BOLD typeface indicates a potentially significant impact.
Sig? – Significant Impact?

TABLE 11–3
YEAR 2040 WEEKDAY RAMP MERGE /DIVERGE OPERATIONS

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	3,470	260	3,730	61.2	24.4	C
	PM	4,360	260	4,620	58.6	29.9	D
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	3,280	150	3,430	61.7	22.5	C
	PM	3,520	330	3,850	60.8	25.5	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,410	150	2,560	60.4	26.6	C
	PM	3,670	110	3,780	**47.2**	**39.2**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	3,500	130	3,630	**48.8**	**38.4**	**F**
	PM	4,350	70	4,420	**20.2**	**46.8**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	4,180	90	4,090	58.0	30.2	D
	PM	4,810	40	4,770	58.1	33.8	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,960	480	3,480	56.7	27.4	C
	PM	4,470	100	4,370	57.9	31.8	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,400	130	3,270	57.8	25.2	C
	PM	3,610	80	3,530	58.0	26.7	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,520	110	2,410	57.9	28.5	D
	PM	3,720	60	3,660	**58.0**	**43.0**	**F**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	3,640	140	3,500	**57.8**	**40.3**	**F**
	PM	4,420	60	4,360	**58.0**	**50.0**	**F**

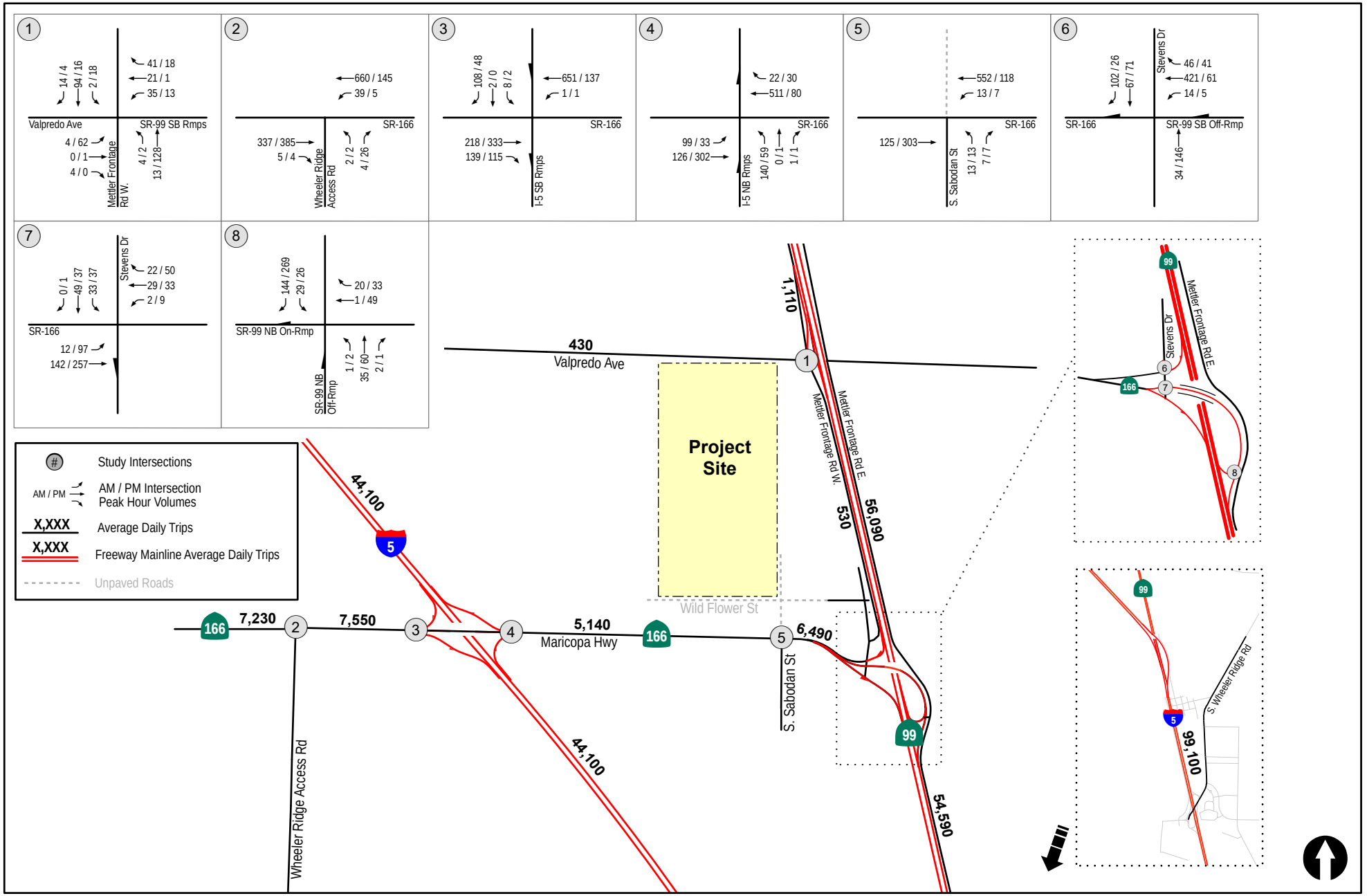
Footnotes:

a. Passenger cars / mile / lane

TABLE 11–4
YEAR 2040 + ENTIRE PROJECT WEEKDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A1

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	3,470	360	3,830	60.9	25.2	C
	PM	4,360	456	4,816	57.3	31.6	D
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	3,280	221	3,501	61.6	23.1	C
	PM	3,520	470	3,990	60.2	26.8	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,410	179	2,589	60.3	26.8	C
	PM	3,670	166	3,836	**46.1**	**39.6**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	3,500	201	3,701	**47.5**	**39.0**	**F**
	PM	4,350	210	4,560	**12.4**	**48.0**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	4,226	136	4,090	57.8	30.3	D
	PM	4,869	99	4,770	57.9	33.9	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	4,029	549	3,480	56.5	27.5	C
	PM	4,559	189	4,370	57.7	31.9	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,562	292	3,270	57.3	25.5	C
	PM	3,818	288	3,530	57.3	27.0	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,636	226	2,410	57.5	28.5	D
	PM	3,869	209	3,660	**57.6**	**43.0**	**F**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	3,686	186	3,500	**57.7**	**40.3**	**F**
	PM	4,479	119	4,360	**57.9**	**50.0**	**F**

Footnotes:
a. Passenger cars / mile / lane



LINSCOTT LAW & GREENSPAN engineers

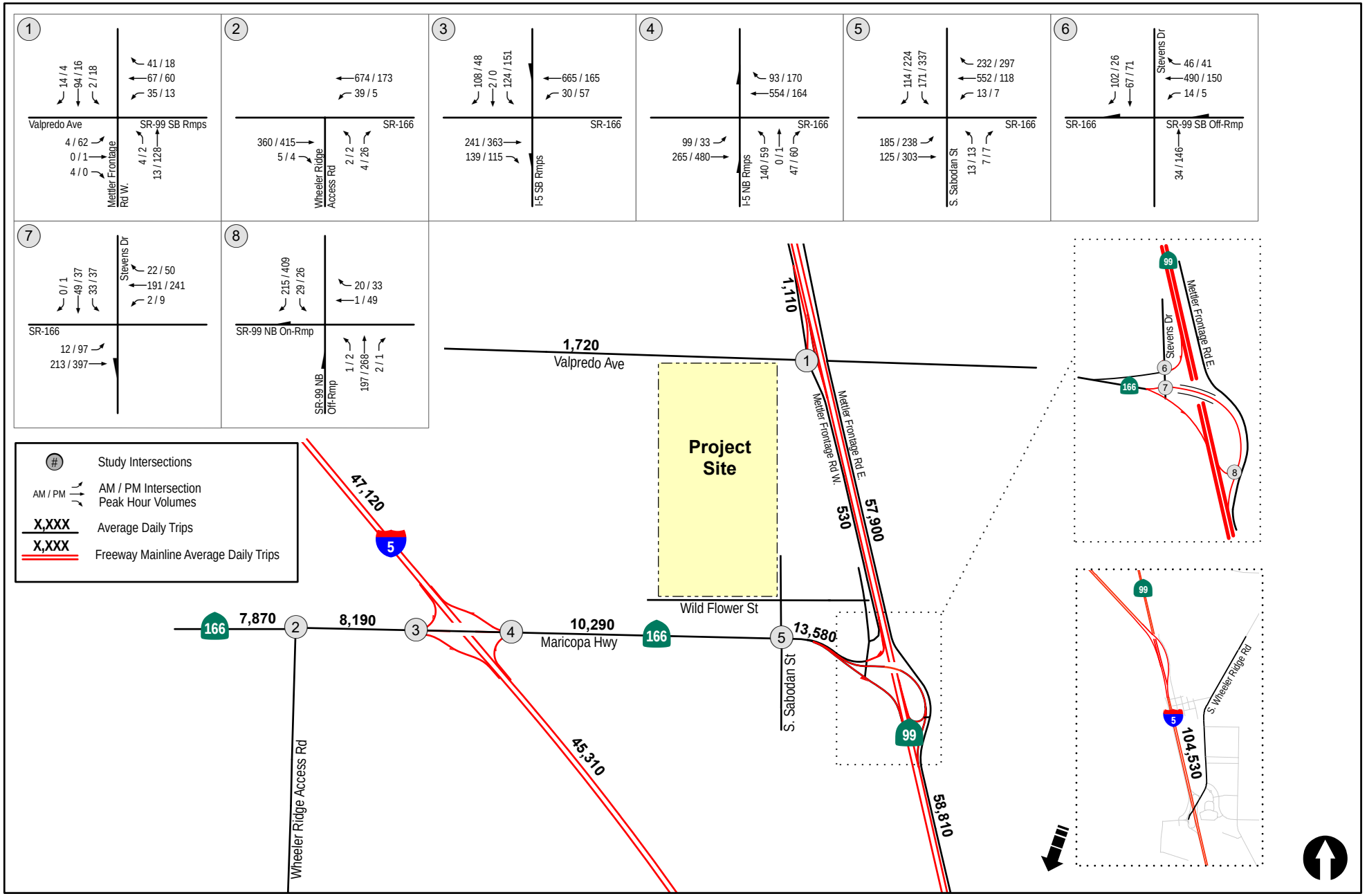
N:\3004\Figures
Date: 05/17/19

Figure 11-1

Year 2040 Without Project Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/20/19

Figure 11-2

Year 2040 + Alternative 1 Project Traffic Volumes

Weekday

TEJON CASINO

ALTERNATIVE A2

12.0 ALTERNATIVE A2 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

As explained in Section 10.0, Alternative A1 Trip Generation/Distribution/Assignment, using the trip generation rates described in Section 8.0, Trip Generation Methodology, Weekday and Saturday trip generation was estimated for Alternative A2 as described below.

12.1.1 *Weekday*

Alternative A2 is planned to be developed in two Phases. ***Table 12-1*** summarizes the Alternative A2 Weekday trip generation. As seen in *Table 12-1*, the proposed land uses in Alternative A2 are estimated to generate a total of 8,741 daily trips, with 452 AM peak hour trips (283 inbound / 169 outbound) and 733 PM peak hour trips (400 inbound / 333 outbound) during the weekdays. The casino is calculated to generate 784 daily *diverted link* trips with 40 AM peak hour trips (25 inbound and 15 outbound) and 67 PM peak hour trips (37 inbound and 30 outbound).

The Entire Alternative A2 land uses are estimated to generate a total of 12,268 daily trips, with 702 AM peak hour trips (437 inbound / 265 outbound) and 1,098 PM peak hour trips (556 inbound / 542 outbound) during the weekdays.

12.1.2 *Saturday*

Table 12-2 summarizes the Alternative A2 Saturday trip generation. As seen in *Table 12-2*, the Alternative A2 land uses are estimated to generate a total of 13,802 daily trips, with 938 PM peak hour trips (367 inbound / 571 outbound) during the Saturday. The casino is calculated to generate 1,290 daily *diverted link* trips with 86 PM peak hour trips (33 inbound and 53 outbound).

As seen in *Table G*, the Entire Alternative A2 land uses are estimated to generate a total of 16,308 daily Saturday trips, with 1,286 PM peak hour trips (551 inbound / 735 outbound) during the Saturday.

12.2 Trip Distribution

The Proposed Alternative A2 site is the same as the Alternative A1 site. As in Alternative A1, it is assumed that 50% of the Project traffic is oriented to the north, 25% each on I-5 and SR 99, 35% is oriented to the south on SR 99, 10% is to the south on I-5 and 5% to the west on Maricopa Highway.

Figure 12–1 depicts the Alternative A2 Project Traffic Distribution. ***Figure 12–2*** depicts the Alternative A2 Weekday Project Phase 1 Traffic Volumes, while ***Figure 12–3*** depicts the Alternative A2 Saturday Project Phase 1 Traffic Volumes. ***Figure 12–4*** depicts the Alternative A2 Weekday Entire Project Traffic Volumes, while ***Figure 12–5*** depicts the Alternative A2 Saturday Entire Project Traffic Volumes. ***Figure 12–6*** depicts the Existing + Alternative A2 Weekday Project Phase 1 Traffic Volumes, while ***Figure 12–7*** depicts the Existing + Alternative A2 Saturday Project Phase 1 Traffic Volumes. ***Figure 12–8*** depicts the Opening Year (2023) + Alternative A2 Weekday Project Phase 1 Traffic Volumes, while ***Figure 12–9*** depicts the Opening Year (2023) + Alternative A2 Saturday Project Phase 1 Traffic Volumes.

TABLE 12-1
ALTERNATIVE A2 - WEEKDAY TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		Weekday AM Peak Hour					Weekday PM Peak Hour				
		Rate [a]	Volume	Rate	In:Out Split [a]	Volume			Rate	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Phase 1													
Casino Gaming Area [a]	KSF	53.34[a]	7,841	2.73[a]	63 : 37	253	148	401	4.54[a]	55 : 45	367	301	668
Primary			*7,057*			*228*	*133*	*361*			*330*	*271*	*601*
Diverted link (10%) [b]			*784*			*25*	*15*	*40*			*37*	*30*	*67*
Hotel [c]	300 Rooms	3 /Room	900	5.62%	59 : 41	30	21	51	7.18%	51 : 49	33	32	65
Phase 1 Primary Trips			**7,957**			**258**	**154**	**412**			**363**	**303**	**666**
Phase 1 Total Trips			**8,741**			**283**	**169**	**452**			**400**	**333**	**733**
Phase 2													
Organic Farm [c]	43 Acres	2 /Acre	86	10%	90 : 10	8	1	9	10%	10 : 90	1	8	9
Single Family Homes [d]	92 DU	10.47[d]		0.76[d]	25 : 75	18	52	70	1.02[d]	63 : 37	59	35	94
Community Park [e]	52 Acres	7.8 /Acre	406	0.20	67 : 33	7	3	10	1.10	40 : 60	23	34	57
Community Center [f]	68 KSF	14.41 /KSF	980	0.88	66 : 34	40	20	60	1.16	47 : 53	37	42	79
Health Center [g]	43 KSF	17.4 /KSF	748	1.39	78 : 22	47	13	60	1.73	28 : 72	21	53	74
Tribal Administration [h]	42.5 KSF	8.095 /KSF	344	0.96	83 : 17	34	7	41	1.23	28 : 72	15	37	52
Subtotal Phase 2			**3,527**			**154**	**96**	**250**			**156**	**209**	**365**
Entire Project Primary Trips			**11,484**			**412**	**250**	**662**			**519**	**512**	**1,031**
Entire Project Total Trips			**12,268**			**437**	**265**	**702**			**556**	**542**	**1,098**

963

Footnotes:

a. Casino Gaming Area: Weekday rates are based on trip generation rates developed using actual traffic counts at the Harrah's Rincon Casino in January 2006 (San Diego, CA), the Black Oak Casino in February 2006 (Tuolumne, CA) and the Chuckchansi Gold Casino August 2005 (Coarsegold, CA), in the Year 2007. Daily rate: y = 2666.1 Ln(x) - 5464; PM Rate: y = 318.37 Ln (x) - 921.31. AM rate: 60% of PM with 63% inbound / 37% outbound. Rates shown are average rates calculated by dividing the volume by the KSF.

b. Diverted link trips are generated by the Casino and hotel only. Diverted link trip reduction is applied only to the freeway traffic volumes.

c. Hotel: The weekday rates are based on the rates in the *Traffic Needs Assessment of Tribal Development Projects in the San Diego Region*- March 2003 Update, San Diego County.

d. Organic Farm: Weekday rates are based on SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, for Agriculture Land Use.

e. Single Family Home: Weekday rates are based on Land Use 210, *Trip Generation Manual*, 10th Edition, ITE. Daily Rate: Ln(T) = 0.92 Ln(X) + 2.71; AM Peak Hour: T = 0.71(X) + 4.80; and PM Peak Hour: Ln (T) = 0.96 Ln (X) + 0.20. Rates shown are average rates calculated by dividing the volume by the dwelling unit.

f. Community Park: 10 times the weekday rates are for Community Park, Land Use 411, *Trip Generation Manual,* 10th Edition, *ITE* are applied.

g. Community Center: Weekday rates are based on Recreational Community Center, Land Use 495, *Trip Generation Manual*, 10th Edition, ITE. However, since this is community center is meant for only tribe members, 50% of the rates is applied.

h. Health Center: Weekday trip rates for Medical-Dental office, Land Use 720, Trip Generation Manual, 10th Edition, ITE are used. However, since this is a health center for only tribe members, 50% of the rates is applied.

i. Tribal Administration: Since this Tribal office is meant for only tribe members, 50% of the weekday trip rates for Small Office building Land Use 712, Trip Generation Manual, 10th Edition, ITE is used.

TABLE 12-2
ALTERNATIVE A2 - SATURDAY TRIP GENERATION

Land Use	Size	Daily Trip Ends (ADTs)		Saturday PM Peak Hour				
		Rate [a]	Volume	Rate	In:Out Split	Volume		
						In	Out	Total
Phase 1								
Casino Gaming Area [a]	147 KSF	87.77[a]	12,902	5.86[a]	38 : 62	328	534	862
Primary			*11,612*			*295*	*481*	*776*
Diverted link (10%) [b]			*1,290*			*33*	*53*	*86*
Hotel [c]	300 Rooms	3 /Room	900	8.41%	51 : 49	39	37	76
Phase 1 Primary Trips			**12,512**			**334**	**518**	***852***
Phase 1 Total Trips			**13,802**			**367**	**571**	**938**
Phase 2								
Organic Farm [c]	43 Acres	2 /Acre	86	5%	10 : 90	0	4	4
Single Family Homes [d]	92 DU	9.86[d]	907	1.04[d]	54 : 46	51	44	95
Community Park [e]	52 Acres	19.6 /Acres	1,019	2.80	55 : 45	80	66	146
Community Center [f]	68 KSF	4.55 /KSF	309	0.54	54 : 46	19	17	36
Health Center [g]	43 KSF	4.285 /KSF	184	1.55	50 : 50	34	33	67
Tribal Administration [h]	42.5 KSF	- -	-	-	- -	-	-	-
Subtotal Phase 2			**2,506**			**184**	**164**	**348**
Entire Project Primary Trips			**15,018**			**518**	**682**	**1,200**
Entire Project Total Trips			**16,308**			**551**	**735**	**1,286**

Footnotes:

a. Casino Gaming Area: Saturday rates are based on trip generation rates developed using actual traffic counts at the Harrah's Rincon Casino in January 2006 (San Diego, CA), the Black Oak Casino in February 2006 (Tuolumne, CA) and the Chuckchansi Gold Casino August 2005 (Coarsegold, CA), in the Year 2007. Daily rate: y = 5159.1 Ln(x) - 12844; PM Rate: y = 448.1 Ln (x) - 1374. AM rate: 60% of PM with 63% inbound / 37% outbound. Rates shown are average rates calculated by dividing the volume by the square footage.

b. Diverted link trips are generated by the Casino and hotel only. Diverted link trip reduction is applied only to the freeway traffic volumes.

c. Hotel: The Saturday rates are based on the rates in the San Diego County Casino study. Peak hour rates are based on Hotel, Land Use 310, Trip Generation Manual, 10th Edition, Institute of Transportation Engineers (ITE). The peak hour split is not available and was assumed.

d. Organic Farm: Rates are based on SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, for Agriculture Land Use.

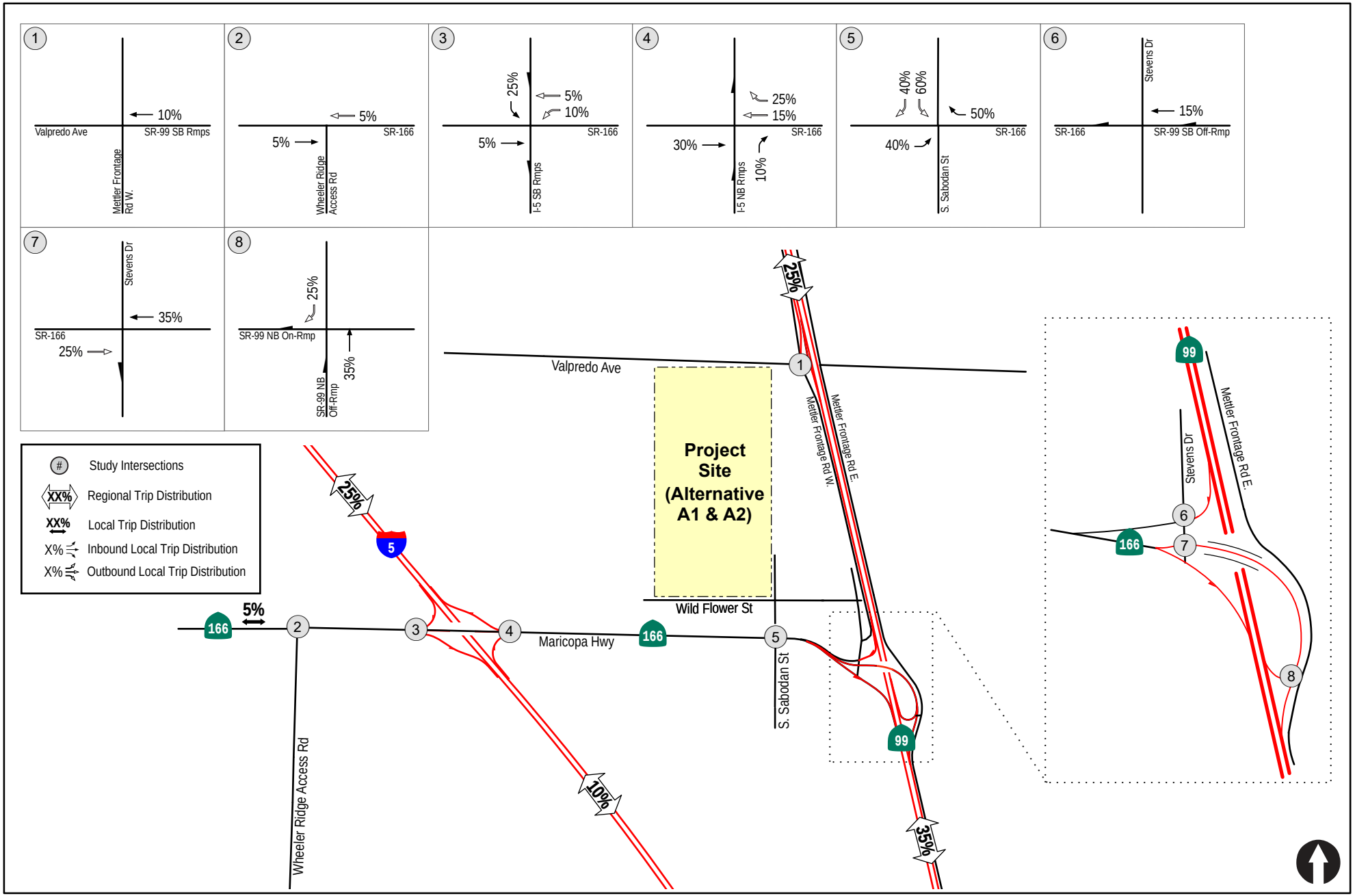
e. Single Family Homes: Saturday rates are based on Land Use 210, *Trip Generation Manual*, 10th Edition, (ITE). Daily Rate: Ln(T) = 0.94 Ln(X) + 2.56; Peak Hour: T = 0.84(X) + 17.99. Rates shown are average rates calculated by dividing the volume by the dwelling unit.

f. Community Park: Saturday rates are based on Public Park, Land Use 411, *Trip Generation Manual*, 10th Edition, (ITE). The ITE trip rates are very low and hence were increased by 10 times.

g. Community Center: Saturday rates are based on Recreational Community Center, Land Use 495, *Trip Generation Manual*, 10th Edition, ITE. However, since this is community center is meant for only tribe members, 50% of the rates is applied.

h. Health Center: Saturday trip rates for Medical-Dental office Land Use 720, Trip Generation Manual, 10th Edition, ITE are used. However, since this is a health center for only tribe members, 50% of the rates is applied.

i. Tribal Administration: This office is assumed to be closed during the Saturday.



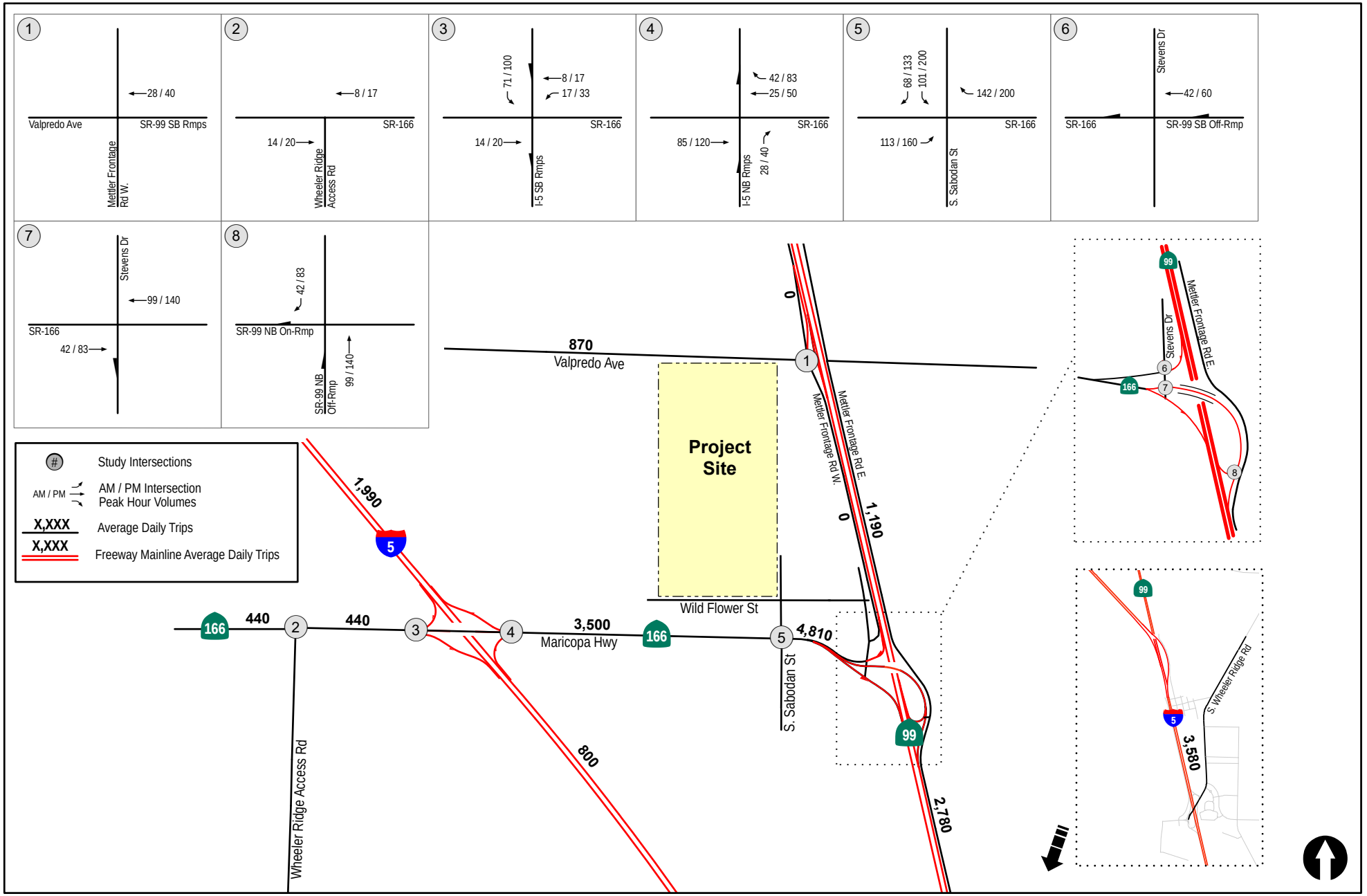
LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 04/25/19

Figure 12-1

Alternative "A2" Project Traffic Distribution

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

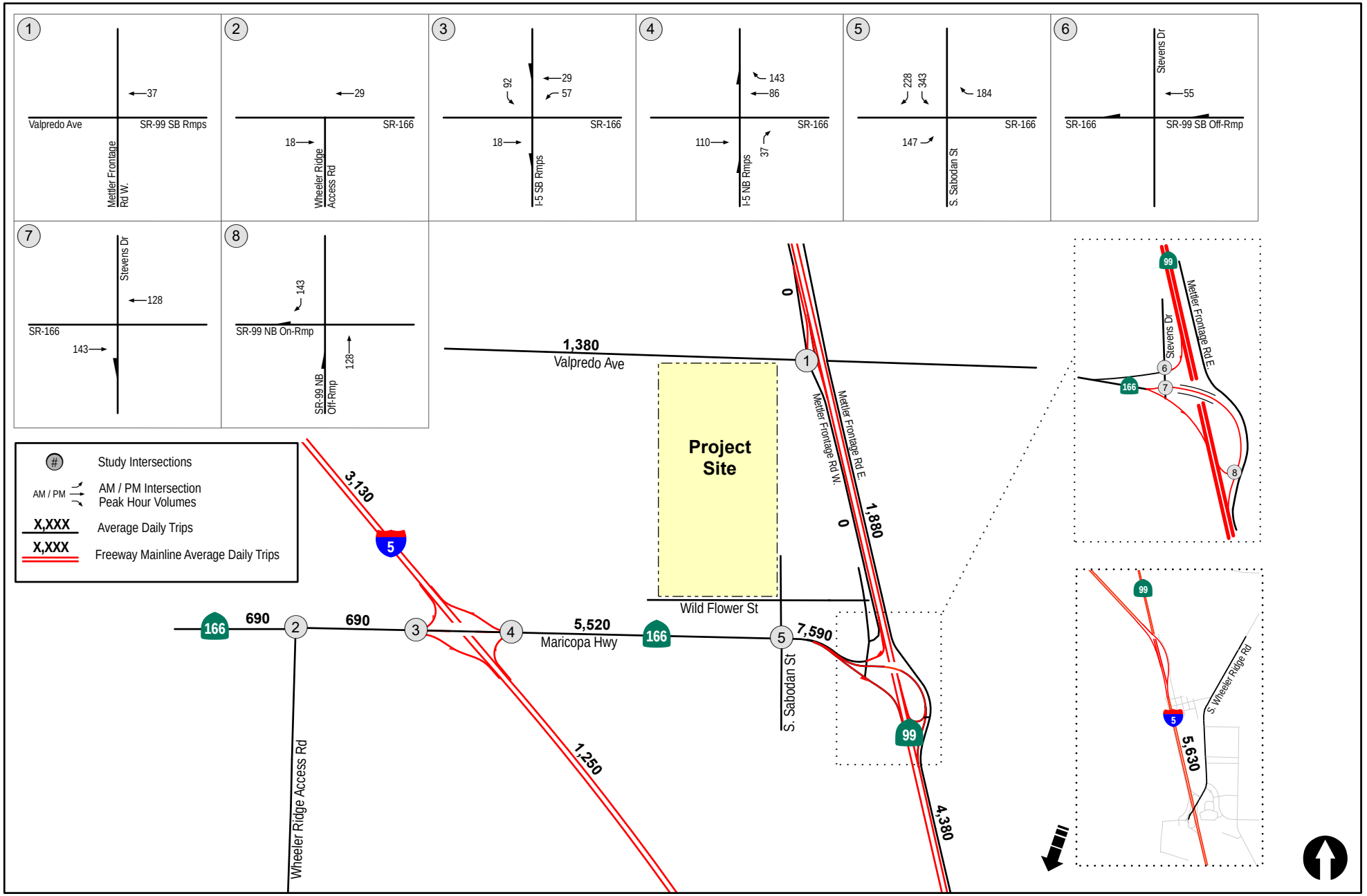
N:\3004\Figures
Date: 05/20/19

Figure 12-2

Alternative A2 Project Phase I Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

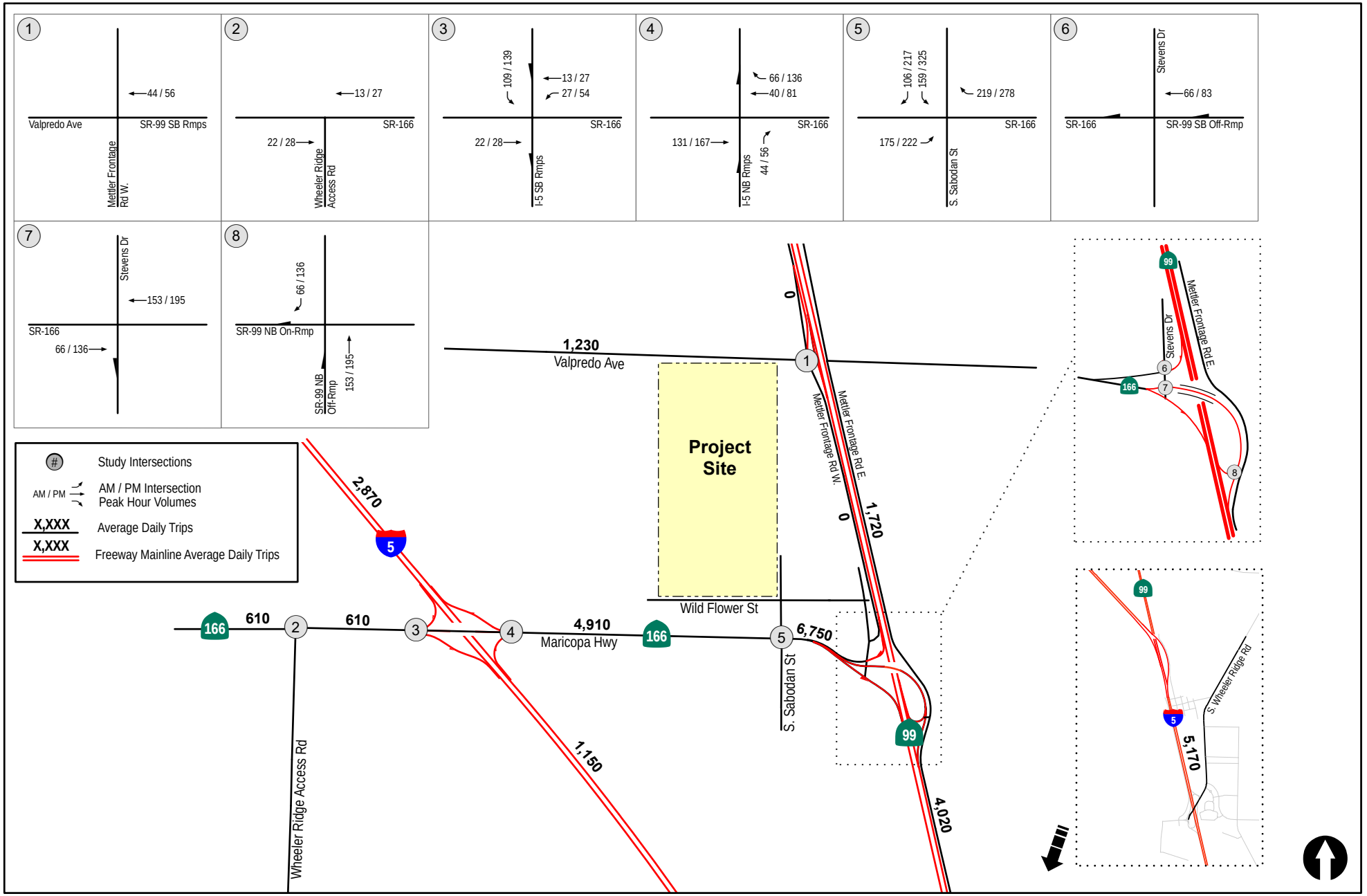
N:\3004\Figures
Date: 05/17/19

Figure 12-3

Alternative A2 Project Phase I Traffic Volumes

Saturday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

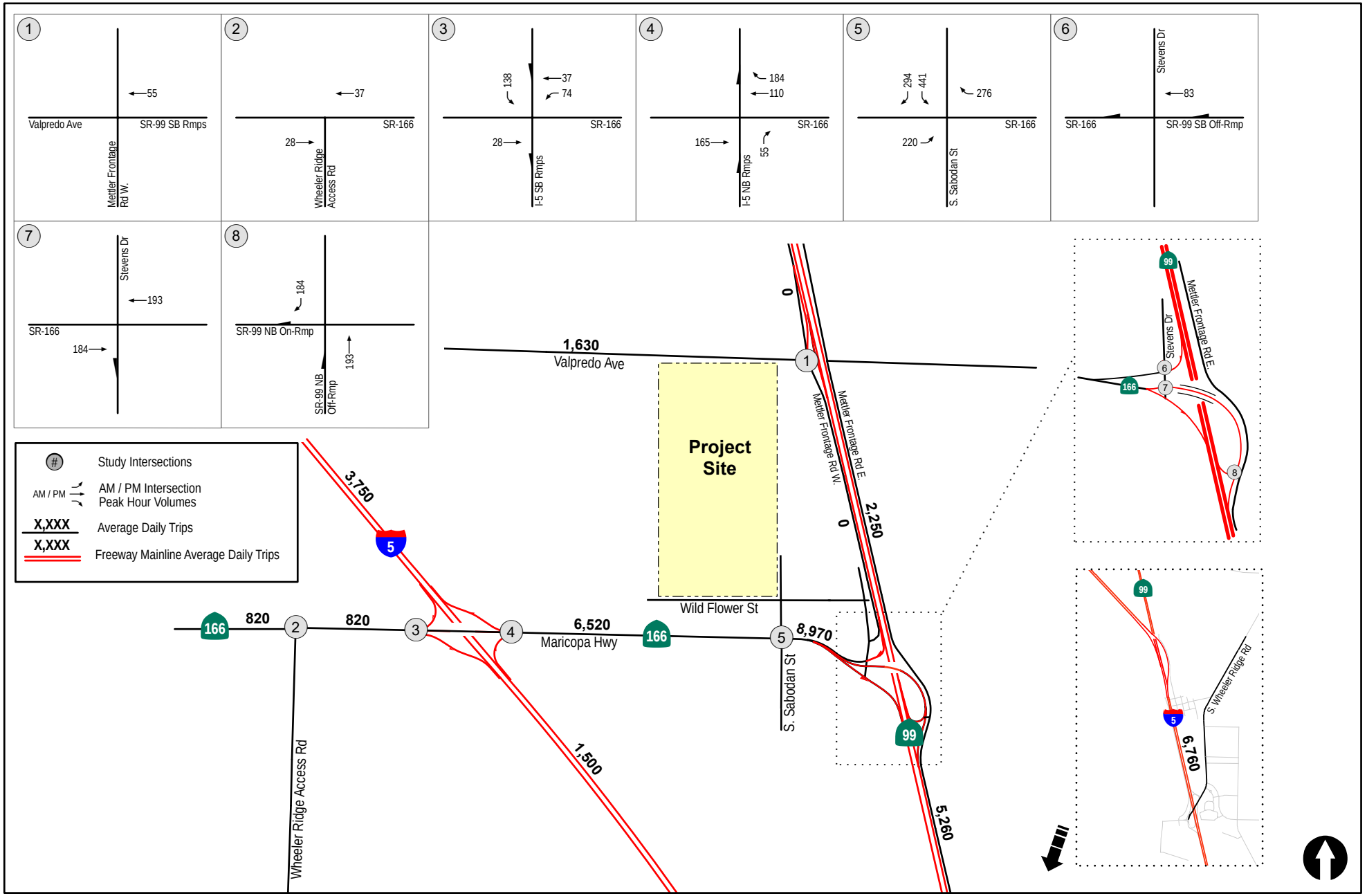
N:\3004\Figures
Date: 05/20/19

Figure 12-4

Alternative A2 Entire Project Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

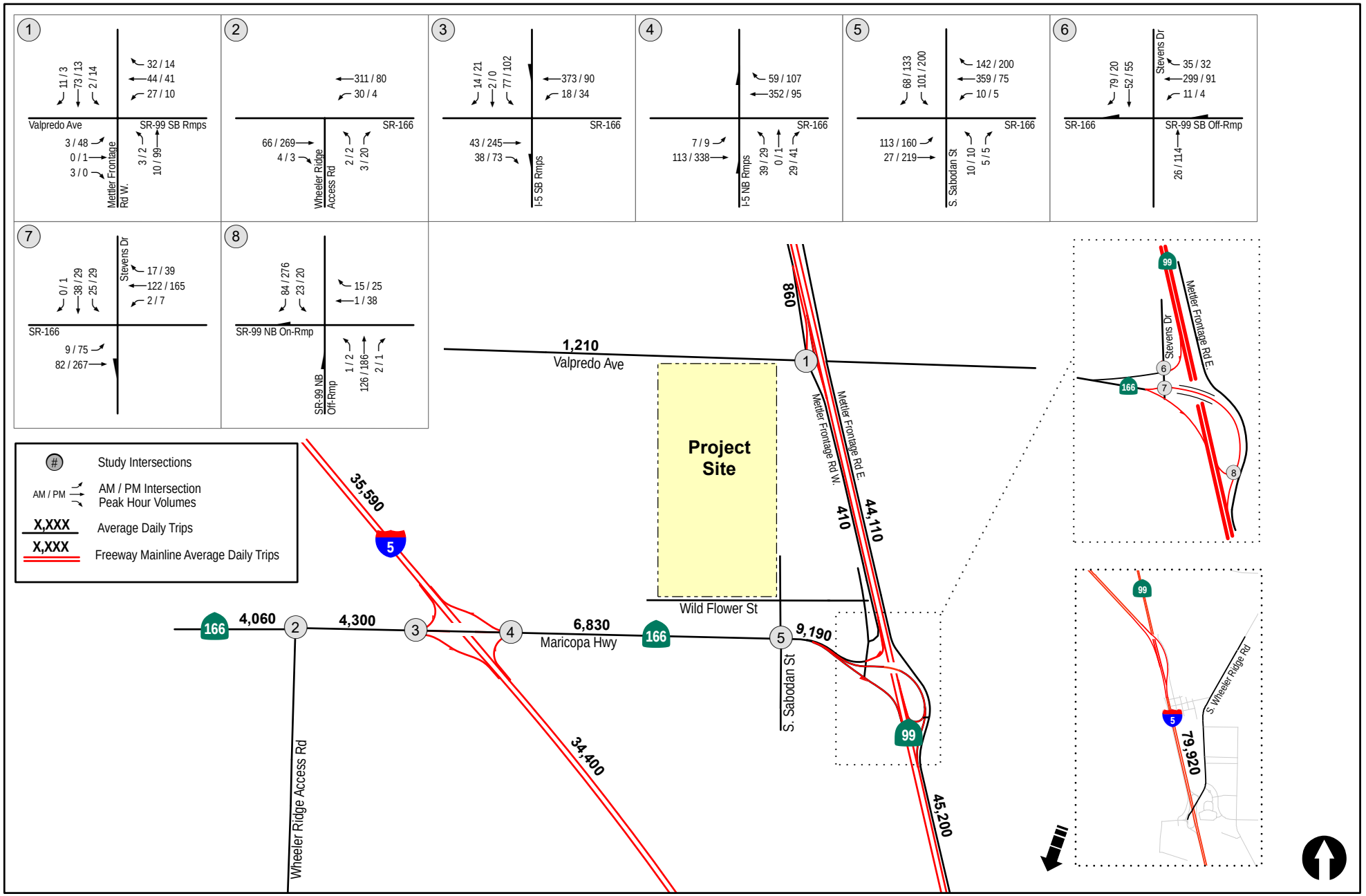
N:\3004\Figures
Date: 05/20/19

Figure 12-5

Alternative A2 Entire Project Traffic Volumes

Saturday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

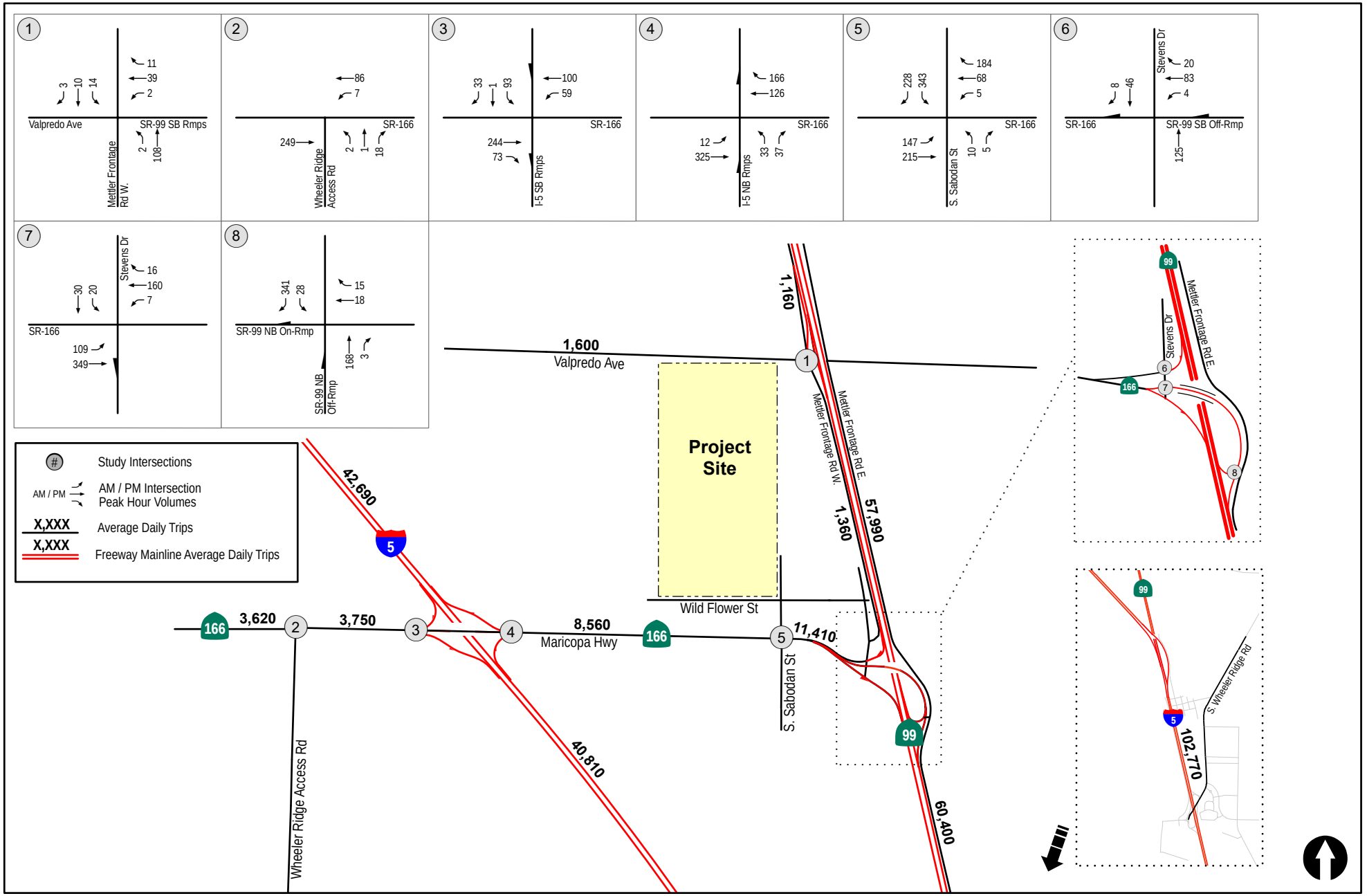
N:\3004\Figures
Date: 05/20/19

Figure 12-6

Existing + Alternative A2 Project Phase I Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

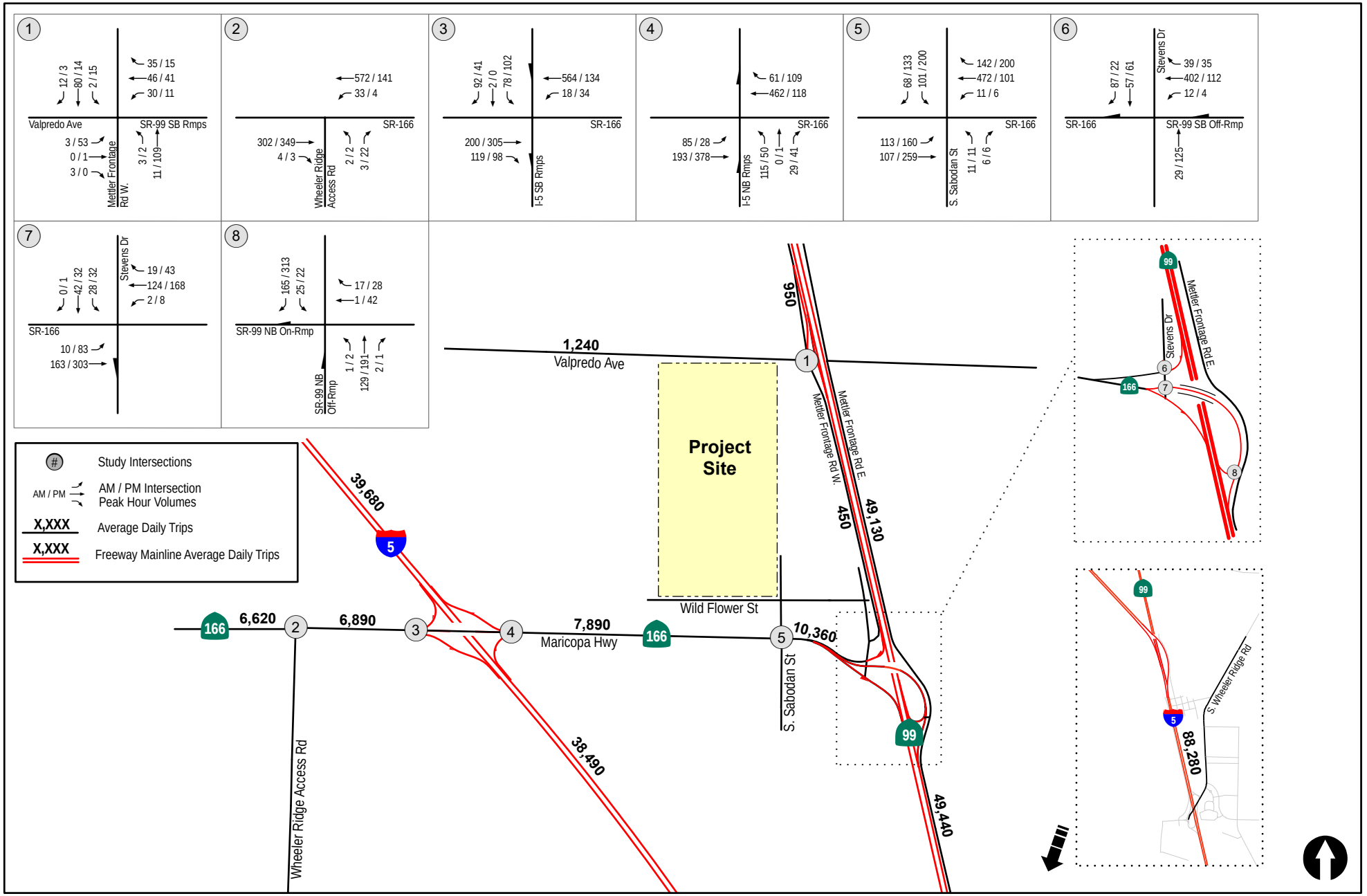
N:\3004\Figures
Date: 05/17/19

Figure 12-7

Existing + Alternative A2 Project Phase I Traffic Volumes

Saturday

TEJON CASINO



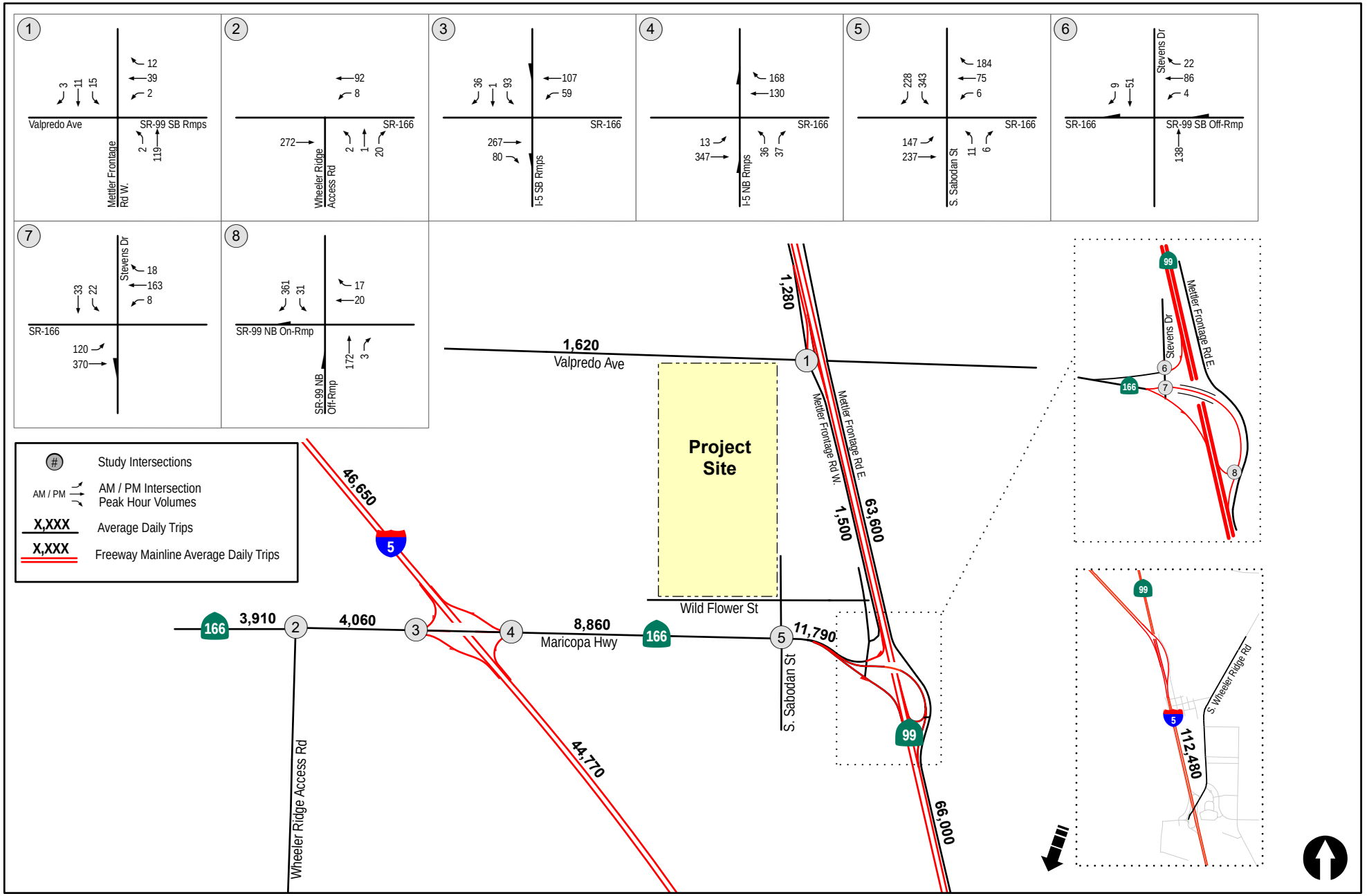
N:\3004\Figures
Date: 05/20/19

Figure 12-8

Opening Year (2023) + Alternative A2 Project Phase I Traffic Volumes

Weekday

Tejon Casino



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/17/19

Figure 12-9

Opening Year (2023) + Alternative A2 Project Phase I Traffic Volumes

Saturday

TEJON CASINO

13.0 ANALYSIS OF NEAR-TERM SCENARIOS – ALTERNATIVE A2

13.1 Existing + Project Alternative A2 Phase 1

13.1.1 *Intersection Analysis*

Table 13-1 summarizes the Existing + Project Alternative A2 Phase 1 Weekday peak hour intersection operations during the weekday peak hours and the Saturday peak hour. As seen in *Table 13-1*, with the addition of Alternative A2 Project Phase 1 traffic, the minor street left-turn movements the following intersections are calculated to operate at LOS E or worse:

- Maricopa Highway / S. Sabodan Street (LOS F during the weekday PM peak hour and Saturday peak hour)
- Maricopa Highway / Stevens Drive (LOS E during Saturday peak hour)

The Project has a direct impact at this intersection in Alternative A2.

Appendix H contains the Existing + Project Alternative A2 Phase 1 Weekday and Saturday intersection analysis worksheets.

13.1.2 *Daily Street Segment Levels of Service*

Table 13-2 summarizes the Existing + Project Alternative A2 Phase 1 Weekday segment operations. As seen in *Table 13-2*, with the addition of Alternative A2 Project Phase 1 traffic, all study area segments are calculated to operate at LOS C or better on a weekday.

Table 13-3 summarizes the Existing + Project Alternative A2 Phase 1 Saturday segment operations. As seen in *Table 13-2*, with the addition of Alternative A2 Project Phase 1 traffic, all study area segments are calculated to operate at LOS D or better on a Saturday.

13.1.3 *Ramp Merge Analysis*

Table 13–4 summarizes the operations of the Ramp Merge sections under Existing + Project Alternative A2 Phase 1 Weekday scenario. As seen in *Table 13–4*, with the addition of Project Alternative A2 Phase 1 traffic, the SR 166 to NB I-5 ramp merge is calculated to operate at LOS F during the PM peak hour.

- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 13–5 summarizes the operations of the Ramp Merge sections under Existing + Project Alternative A2 Phase 1 Saturday scenario. As seen in *Table 13–5*, with the addition of Project Alternative A2 Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB I-5 (LOS E during the PM peak hour)

- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

13.1.4 *Ramp Diverge Analysis*

Table 13–4 summarizes the operations of the Ramp Diverge sections under Existing + Project Alternative A2 Phase 1 Weekday scenario. As seen in *Table 13–4*, with the addition of Project Alternative A2 Phase 1 traffic, the following ramp diverge section is calculated to operate at LOS E:

- NB I-5 off-ramp diverge to SR 166 (LOS E during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 13–5 summarizes the operations of the Ramp Diverge sections under Existing + Project Alternative A2 Phase 1 Saturday scenario. As seen in *Table 13–5*, with the addition of Project Alternative A2 Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS E or F:

- SB I-5 off-ramp diverge to SR 166 (LOS E during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Appendix H contains the Existing + Project Alternative A2 Phase 1 Weekday and Saturday Ramp Merge and Diverge analysis worksheets.

13.2 Opening Year (2023) without Project

The Opening Year (2023) without Project intersection peak hour, segment and freeway segment analyses are the same as in Section 10.2 and is therefore not repeated here. However, for the convenience of the reader, the results of the intersection and segment analyses (Weekday and Saturday) are included in *Tables 13-1, 13-2 and 13-3* respectively.

13.3 Opening Year (2023) + Project Phase 1

13.3.1 *Intersection Analysis*

Table 13-1 summarizes the Opening Year (2023) + Project Alternative A2 Phase 1 peak hour intersection operations during the weekday peak hours and the Saturday peak hour. As seen in *Table 13-1*, with the addition of Project Alternative A2 Phase 1 traffic, the minor street left-turn movements the following intersections are calculated to operate at LOS E or worse:

- Maricopa Highway / S. Sabodan Street (LOS F during the Weekday AM and PM peak hours and Saturday peak hour)
- Stevens Drive / Maricopa Highway (LOS E during the Saturday peak hour)

The Project has a direct impact at this intersection in Alternative A2.

Appendix I contains the Opening Year (2023) + Project Alternative A2 Phase 1 Weekday and Saturday intersection analysis worksheets.

13.3.2 *Daily Street Segment Levels of Service*

Table 13-2 summarizes the Opening Year (2023) + Project Alternative A2 Phase 1 Weekday segment operations. As seen in *Table 13-2*, with the addition of Project Alternative A2 Phase 1 traffic, all study area segments are calculated to operate at LOS C or better on a weekday.

Table 13-3 summarizes the Opening Year (2023) + Project Alternative A2 Phase 1 Saturday segment operations. As seen in *Table 13-2*, with the addition of Project Alternative A2 Phase 1 traffic, all study area segments are calculated to operate at LOS D or better on a Saturday.

13.3.3 *Ramp Merge Analysis*

Table 13–6 summarizes the operations of the Ramp Merge sections under Opening Year (2023) + Project Alternative A2 Phase 1 Weekday scenario. As seen in *Table 13–6*, with the addition of Project Alternative A2 Phase 1 traffic, the following ramp merge section is calculated to operate at LOS F:

- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 13–7 summarizes the operations of the Ramp Merge sections under Opening Year (2023) + Project Alternative A2 Phase 1 Saturday scenario. As seen in *Table 13–7*, with the addition of Project Alternative A2 Phase 1 traffic, the following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB SR 99 (LOS F during the PM peak hour)
- SR 166 on-ramp merge to SB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

13.3.4 *Ramp Diverge Analysis*

Table 13–6 summarizes the operations of the Ramp Diverge sections under Opening Year (2023) + Project Alternative A2 Phase 1 Weekday scenario. As seen in *Table 13–6*, with the addition of Project Alternative A2 Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS E or F:

- SB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off-ramp diverge to SR 166 (LOS F during both, the AM and PM peak hours) - There is no change in LOS with the addition of Project traffic.

Table 13–7 summarizes the operations of the Ramp Diverge sections under Opening Year (2023) + Project Alternative A2 Phase 1 Saturday scenario. As seen in *Table 13–7*, with the addition of Project

Alternative A2 Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS F:

- SB SR 99 off-ramp diverge to Valpredo Avenue (LOS F during the PM peak hour)
- SB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off-ramp diverge to SR 166 (LOS F during both, the AM and PM peak hours) - There is no change in LOS with the addition of Project traffic.

Appendix I contains the Opening Year (2023) + Project Alternative A2 Phase 1 Weekday and Saturday Ramp Merge and Diverge analysis worksheets.

TABLE 13–1
NEAR-TERM WITH PROJECT PHASE 1 INTERSECTION OPERATIONS - ALTERNATIVE A2

Intersection	Control Type	Peak Hour	Existing		Existing + Project		Δ Delay	Sig?	Opening Year (2023) Without Project		Opening Year (2023) + Project		Δ Delay	Sig?
			Delay [a]	LOS [b]	Delay	LOS			Delay	LOS	Delay	LOS		
1. Mettler Frontage Rd W. / Valpredo Ave / SR 99 SB Ramps	TWSC [c]	Wkday AM	10.1	B	10.5	B	0.4	No	10.2	B	10.6	B	0.4	No
		Wkday PM	10.2	B	10.6	B	0.4	No	10.4	B	10.9	B	0.5	No
		Saturday Pk	10.3	B	11.0	B	0.7	No	10.5	B	11.2	B	0.7	No
2. Maricopa Hwy / Wheeler Ridge Rd	TWSC	Wkday AM	10.4	B	10.6	B	0.2	No	16.0	C	16.4	C	0.4	No
		Wkday PM	10.3	B	10.4	B	0.1	No	11.0	B	11.2	B	0.2	No
		Saturday Pk	10.2	B	10.4	B	0.2	No	10.4	B	10.6	B	0.2	No
3. Maricopa Hwy / I-5 SB Ramps	TWSC	Wkday AM	11.9	B	14.5	B	2.6	No	17.6	C	26.6	D	9.0	No
		Wkday PM	10.6	B	13.7	B	3.1	No	11.6	B	15.8	C	4.2	No
		Saturday Pk	10.8	B	15.5	C	4.7	No	11.0	B	16.2	C	5.2	No
4. Maricopa Hwy / I-5 NB Ramps	TWSC	Wkday AM	11.8	B	13.2	B	1.4	No	25.3	D	33.1	D	7.8	No
		Wkday PM	10.8	B	12.6	B	1.8	No	12.2	B	14.7	B	2.5	No
		Saturday Pk	10.8	B	13.0	B	2.2	No	11.1	B	13.5	B	2.4	No
5. Maricopa Hwy / S. Sabodan St	TWSC	Wkday AM	10.9	B	26.3	D	15.4	No	12.6	B	**43.7**	**E**	**31.1**	**Yes**
		Wkday PM	10.4	B	**53.9**	**F**	**43.5**	**Yes**	10.9	B	**73.3**	**F**	**62.4**	**Yes**
		Saturday Pk	10.3	B	**>100.0**	**F**	**>10.0**	**Yes**	10.5	B	**>100.0**	**F**	**>10.0**	**Yes**
6. SR 99 SB Off Ramp / Stevens Dr	TWSC	Wkday AM	11.0	B	11.5	B	0.5	No	12.6	B	13.4	B	0.8	No
		Wkday PM	9.8	A	10.2	B	0.4		10.1	B	10.6	B	0.5	No
		Saturday Pk	10.4	B	11.1	B	0.7 No	No	10.6	B	11.5	B	0.9	No

CONTINUED ON THE NEXT PAGE

TABLE 13–1 (CONTINUED)
NEAR-TERM WITH PROJECT PHASE 1 INTERSECTION OPERATIONS - ALTERNATIVE A2

Intersection	Control Type	Peak Hour	Existing		Existing + Project		Δ Delay	Sig?	Opening Year (2023) Without Project		Opening Year (2023) + Project		Δ Delay	Sig?
			Delay [a]	LOS [b]	Delay	LOS			Delay	LOS	Delay	LOS		
7. Maricopa Hwy / Stevens Dr	TWSC	Wkday AM	9.7	A	10.9	B	1.2	No	10.4	B	12.0	B	1.6	No
		Wkday PM	13.1		17.2		4.1	No	14.2		19.2	C	5.0	No
		Saturday Pk	19.1 B		**37.6 C**	**E**	**18.5**	**Yes**	22.0 B		**48.7**	**E**	**26.7**	**Yes**
8. Maricopa Hwy / SR 99 NB Ramps	TWSC	Wkday AM	7.4 C	A	8.3	A	0.9	No	7.6 C	A	8.5	A	0.9	No
		Wkday PM	8.1		9.6		1.5	No	8.4		10.0	A	1.6	No
		Saturday Pk	8.3 A		11.0 A	B	2.7	No	8.6 A		11.6	B	3.0	No
			A						A					

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

WkDay AM – Weekday AM Peak Hour
WkDay AM – Weekday PM Peak Hour
Saturday Pk – Saturday Peak Hour

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

TABLE 13–2
NEAR-TERM WITH PROJECT PHASE 1 WEEKDAY STREET SEGMENT OPERATIONS - ALTERNATIVE A2

Street Segment	Existing Capacity (LOS E)[a]	Existing			Existing + Project			Δ V/C	Sig?	Opening Year (2023) Without Project			Opening Year (2023) + Project			Δ V/C	Sig?
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C			ADT	LOS	V/C	ADT	LOS	V/C		
I-5																	
Copus Rd to SR 166 (Maricopa Hwy)	63,700	33,600	B	0.527	35,590	B	0.559	0.032	No	37,690	C	0.592	39,680	C	0.623	0.031	No
SR 166 (Maricopa Hwy) to SR 99	63,700	33,600	B	0.527	34,400	B	0.540	0.013	No	37,690	C	0.592	38,490	C	0.604	0.013	No
SR 99 to S. Wheeler Ridge Rd	127,400	76,340	C	0.599	79,920	C	0.627	0.028	No	84,700	C	0.665	88,280	C	0.693	0.028	No
SR 99																	
Valpredo Ave to SR 166 (Maricopa Hwy)	63,700	42,920	B	0.674	44,110	C	0.692	0.018	No	47,940	C	0.753	49,130	C	0.771	0.019	No
SR 166 (Maricopa Hwy) to I-5	63,700	42,420	B	0.666	45,200	C	0.710	0.044	No	46,660	C	0.732	49,440	C	0.776	0.044	No
Mettler Frontage Rd W																	
Copus Rd to Valpredo Ave	25,600	860	A	0.034	860	A	0.034	0.000	No	950	A	0.037	950	A	0.037	0.000	No
Valpredo Ave to Maricopa Hwy	25,600	410	A	0.016	410	A	0.016	0.000	No	450	A	0.018	450	A	0.018	0.000	No
Valpredo Ave																	
I-5 Ramps to SR-99 Ramps	25,600	340	A	0.013	1,210	A	0.047	0.034	No	370	A	0.014	1,240	A	0.048	0.034	No
Maricopa Highway																	
East of Wheeler Ridge Access Rd	25,600	3,620	A	0.141	4,060	A	0.159	0.018	No	6,180	B	0.241	6,620	B	0.259	0.017	No
Wheeler Ridge Access Rd to I-5 SB Ramps	25,600	3,860	A	0.151	4,300	A	0.168	0.017	No	6,450	B	0.252	6,890	B	0.269	0.017	No
I-5 NB Ramps to S Sabodan St	25,600	3,330	A	0.130	6,830	B	0.267	0.137	No	4,390	A	0.171	7,890	C	0.308	0.137	No
S Sabodan St to SR-99 Ramps	25,600	4,380	A	0.171	9,190	C	0.359	0.188	No	5,550	B	0.217	10,360	C	0.405	0.188	No

Footnotes:

a. Capacities based on Kern County Roadway Classification & LOS table (See *Table 4-3*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

Sig? – Significant impact?

TABLE 13–3
NEAR-TERM WITH PROJECT PHASE 1 SATURDAY STREET SEGMENT OPERATIONS - ALTERNATIVE A2

Street Segment	Existing Capacity (LOS E)[a]	Existing			Existing + Project			Δ V/C	Sig?	Opening Year (2023) Without Project			Opening Year (2023) + Project			Δ V/C	Sig?
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C			ADT	LOS	V/C	ADT	LOS	V/C		
I-5																	
Copus Rd to SR 166 (Maricopa Hwy)	63,700	39,560	C	0.621	42,690	C	0.670	0.049	No	43,520	C	0.683	46,650	C	0.732	0.049	No
SR 166 (Maricopa Hwy) to SR 99	63,700	39,560	C	0.621	40,810	C	0.641	0.020	No	43,520	C	0.683	44,770	C	0.703	0.020	No
SR 99 to S. Wheeler Ridge Rd	127,400	97,140	C	0.762	102,770	D	0.807	0.045	No	106,850	D	0.839	112,480	D	0.883	0.044	No
SR 99																	
Valpredo Ave to SR 166 (Maricopa Hwy)	63,700	56,110	C	0.881	57,990	C	0.910	0.029	No	61,720	C	0.969	63,600	C	0.998	0.030	No
SR 166 (Maricopa Hwy) to I-5	63,700	56,020	C	0.879	60,400	C	0.948	0.069	No	61,620	C	0.967	66,000	D	1.036	0.069	No
Mettler Frontage Rd W																	
Copus Rd to Valpredo Ave	25,600	1,160	A	0.045	1,160	A	0.045	0.000	No	1,280	A	0.050	1,280	A	0.050	0.000	No
Valpredo Ave to Maricopa Hwy	25,600	1,360	A	0.053	1,360	A	0.053	0.000	No	1,500	A	0.059	1,500	A	0.059	0.000	No
Valpredo Ave																	
I-5 Ramps to SR-99 Ramps	25,600	220	A	0.009	1,600	A	0.063	0.054	No	240	A	0.009	1,620	A	0.063	0.054	No
Maricopa Highway																	
East of Wheeler Ridge Access Rd	25,600	2,930	A	0.114	3,620	A	0.141	0.027	No	3,220	A	0.126	3,910	A	0.153	0.027	No
Wheeler Ridge Access Rd to I-5 SB Ramps	25,600	3,060	A	0.120	3,750	A	0.146	0.026	No	3,370	A	0.132	4,060	A	0.159	0.027	No
I-5 NB Ramps to S Sabodan St	25,600	3,040	A	0.119	8,560	C	0.334	0.215	No	3,340	A	0.130	8,860	C	0.346	0.216	No
S Sabodan St to SR-99 Ramps	25,600	3,820	A	0.149	11,410	C	0.446	0.297	No	4,200	A	0.164	11,790	C	0.461	0.296	No

Footnotes:

a. Capacities based on Kern County Roadway Classification & LOS table (See *Table 4-3*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

BOLD typeface indicates a potentially significant impact.

Sig? – Significant Impact?

TABLE 13–4
EXISTING + PROJECT PHASE I WEEKDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A2

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,703	263	2,966	62.3	19.6	B
	PM	3,390	321	3,711	61.2	24.4	C
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,541	86	2,627	62.7	17.3	B
	PM	2,738	316	3,054	62.2	20.5	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	1,869	58	1,927	62.2	20.2	C
	PM	2,852	107	2,959	58.1	30.7	D
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,714	66	2,780	58.9	29.6	D
	PM	3,384	117	3,501	**51.1**	**37.0**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	3,276	103	3,173	57.9	24.8	C
	PM	3,775	65	3,710	58.0	28.0	C
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,048	345	2,703	57.2	22.2	C
	PM	3,517	127	3,390	57.8	26.2	C
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	2,670	129	2,541	57.8	20.5	C
	PM	2,927	189	2,738	57.7	21.9	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	1,962	93	1,869	58.0	22.3	C
	PM	2,975	123	2,852	57.9	33.6	D
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,782	68	2,714	58.0	31.4	D
	PM	3,455	71	3,384	**58.0**	**39.0**	**E**

Footnotes:
a. Passenger cars / mile / lane

TABLE 13–5
EXISTING + PROJECT PHASE I SATURDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A2

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,467	404	4,871	57.1	31.8	D
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	3,668	359	4,027	60.3	26.7	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,350	133	3,483	**52.6**	**36.1**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,989	178	4,167	**33.3**	**43.9**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	PM	4,810	52	4,758	58.1	33.8	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	4,574	107	4,467	57.9	32.3	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	3,839	171	3,668	57.7	27.7	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	3,477	127	3,350	**57.8**	**39.4**	**E**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	4,059	70	3,989	**58.0**	**45.8**	**F**

Footnotes:
a. Passenger cars / mile / lane

TABLE 13–6
OPENING YEAR + PROJECT PHASE I WEEKDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A2

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,970	279	3,249	62.0	21.4	C
	PM	3,730	337	4,067	60.3	26.6	C
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,800	169	2,969	62.3	19.6	B
	PM	3,010	361	3,371	61.7	22.6	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,060	144	2,204	61.6	22.9	C
	PM	3,140	131	3,271	55.3	33.9	D
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,990	149	3,139	56.0	33.2	D
	PM	3,720	141	3,861	**43.4**	**40.8**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	3,598	108	3,490	57.9	26.8	C
	PM	4,150	70	4,080	58.0	30.2	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,429	449	2,980	56.8	24.2	C
	PM	3,878	148	3,730	57.8	28.2	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,006	206	2,800	57.6	22.4	C
	PM	3,228	208	3,020	57.6	23.8	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,228	168	2,060	57.7	24.5	C
	PM	3,278	148	3,130	**57.8**	**36.9**	**E**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	3,135	145	2,990	57.8	34.5	D
	PM	3,818	88	3,730	**58.0**	**42.9**	**F**

Footnotes:
a. Passenger cars / mile / lane

TABLE 13–7
OPENING YEAR + PROJECT PHASE I SATURDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A2

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,910	420	5,330	**54.2**	**34.7**	**F**
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,030	383	4,413	59.0	29.2	D
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,690	137	3,827	**46.2**	**39.6**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	4,390	183	4,573	**11.3**	**48.2**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	PM	5,287	57	5,230	**58.1**	**38.0**	**F**
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	5,025	115	4,910	57.9	34.6	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	4,208	178	4,030	57.7	29.7	D
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	3,812	132	3,680	**57.8**	**43.2**	**F**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	4,457	77	4,380	**58.0**	**50.2**	**F**

Footnotes:
a. Passenger cars / mile / lane

14.0 ANALYSIS OF LONG-TERM (YEAR 2040) SCENARIOS – ALTERNATIVE A2

14.1 Year 2040 Traffic Volumes

The methodology used to forecast the Year 2040 volumes is explained in Section 11.0 Analysis of Long-Term Scenarios – Alternative A1. The same applies for Alternative A2 since the Year 2040 without Project volumes are the same.

Figure 11-1 depicts the Year 2040 without Project traffic volumes. ***Figure 14-1*** depicts the Year 2040 with Project Alternative A2 traffic volumes.

14.2 Year 2040 without Project Analysis

The Year 2040 without Project peak hour intersection and segment are the same as described in Section 11.2. The delays and levels of service are repeated in *Table 17-1 and 17-2* for the convenience of the reader.

14.3 Year 2040 with Project Analysis

14.3.1 *Intersection Analysis*

Table 14-1 summarizes the Year 2040 + Project Alternative A2 peak hour intersection operations during the weekday peak hours. As seen in *Table 14-1*, with the addition of Alternative A2 Project traffic, the minor street left-turn movements the following intersections are calculated to operate at LOS E or worse:

- Maricopa Highway / S. Sabodan Street (LOS F during the Weekday AM and PM peak hours)
- Maricopa Highway / I-5 SB Ramps (LOS F during the Weekday AM peak hour)
- Maricopa Highway / I-5 NB Ramps (LOS F during the Weekday AM peak hour)

The Project has a cumulative impact at these intersections in Alternative A2.

Appendix J contains the Year 2040 + Entire Alternative A2 Project intersection analysis worksheets.

14.3.2 *Daily Street Segment Levels of Service*

Table 14-2 summarizes the Year 2040 + Project Alternative A2 segment operations. As seen in *Table 14-2*, with the addition of Project Alternative A2 Project traffic, all study area segments are calculated to operate at LOS D or better.

14.3.3 *Ramp Merge Analysis*

Table 14–3 summarizes the operations of the Ramp Merge sections under Year 2040 + Project Alternative A2 scenario. As seen in *Table 14–3*, with the addition of the Entire Project Alternative A2 traffic, the following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

- SR 166 on-ramp merge to NB I-5 (LOS F during both, the AM and PM peak hours) - There is no change in LOS with the addition of Project traffic.

14.3.4 *Ramp Diverge Analysis*

Table 14–3 summarizes the operations of the Ramp Diverge sections under Year 2040 + Project Alternative A2 scenario. As seen in *Table 14–3*, with the addition of the Entire Project Alternative A2 traffic, the following ramp diverge sections are calculated to operate at LOS F:

- SB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off-ramp diverge to SR 166 (LOS F during both, the AM and PM peak hours) - There is no change in LOS with the addition of Project traffic.

Appendix J contains the Year 2040 + Entire Alternative A2 Project Ramp Merge and Diverge analysis worksheets.

TABLE 14–1
YEAR 2040 WEEKDAY INTERSECTION OPERATIONS – ALTERNATIVE A2

Intersection	Control Type	Peak Hour	Year 2040 Without Project		Year 2040 With Entire Project		Δ [c] Delay	Sig?
			Delay [a]	LOS [b]	Delay	LOS		
1. Mettler Frontage Rd W. / Valpredo Ave / SR 99 SB Ramps	TWSC [d]	AM	10.5	B	11.2	B	0.7	No
		PM	10.8	B	11.5	B	0.7	No
2. Maricopa Hwy / Wheeler Ridge Rd	TWSC	AM	17.6	C	18.3	C	0.7	No
		PM	11.6	B	11.9	B	0.3	No
3. Maricopa Hwy / I-5 SB Ramps	TWSC	AM	20.8	C	**64.6**	**F**	**43.8**	**Yes**
		PM	12.3	B	22.9	C	10.6	No
4. Maricopa Hwy / I-5 NB Ramps	TWSC	AM	**42.6**	**E**	**85.3**	**F**	**42.7**	**Yes**
		PM	13.3	B	18.1	C	4.8	No
5. Maricopa Hwy / S. Sabodan St	TWSC	AM	13.8	B	**>100.0**	**F**	**>10.0**	**Yes**
		PM	11.4	B	**>100.0**	**F**	**>10.0**	**Yes**
6. SR 99 SB Off Ramp / Stevens Dr	TWSC	AM	14.3	B	16.4	C	2.1	No
		PM	10.4	B	11.2	B	0.8	No
7. Maricopa Hwy / Stevens Dr	TWSC	AM	10.9	B	13.8	B	2.9	No
		PM	16.1	C	28.2	D	12.1	No
8. Maricopa Hwy / SR 99 NB Ramps	TWSC	AM	7.8	A	9.4	A	1.6	No
		PM	8.8	A	12.0	B	3.2	No

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:
Sig? – Significant Impact?

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

TABLE 14–2
YEAR 2040 WEEKDAY STREET SEGMENT OPERATIONS - ALTERNATIVE A2

Street Segment	Existing Capacity (LOS E)[a]	Year 2040 Without Project			Year 2040 With Entire Project			Sig?
		ADT[b]	V/C[c]	LOS[d]	ADT	V/C	LOS	
I-5								
Copus Rd to SR 166 (Maricopa Hwy)	63,700	44,100	C	0.692	46,970	C	0.737	No
SR 166 (Maricopa Hwy) to SR 99	63,700	44,100	C	0.692	45,250	C	0.710	No
SR 99 to S. Wheeler Ridge Rd	127,400	99,100	C	0.778	104,270	D	0.818	No
SR 99								
Valpredo Ave to SR 166 (Maricopa Hwy)	63,700	56,090	C	0.881	57,810	C	0.908	No
SR 166 (Maricopa Hwy) to I-5	63,700	54,590	C	0.857	58,610	C	0.920	No
Mettler Frontage Rd W								
Copus Rd to Valpredo Ave	25,600	1,110	A	0.043	1,110	A	0.043	No
Valpredo Ave to Maricopa Hwy	25,600	530	A	0.021	530	A	0.021	No
Valpredo Ave								
I-5 Ramps to SR-99 Ramps	25,600	430	A	0.017	1,660	A	0.065	No
Maricopa Highway								
East of Wheeler Ridge Access Rd	25,600	7,230	B	0.282	7,840	C	0.306	No
Wheeler Ridge Access Rd to I-5 SB Ramps	25,600	7,550	B	0.295	8,160	C	0.319	No
I-5 NB Ramps to S Sabodan St	25,600	5,140	B	0.201	10,050	C	0.393	No
S Sabodan St to SR-99 Ramps	25,600	6,490	B	0.254	13,240	C	0.517	No

Footnotes:

a. Capacities based on Kern County Roadway Classification & LOS table (See *Table 4-3*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

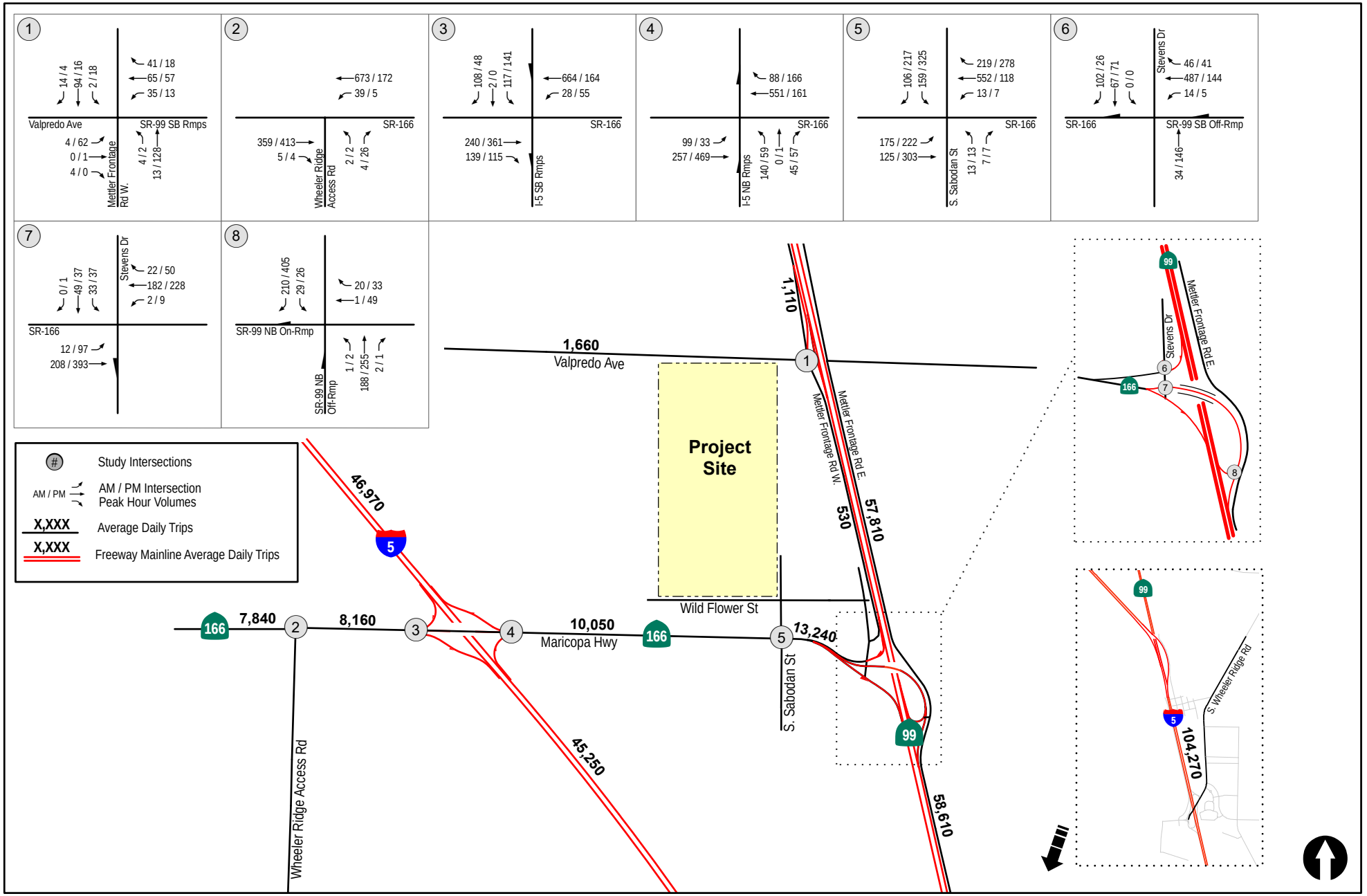
General Notes:

Sig? – Significant Impact?

TABLE 14–3
YEAR 2040 + ENTIRE PROJECT WEEKDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE A2

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	3,470	353	3,823	60.9	25.2	C
	PM	4,360	450	4,810	57.3	31.5	D
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	3,280	216	3,496	61.6	23.1	C
	PM	3,520	466	3,986	60.3	26.7	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,410	177	2,587	60.3	26.8	C
	PM	3,670	164	3,834	**46.1**	**39.6**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	3,500	196	3,696	**47.6**	**38.9**	**F**
	PM	4,350	206	4,556	**12.7**	**47.9**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	4,224	134	4,090	57.8	30.3	D
	PM	4,866	96	4,770	58.0	33.9	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	4,026	546	3,480	56.5	27.5	C
	PM	4,553	183	4,370	57.7	31.9	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,553	283	3,270	57.4	25.5	C
	PM	3,805	275	3,530	57.4	27.0	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,629	219	2,410	57.6	28.5	D
	PM	3,859	199	3,660	**57.6**	**43.0**	**F**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	3,684	184	3,500	**57.7**	**40.3**	**F**
	PM	4,476	116	4,360	**57.9**	**50.0**	**F**

Footnotes:
a. Passenger cars / mile / lane



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/20/19

Figure 14-1

Year 2040 + Alternative A2 Project Traffic Volumes

Weekday

TEJON CASINO

ALTERNATIVE B

15.0 ALTERNATIVE B TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

As explained in Section 10.0, Alternative A1 Trip Generation/Distribution/Assignment, using the trip generation rates described in Section 8.0, Trip Generation Methodology, Weekday and Saturday trip generation was estimated for Alternative B as described below.

15.1.1 *Weekday*

Alternative B is planned to be developed in two Phases. ***Table 15-1*** summarizes the Alternative B Weekday trip generation. As seen in *Table 15-1*, the proposed land uses in Alternative B are estimated to generate a total of 9,408 daily trips, with 493 AM peak hour trips (308 inbound / 185 outbound) and 798 PM peak hour trips (436 inbound / 362 outbound) during the weekdays. The casino and is calculated to generate 817 daily *diverted link* trips with 42 AM peak hour trips (27 inbound and 16 outbound) and 71 PM peak hour trips (39 inbound and 32 outbound).

As seen in *Table 15-1*, the proposed land uses in Alternative B are estimated to generate a total of 10,053 daily trips, with 548 AM peak hour trips (343 inbound / 205 outbound) and 864 PM peak hour trips (461inbound / 403 outbound) during the weekdays.

15.1.2 *Saturday*

Table 15-2 summarizes the Alternative B Saturday trip generation. As seen in *Table 15-2*, the Alternative B land uses are estimated to generate a total of 14,795 daily trips, with 1,024 PM peak hour trips (404 inbound / 620 outbound) during the Saturday. The casino is calculated to generate 1,355 daily *diverted link* trips with 92 PM peak hour trips (35 inbound and 57 outbound). As seen in *Table 15-2*, the Alternative B land uses are estimated to generate a total of 15,149 daily trips, with 1,084 PM peak hour trips (435 inbound / 649 outbound) during the Saturday.

15.2 Trip Distribution

The Proposed Alternative B site is well connected (accessed) both from I-5 and SR 99. There is little to no local traffic on the surface streets. Most of the traffic to the Casino is regional. Even though the Project site is closer to I-5 than SR 99, since SR 99 is a 6-lane freeway and I-5 is a 4-lane freeway and carries a large amount of traffic, it is anticipated that more patrons will find it easier to utilize SR 99 to access the site than I-5. Hence, it is assumed that more project traffic from the south will utilize SR 99 than I-5. It is assumed that 50% of the Project traffic is oriented to the north, 25% each on I-5 and SR 99, 25% is oriented to the south on SR 99, 20% to the south on I-5 and 5% to the west on Maricopa Highway.

Figure 15–1 depicts the Alternative B Project Traffic Distribution. ***Figure 15–2*** depicts the Alternative B Weekday Project Phase 1 Traffic Volumes, while ***Figure 15–3*** depicts the Alternative B Saturday Project Phase 1 Traffic Volumes. ***Figure 15–4*** depicts the Alternative B Weekday Entire Project Traffic Volumes, while ***Figure 15–5*** depicts the Alternative B Saturday Entire Project Traffic Volumes.

Figure 15–6 depicts the Existing + Alternative B Weekday Project Phase 1 Traffic Volumes, while ***Figure 15–7*** depicts the Existing + Alternative B Saturday Project Phase 1 Traffic Volumes. ***Figure 15–8*** depicts the Opening Year (2023) + Alternative B Weekday Project Phase 1 Traffic Volumes, while ***Figure 15–9*** depicts the Opening Year (2023) + Alternative B Saturday Project Phase 1 Traffic Volumes.

Table 15-1
Alternative B - Weekday Trip Generation

Land Use	Size	Daily Trip Ends (ADTs)		Weekday AM Peak Hour					Weekday PM Peak Hour				
		Rate [a]	Volume	Rate	In:Out Split [a]	Volume			Rate	In:Out Split	Volume		
						In	Out	Total			In	Out	Total
Phase 1													
Casino Gaming Area [a]	KSF	49.09 [a]	8,173	2.55[a]	63 : 37	267	157	424	4.25[a]	55 : 45	389	318	707
Primary			*7,356*			*240*	*141*	*382*			*350*	*286*	*636*
Diverted link (10%) [b] 166.5			*817*			*27*	*16*	*42*			*39*	*32*	*71*
Hotel [b]	400 Rooms	3 /Room	1,200	5.62%	59 : 41	40	27	67	7.18%	51 : 49	44	42	86
RV Parking [c]	Acres	7[c]	35	0.48	42 : 58	1	1	2	0.98	69 : 31	3	2	5
Phase 1 Primary Trips			**8,591**			**281**	**169**	**451**			**397**	**330**	**727**
Phase 1 Total Trips			**9,408**			**308**	**185**	**493**			**436**	**362**	**798**
Phase 2													
Organic Farm [d]	30 Acres	2 /Acre	60	10%	90 : 10	5	1	6	10%	10 : 90	1	5	6
Single Family Homes 5	15 DU	12.13[e]		1.0 [e]	25 : 75	4	11	15	1.07 [e]	: 37	10	6	16
Community Park [f]	2.5 Acres	7.8 /Acre	20	0.20	67 : 33	1	0	1	1.10 63	40 : 60	1	2	3
Community Center [g]	9 KSF	14.41 /KSF	130	0.88	66 : 34	5	3	8	1.16	47 : 53	5	5	10
Health Center [h]	9 KSF	17.4 /KSF	157	1.39	78 : 22	10	3	13	1.73	28 : 72	4	12	16
Tribal Administration [i]	12 KSF	8.095 /KSF 182	97	0.96	83 : 17	10	2	12	1.23	28 : 72	4	11	15
Subtotal Future Development			**645**			**35**	**20**	**55**			**25**	**41**	**66**
Entire Project Primary Trips			**9.236**			**316**	**189**	**506**			**422**	**371**	**793**
Entire Project Total Trips			**10,053**			**343**	**205**	**548**			**461**	**403**	**864**

Footnotes:

a. Casino Gaming Area: Weekday rates are based on trip generation rates developed using actual traffic counts at the Harrah's Rincon Casino in January 2006 (San Diego, CA), the Black Oak Casino in February 2006 (Tuolumne, CA) and the Chuckchansi Gold Casino August 2005 (Coarsegold, CA), in the Year 2007. Daily rate: y = 2666.1 Ln(x) - 5464; PM Rate: y = 318.37 Ln (x) - 921.31. AM rate: 60% of PM with 63% inbound / 37% outbound. Rates shown are average rates calculated by dividing the volume by the KSF.

b. Diverted link trips are generated by the Casino and hotel only. Diverted link trip reduction is applied only to the freeway traffic volumes.

c. Hotel: The weekday rates are based on the rates in the *Traffic Needs Assessment of Tribal Development Projects in the San Diego Region*- March 2003 Update, San Diego County.

d. RV Parking: Weekday trip rates for Land Use 416 Campground / Recreational Vehicle Park, ITE is used. Daily trip rates are not available. Hence, the daily rips were estimated assuming the peak hour volumes are 10% of the daily trips. Rates shown are average rates calculated by dividing the volume by the KSF.

e. Organic Farm: Weekday rates are based on SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, for Agriculture Land Use.

f. Single Family Home: Weekday rates are based on Land Use 210, *Trip Generation Manual*, 10th Edition, ITE. Daily Rate: Ln(T) = 0.92 Ln(X) + 2.71; AM Peak Hour: T = 0.71(X) + 4.80; and PM Peak Hour: Ln (T) = 0.96 Ln (X) + 0.20. Rates shown are average rates calculated by dividing the volume by the dwelling unit.

g. Community Park: 10 times the weekday rates are for Community Park, Land Use 411, *Trip Generation Manual,* 10th Edition, *ITE* are applied.

h. Community Center: Weekday rates are based on Recreational Community Center, Land Use 495, *Trip Generation Manual*, 10th Edition, ITE. However, since this is community center is meant for only tribe members, 50% of the rates is applied.

i. Health Center: Weekday trip rates for Medical-Dental office, Land Use 720, Trip Generation Manual, 10th Edition, ITE are used. However, since this is a health center for only tribe members, 50% of the rates is applied.

j. Tribal Administration: Since this Tribal office is meant for only tribe members, 50% of the weekday trip rates for Small Office building Land Use 712, Trip Generation Manual, 10th Edition, ITE is used.

Table 15-2
Alternative B - Saturday Trip Generation

Land Use	Size	Daily Trip Ends (ADTs)		Saturday PM Peak Hour			
		Rate [a]	Volume	Rate	In:Out Split	Volume	
						In	Out	Total
Phase 1								
Casino Gaming Area [a]	166.5 KSF	81.35[a]	13,545	5.51[a]	38 : 62	349	569	918
Primary			*12,191*			*314*	*512*	*826*
Diverted Link (10%) [b]			*1,355*			*35*	*57*	*92*
Hotel [b]	400 Rooms	3 /Room	1,200	8.41%	51 : 49	52	49	101
RV Parking [c]	5 Acres	10[c]	50	0.98	69 : 31	3	2	5
Phase 1 Primary Trips			**13,441**			**369**	**563**	**932**
Phase 1 Total Trips			**14,795**			**404**	**620**	**1,024**
Phase 2								
Organic Farm [d]	30 Acres	2 /Acre	60	5%	10 : 90	0	3	3
Single Family Homes	15 DU	11[e]	165	1.33 [e]	54 : 46	17	14	31
Community Park [f]	2.5 Acres	19.6 /Acres	49	2.80	55 : 45	4	3	7
Community Center [g]	9 KSF	4.55 /KSF	41	0.54	54 : 46	3	2	5
Health Center [h]	9 KSF	4.285 /KSF	39	1.55	50 : 50	7	7	14
Tribal Administration [i]	12 KSF	- -	-	-	- -	-	-	-
Subtotal Future Development			**354**			**31**	**29**	**60**
Entire Project Primary Trips			**13,794**			**400**	**592**	**992**
Entire Project Total Trips			**15,149**			**435**	**649**	**1,084**

Footnotes:

a. Casino Gaming Area: Saturday rates are based on trip generation rates developed using actual traffic counts at the Harrah's Rincon Casino in January 2006 (San Diego, CA), the Black Oak Casino in February 2006 (Tuolumne, CA) and the Chuckchansi Gold Casino August 2005 (Coarsegold, CA), in the Year 2007. Daily rate: y = 5159.1 Ln(x) - 12844; PM Rate: y = 448.1 Ln (x) - 1374. AM rate: 60% of PM with 63% inbound / 37% outbound. Rates shown are average rates calculated by dividing the volume by the KSF.

b. Diverted link trips are generated by the Casino and hotel only. Diverted link trip reduction is applied only to the freeway traffic volumes.

c. Hotel: The Saturday rates are based on the rates in the San Diego County Casino study. Peak hour rates are based on Hotel, Land Use 310, Trip Generation Manual, 10th Edition, Institute of Transportation Engineers (ITE). The peak hour split is not available and was assumed.

d. RV Parking: Saturday trip rates are not available and hence, weekday PM trip rates for Land Use 416 Campground / Recreational Vehicle Park is used. Daily trip rates are not available. Hence, the daily rips were estimated assuming the peak hour volumes are 10% of the daily trips. Rates shown are average rates calculated by dividing the volume by the KSF.

e. Organic Farm: Rates are based on SANDAG's *(Not So) Brief Guide of Vehicular Traffic Generation Rates for the San Diego Region*, April 2002, for Agriculture Land Use.

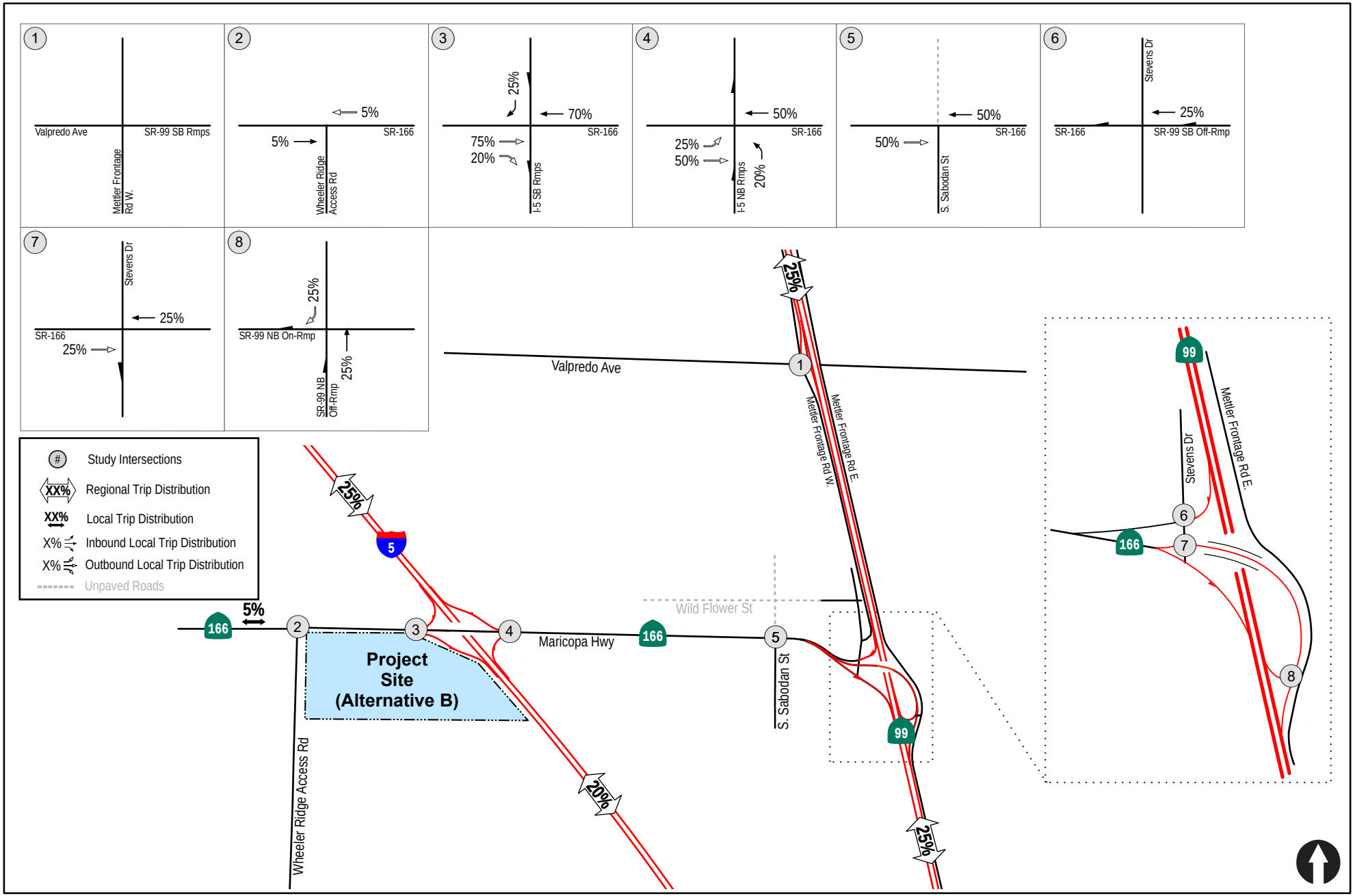
f. Single Family Homes: Saturday rates are based on Land Use 210, *Trip Generation Manual*, 10th Edition, (ITE). Daily Rate: Ln(T) = 0.94 Ln(X) + 2.56; Peak Hour: T = 0.84(X) + 17.99. Rates shown are average rates calculated by dividing the volume by the dwelling unit.

g. Community Park: Saturday rates are based on Public Park, Land Use 411, *Trip Generation Manual*, 10th Edition, (ITE). The ITE trip rates are very low and hence were increased by 10 times.

h. Community Center: Saturday rates are based on Recreational Community Center, Land Use 495, *Trip Generation Manual*, 10th Edition, ITE. However, since this is community center is meant for only tribe members, 50% of the rates is applied.

i. Health Center: Saturday trip rates for Medical-Dental office Land Use 720, Trip Generation Manual, 10th Edition, ITE are used. However, since this is a health center for only tribe members, 50% of the rates is applied.

j. Tribal Administration: This office is assumed to be closed during the Saturday.



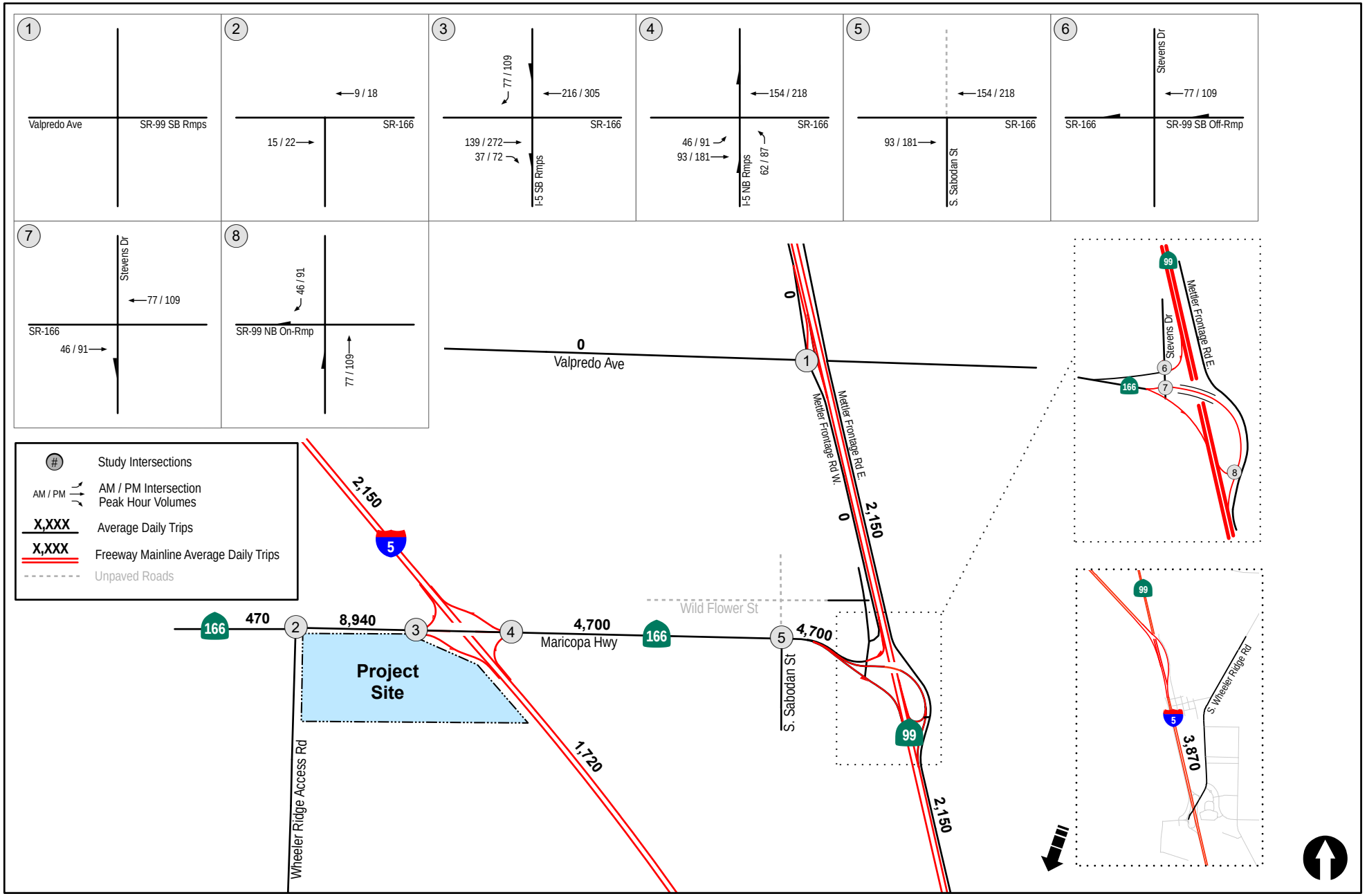
LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 04/25/19

Figure 15-1

Alternative "B" Project Traffic Distribution

TEJON CASINO



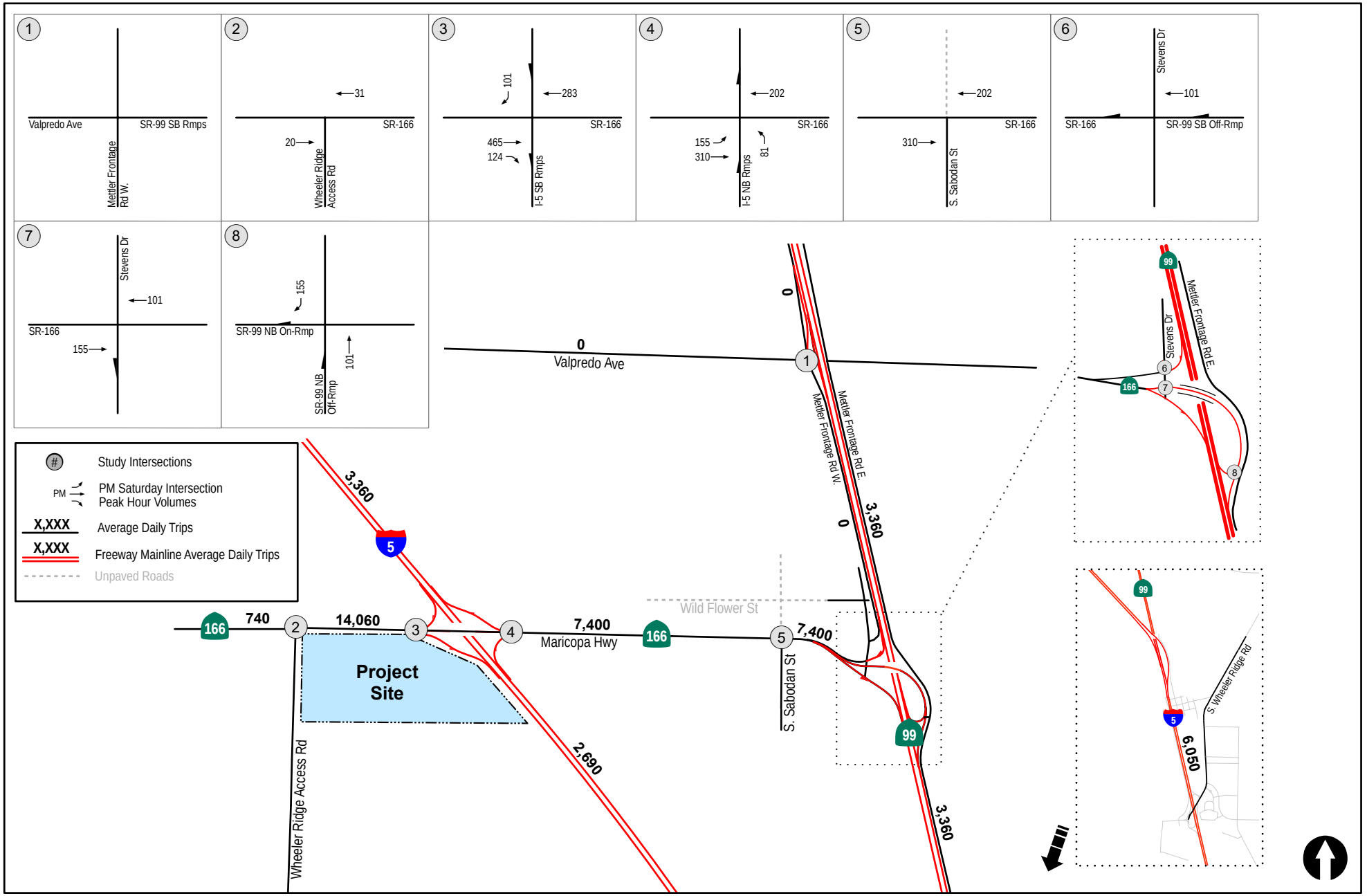
N:\3004\Figures
Date: 05/17/19

Figure 15-2

Alternative B Project Phase I Traffic Volumes

Weekday

Tejon Casino



LINSCOTT LAW & GREENSPAN engineers

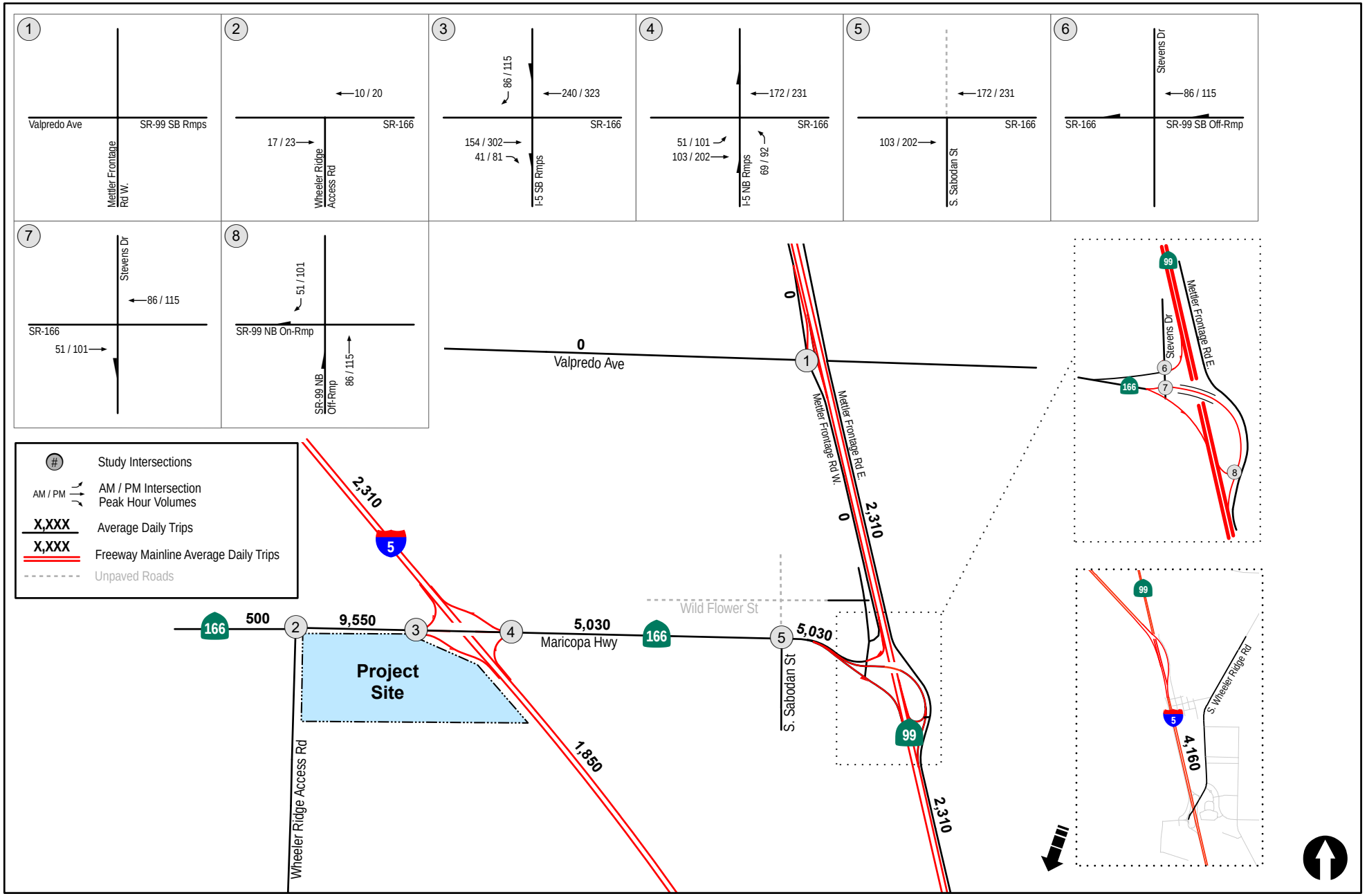
N:\3004\Figures
Date: 05/17/19

Figure 15-3

Alternative B Project Phase I Traffic Volumes

Saturday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

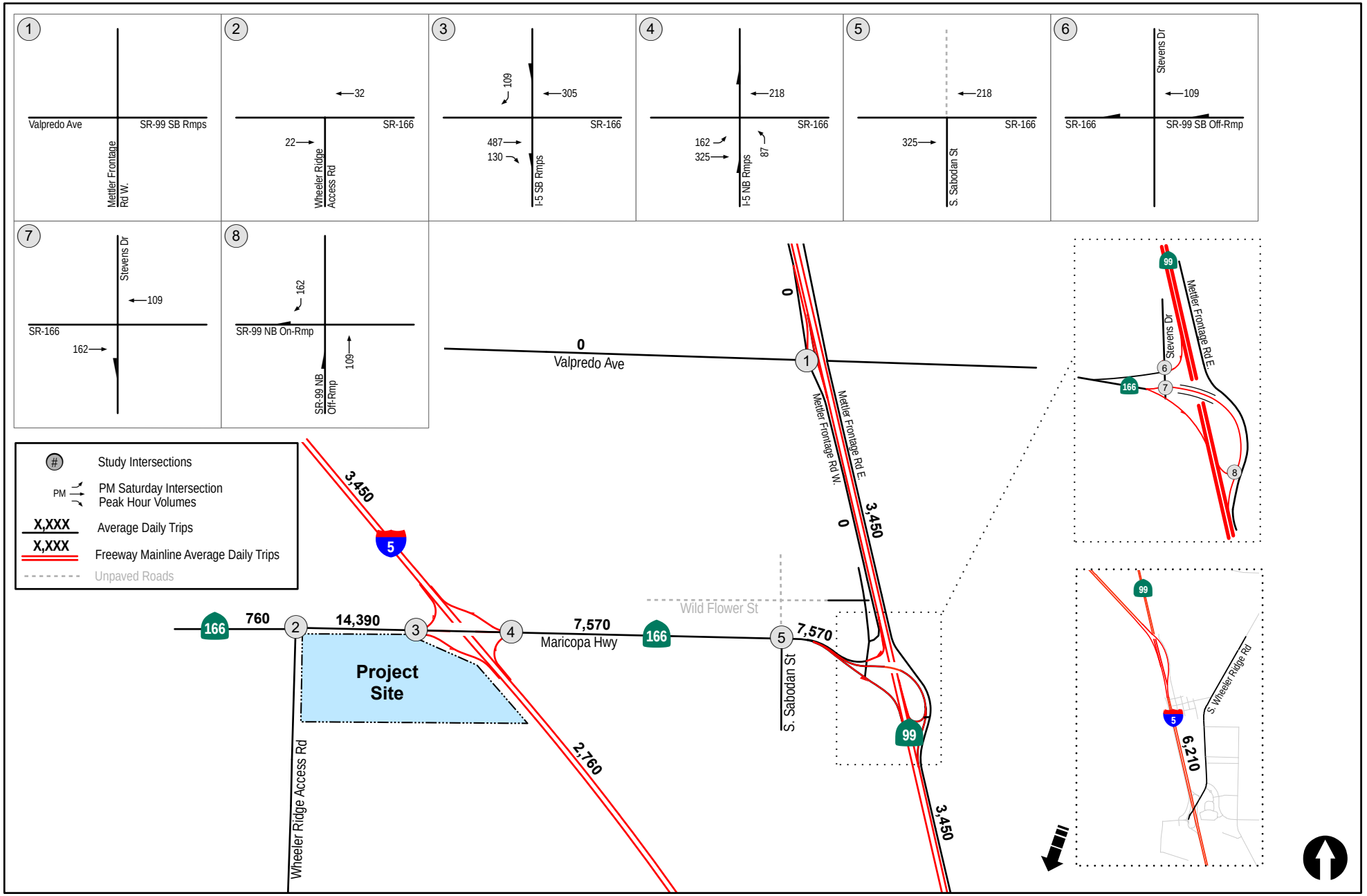
N:\3004\Figures
Date: 05/17/19

Figure 15-4

Alternative B Entire Project Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

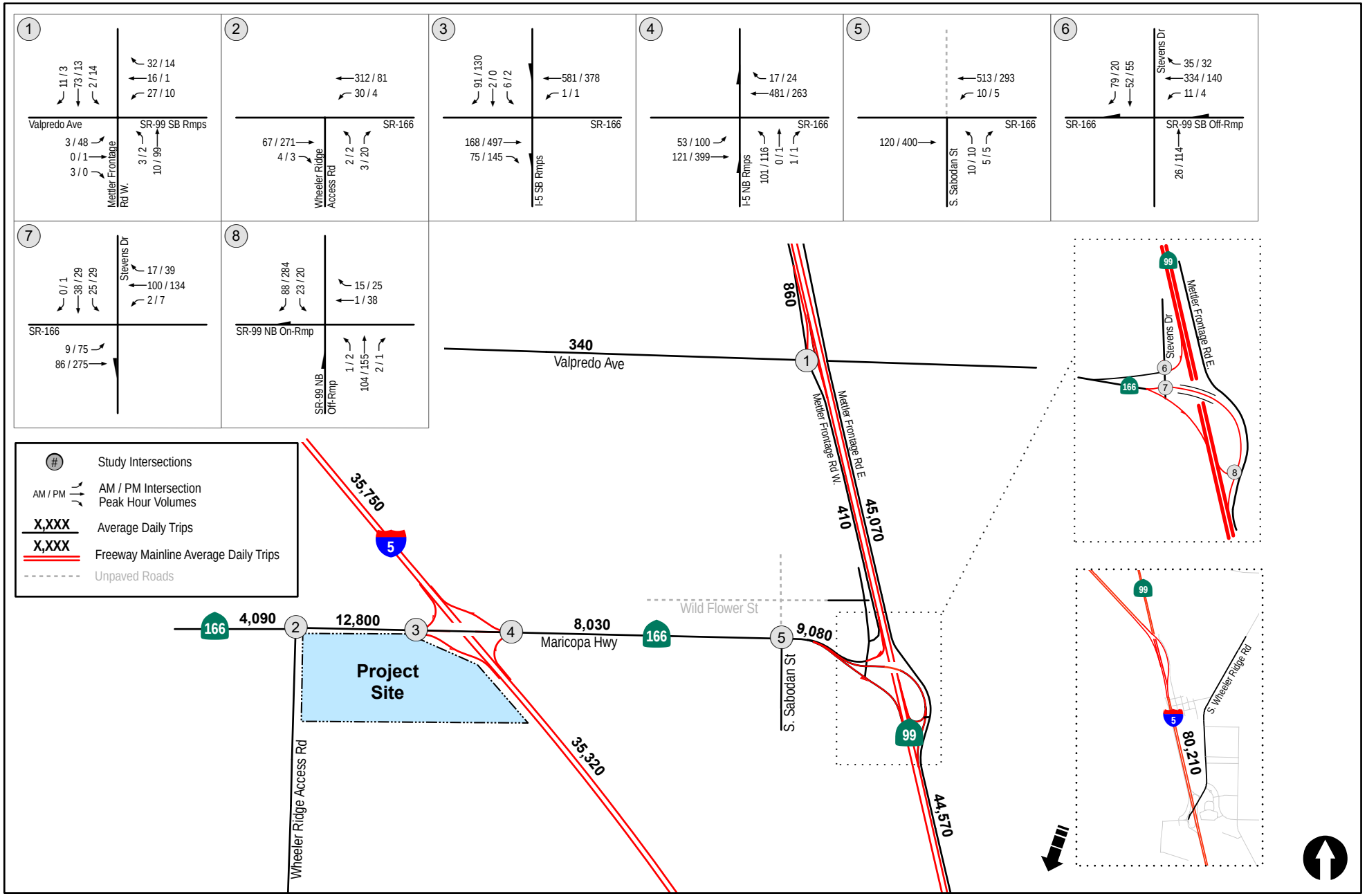
N:\3004\Figures
Date: 05/20/19

Figure 15-5

Alternative B Entire Project Traffic Volumes

Saturday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

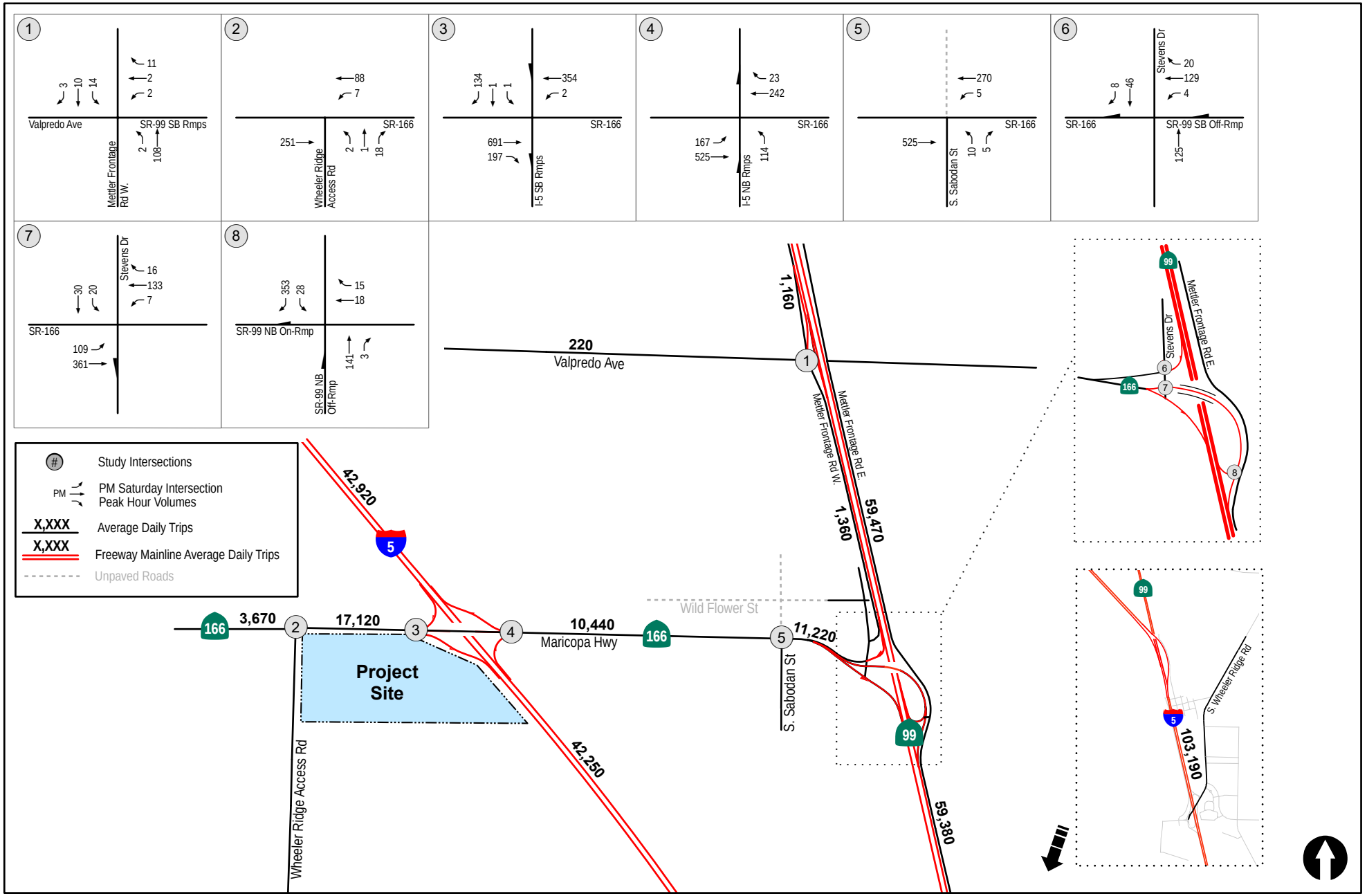
N:\3004\Figures
Date: 05/17/19

Figure 15-6

Existing + Alternative B Project Phase I Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

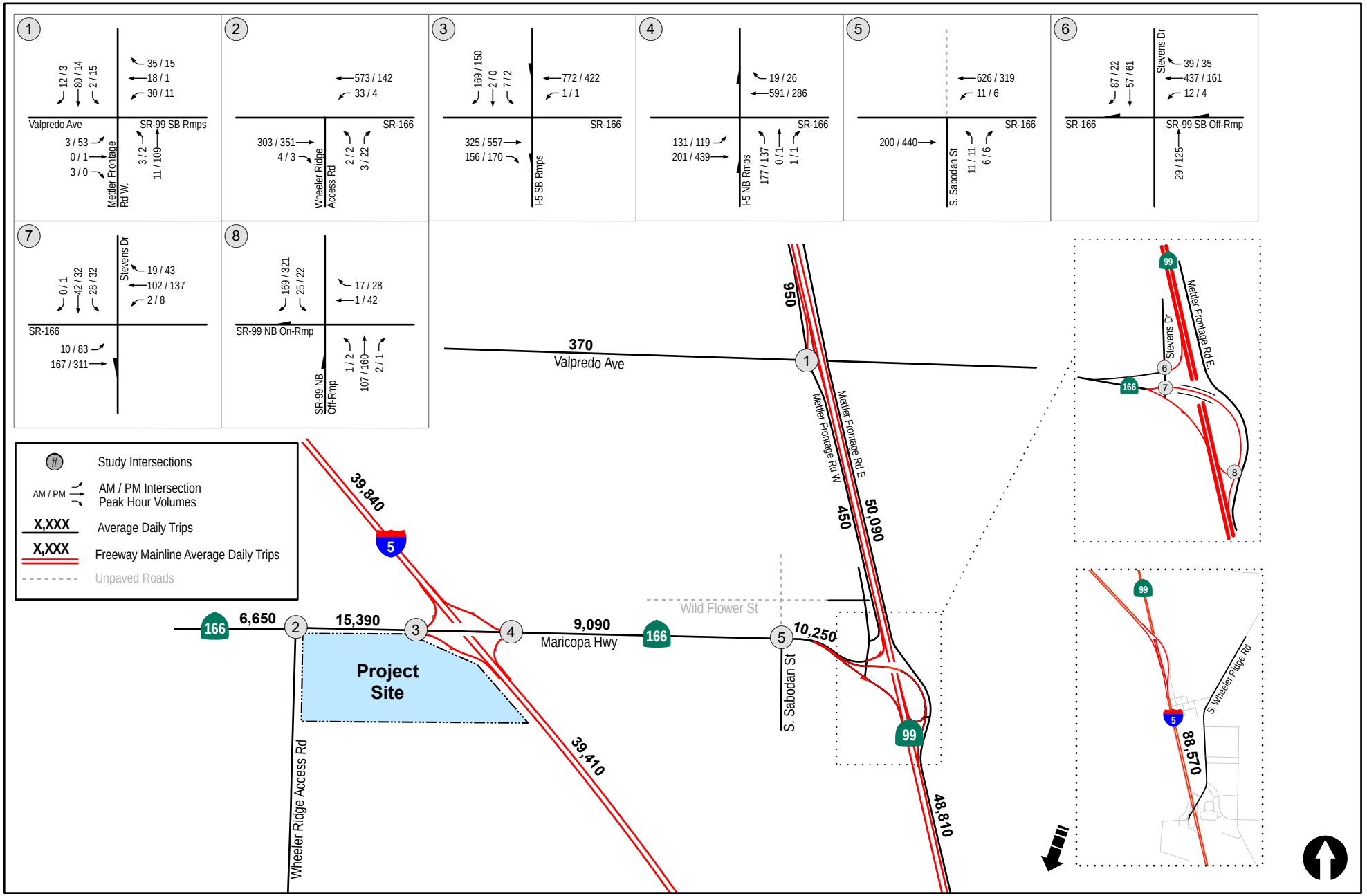
N:\3004\Figures
Date: 05/17/19

Figure 15-7

Existing + Alternative B Project Phase I Traffic Volumes

Saturday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

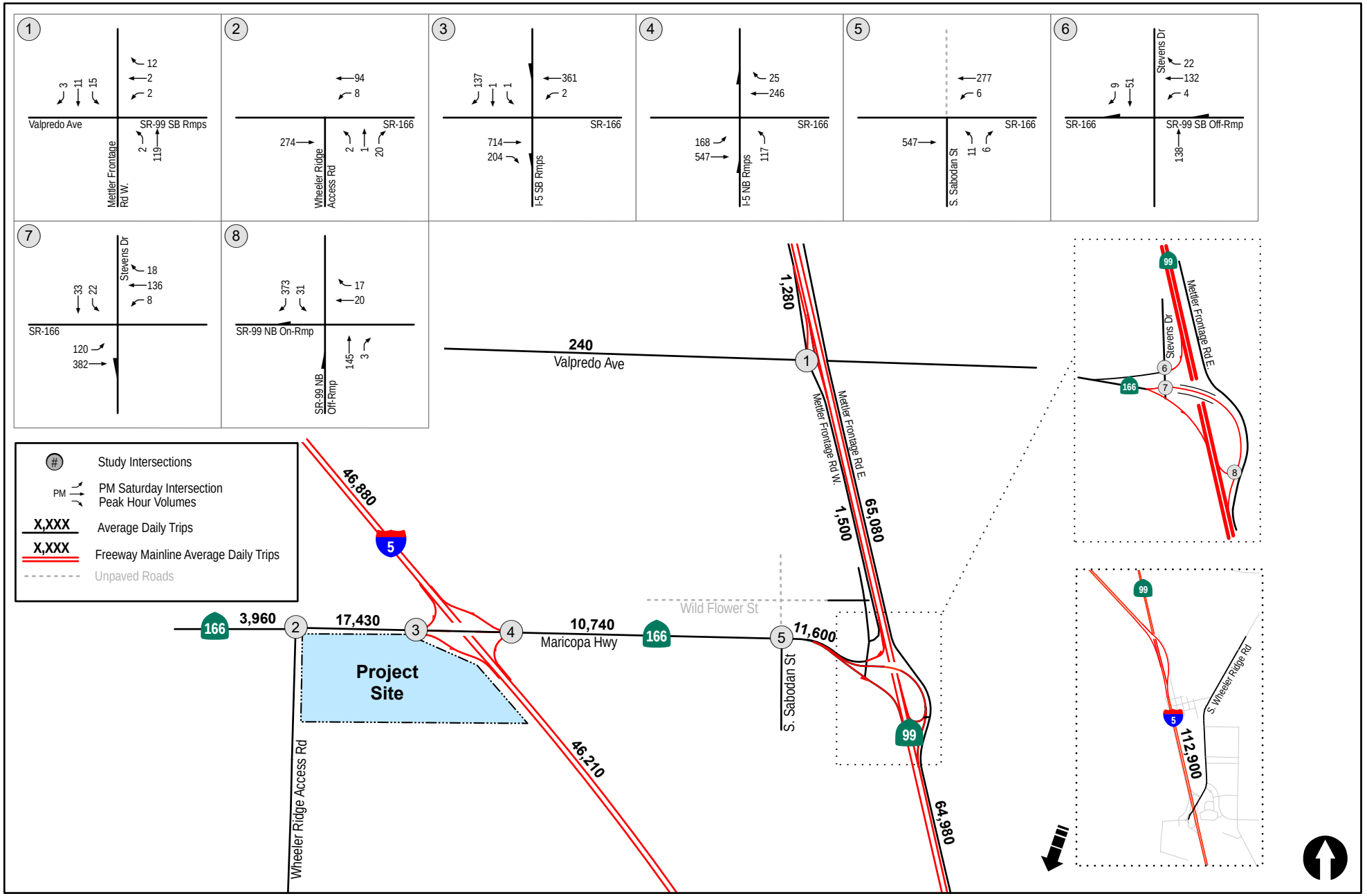
N:\3004\Figures
Date: 05/17/19

Figure 15-8

Opening Year (2023) + Alternative B Project Phase I Traffic Volumes

Weekday

TEJON CASINO



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/17/19

Figure 15-9

Opening Year (2023) + Alternative B Project Phase I Traffic Volumes

Saturday

TEJON CASINO

16.0 ANALYSIS OF NEAR-TERM SCENARIOS – ALTERNATIVE B

16.1 Existing + Project

16.1.1 *Intersection Analysis*

Table 16-1 summarizes the Existing + Project Alternative B Phase 1 peak hour intersection operations during the weekday peak hours and the Saturday peak hour. As seen in *Table 16-1*, with the addition of Alternative B Project Phase 1 traffic, the minor street left-turn movements at all unsignalized intersections are calculated to continue to operate at LOS C or better, except the following:

- Maricopa Highway / I-5 NB Ramps (LOS E during the Weekday PM peak hour and LOS F during the Saturday peak hour)
- Stevens Drive / Maricopa Highway (LOS E during the Saturday peak hour)

The Project has a direct impact at these intersections in Alternative B.

Appendix K contains the Existing + Project Alternative B Phase 1 Weekday and Saturday intersection analysis worksheets.

16.1.2 *Daily Street Segment Levels of Service*

Table 16-2 summarizes the Existing + Project Alternative B Phase 1 Weekday segment operations. As seen in *Table 16-2*, with the addition of Alternative B Project Phase 1 traffic, all study area segments are calculated to operate at LOS D or better on a Weekday, except the following:

Maricopa Highway: Wheeler Ridge Access Road to I-5 SB Ramps (LOS E)

Table 16-3 summarizes the Existing + Project Alternative B Phase 1 Saturday segment operations. As seen in *Table 16-2*, with the addition of Alternative B Project Phase 1 traffic, all study area segments are calculated to operate at LOS D or better on a Saturday, except the following:

- **Maricopa Highway:** Wheeler Ridge Access Road to I-5 SB Ramps (LOS E)

The Project has no significant impact on this roadway segment in Alternative B.

16.1.3 *Ramp Merge Analysis*

Table 16–4 summarizes the operations of the Ramp Merge sections under Existing + Project Alternative B Phase 1 Weekday scenario. As seen in *Table 16–4*, with the addition of Project Alternative B Phase 1 traffic, the following ramp diverge section is calculated to operate at LOS F

- SR 166 on-ramp merge to NB I-5 ramp (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 16–5 summarizes the operations of the Ramp Merge sections under Existing + Project Alternative B Phase 1 Saturday scenario. As seen in *Table 16–5*, with the addition of Project

Alternative B Phase 1 traffic, two of the four merge sections analyzed are calculated to operate at LOS D or better. The following ramp diverge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB I-5 (LOS F during the PM peak hour)
- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

16.1.4 *Ramp Diverge Analysis*

Table 16–4 summarizes the operations of the Ramp Diverge sections under Existing + Project Alternative B Phase 1 Weekday scenario. As seen in *Table 16–4*, with the addition of Project Alternative B Phase 1 traffic, the following ramp diverge section is calculated to operate at LOS E:

- NB I-5 off-ramp diverge to SR 166 ramp (LOS E during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 16–5 summarizes the operations of the Ramp Diverge sections under Existing + Project Alternative B Phase 1 Saturday scenario. As seen in *Table 16–5*, with the addition of Project Alternative B Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS E or F:

- SB I-5 off-ramp diverge to SR 166 (LOS E during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Appendix K contains the Existing + Project Alternative B Phase 1 Weekday and Saturday Ramp Merge and Diverge analysis worksheets.

16.2 Opening Year (2023) without Project

The Opening Year (2023) without Project intersection peak hour, segment and freeway segment analyses are the same as in Section 10.2 and is therefore not repeated here. However, for the convenience of the reader, the results of the intersection and segment analyses (Weekday and Saturday) are included in *Tables 16-1, 16-2 and 16-3* respectively.

16.3 Opening Year (2023) + Project Phase 1

16.3.1 *Intersection Analysis*

Table 16-1 summarizes the Opening Year (2023) + Project Alternative B Phase 1 peak hour intersection operations during the weekday peak hours and the Saturday peak hour. As seen in *Table 1-1*, with the addition of Project Alternative B Phase 1 traffic, the minor street left-turn movements at all unsignalized intersections are calculated to continue to operate at LOS D or better, except the following:

- Maricopa Highway / I-5 SB Ramps (LOS E during the Weekday AM peak hour)

- Maricopa Highway / I-5 NB Ramps (LOS F during the Weekday AM and PM peak hours and the Saturday peak hour)
- Stevens Drive / Maricopa Highway (LOS E during the Saturday peak hour)

The Project has a direct impact at these intersections in Alternative B.

Appendix L contains the Opening Year (2023) + Project Alternative B Phase 1 Weekday and Saturday intersection analysis worksheets.

16.3.2 *Daily Street Segment Levels of Service*

Table 16-2 summarizes the Opening Year (2023) + Project Alternative B Phase 1 Weekday segment operations. As seen in *Table 16-2*, with the addition of Project Alternative B Phase 1 traffic, all study area segments are calculated to operate at LOS D or better on a Weekday, except the following:

- **Maricopa Highway:** Wheeler Ridge Access Road to I-5 SB Ramps (LOS E)

Table 16-3 summarizes the Opening Year (2023) + Project Alternative B Phase 1 Saturday segment operations. As seen in *Table 16-2*, with the addition of Project Alternative B Phase 1 traffic, all study area segments are calculated to operate at LOS D or better on a Saturday, except the following:

- **I-5:** SR 99 to S. Wheeler Ridge Road (LOS E)
- **Maricopa Highway:** Wheeler Ridge Access Road to I-5 SB Ramps (LOS E)

The Project has no significant impacts on these freeway and roadway segments in Alternative B.

16.3.3 *Ramp Merge Analysis*

Table 16–6 summarizes the operations of the Ramp Merge sections under Opening Year (2023) + Project Alternative B Phase 1 Weekday scenario. As seen in *Table 16–6*, with the addition of Project Alternative B Phase 1 traffic, the following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to NB I-5 ramp (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 16–7 summarizes the operations of the Ramp Merge sections under Opening Year (2023) + Project Alternative B Phase 1 Saturday scenario. As seen in *Table 16–7*, with the addition of Project Alternative B Phase 1 traffic, the following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB SR 99 (LOS F during the PM peak hour)
- SR 166 on-ramp merge to SB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- SR 166 on-ramp merge to NB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

16.3.4 *Ramp Diverge Analysis*

Table 16–6 summarizes the operations of the Ramp Diverge sections under Opening Year (2023) + Project Alternative B Phase 1 Weekday scenario. As seen in *Table 16–6*, with the addition of Project Alternative B Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS E or F:

- SB I-5 off-ramp diverge to SR 166 (LOS E during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off-ramp diverge to SR 166 ramp (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

Table 16–7 summarizes the operations of the Ramp Diverge sections under Opening Year (2023) + Project Alternative B Phase 1 Saturday scenario. As seen in *Table 16–7*, with the addition of Project Alternative B Phase 1 traffic, the following ramp diverge sections are calculated to operate at LOS F:

- SB SR 99 off-ramp diverge to Valpredo Avenue (LOS F during the PM peak hour)
- SB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.

The increase in the density in the influence area due to the addition of Project traffic is less than 10%. Hence the Project is considered to have no significant impacts in these sections.

Appendix L contains the Opening Year (2023) + Project Alternative B Phase 1 Weekday and Saturday Ramp Merge and Diverge analysis worksheets.

TABLE 16–1
NEAR-TERM WITH PROJECT PHASE 1 INTERSECTION OPERATIONS - ALTERNATIVE B

Intersection	Control Type	Peak Hour	Existing		Existing + Project Phase 1		Δ Delay	Sig?	Opening Year (2023)		Opening Year (2023) + Project Phase 1		Δ Delay	Sig?
			Delay [a]	LOS [b]	Delay	LOS			Delay	LOS	Delay	LOS		
1. Mettler Frontage Rd W. / Valpredo Ave / SR 99 SB Ramps	TWSC [c]	Wkday AM	10.1	B	10.1	B	0.0	No	10.2	B	10.2	B	0.0	No
		Wkday PM	10.2	B	10.2	B	0.0	No	10.4	B	10.4	B	0.0	No
		Saturday Pk	10.3	B	10.3	B	0.0	No	10.5	B	10.5	B	0.0	No
2. Maricopa Hwy / Wheeler Ridge Rd	TWSC	Wkday AM	10.4	B	10.6	B	0.2	No	16.0	C	16.5	C	0.5	No
		Wkday PM	10.3	B	10.5	B	0.2	No	11.0	B	11.2	B	0.2	No
		Saturday Pk	10.2	B	10.4	B	0.2	No	10.4	B	10.6	B	0.2	No
3. Maricopa Hwy / I-5 SB Ramps	TWSC	Wkday AM	11.9	B	17.7	C	5.8	No	17.6	C	**38.4**	**E**	**20.8**	**Yes**
		Wkday PM	10.6	B	18.8	C	8.2	No	11.6	B	21.3	C	9.7	No
		Saturday Pk	10.8	B	24.9	C	14.1	No	11.0	B	25.9	D	14.9	No
4. Maricopa Hwy / I-5 NB Ramps	TWSC	Wkday AM	11.8	B	22.2	C	10.4	No	25.3	D	**>100.0**	**F**	**>10.0**	**Yes**
		Wkday PM	10.8	B	**36.3**	**E**	**25.5**	**Yes**	12.2	B	**66.4**	**F**	**54.2**	**Yes**
		Saturday Pk	10.8	B	**>100.0**	**F**	**>10.0**	**Yes**	11.1	B	**>100.0**	**F**	**>10.0**	**Yes**
5. Maricopa Hwy / S. Sabodan St	TWSC	Wkday AM	10.9	B	13.2	B	2.3	No	12.6	B	15.7	C	3.1	No
		Wkday PM	10.4	B	14.1	B	3.7	No	10.9	B	14.9	B	4.0	No
		Saturday Pk	10.3	B	15.6	C	5.3	No	10.5	B	16.0	C	5.5	No
6. SR 99 SB Off Ramp / Stevens Dr	TWSC	Wkday AM	11.0	B	12.0	B	1.0	No	12.6	B	14.2	B	1.6	No
		Wkday PM	9.8	A	10.7	B	0.9	No	10.1	B	11.1	B	1.0	No
		Saturday Pk	10.4	B	11.9	B	1.5	No	10.6	B	12.3	B	1.7	No

CONTINUED ON THE NEXT PAGE

TABLE 16–1 (CONTINUED)
NEAR-TERM WITH PROJECT PHASE 1 INTERSECTION OPERATIONS - ALTERNATIVE B

Intersection	Control Type	Peak Hour	Existing		Existing + Project Phase 1		Δ Delay	Sig?	Opening Year (2023)		Opening Year (2023) + Project Phase 1		Δ Delay	Sig?
			Delay [a]	LOS [b]	Delay	LOS			Delay	LOS	Delay	LOS		
7. Maricopa Hwy / Stevens Dr	TWSC	Wkday AM	9.7	A	10.7	B	1.0	No	10.4	B	11.7	B	1.3	No
		Wkday PM	13.1		16.7		3.6	No	14.2		18.5	C	4.3	No
		Saturday Pk	19.1 B		**36.0 C**	**E**	**16.9**	**Yes**	22.0 B		**45.4**	**E**	**23.4**	**Yes**
8. Maricopa Hwy / SR 99 NB Ramps	TWSC	Wkday AM	7.4 C	A	8.1	A	0.7	No	7.6 C	A	8.3	A	0.7	No
		Wkday PM	8.1		9.4		1.3	No	8.4		9.8	A	1.4	No
		Saturday Pk	8.3 A		11.1 A	B	2.8	No	8.6 A		11.6	B	3.0	No

A A

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

WkDay AM – Weekday AM Peak Hour
WkDay AM – Weekday PM Peak Hour
Saturday Pk – Saturday Peak Hour

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

TABLE 16–2
NEAR-TERM WITH PROJECT PHASE 1 WEEKDAY STREET SEGMENT OPERATIONS - ALTERNATIVE B

Street Segment	Existing Capacity (LOS E)[a]	Existing			Existing + Project Phase 1			Δ V/C	Sig?	Opening Year (2023)			Opening Year (2023) + Project Phase 1			Δ V/C	Sig?
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C			ADT	V/C	LOS	ADT	V/C	LOS		
I-5																	
Copus Rd to SR 166 (Maricopa Hwy)	52,200	33,600	C	0.644	35,750	C	0.685	0.041	None	37,690	C	0.722	39,840	C	0.763	0.041	No
SR 166 (Maricopa Hwy) to SR 99	52,200	33,600	C	0.644	35,320	C		0.033	None	37,690	C	0.722	39,410	C	0.755	0.033	No
SR 99 to S. Wheeler Ridge Rd	104,400	76,340	C	0.731	80,210	C	0.677 0.768	0.037	None	84,700	C	0.811	88,570	D	0.848	0.037	No
SR 99																	
Valpredo Ave to SR 166 (Maricopa Hwy)	78,300	42,920	B	0.548	45,070	C	0.576	0.028	None	47,940	C	0.612	50,090	C	0.640	0.027	No
SR 166 (Maricopa Hwy) to I-5	78,300	42,420	B	0.542	44,570	C	0.569	0.027	None	46,660	C	0.596	48,810	C	0.623	0.027	No
Mettler Frontage Rd W																	
Copus Rd to Valpredo Ave	13,600	860	A	0.063	860	A	0.063	0.000	None	950	A	0.070	950	A	0.070	0.000	No
Valpredo Ave to Maricopa Hwy	13,600	410	A	0.030	410	A	0.030	0.000	None	450	A	0.033	450	A	0.033	0.000	No
Valpredo Ave																	
I-5 Ramps to SR-99 Ramps	13,600	340	A	0.025	340	A	0.025	0.000	None	370	A	0.027	370	A	0.027	0.000	No
Maricopa Highway																	
East of Wheeler Ridge Access Rd	13,600	3,620	B	0.266	4,090	B		0.035	None	6,180	C	0.454	6,650	C	0.489	0.035	No
Wheeler Ridge Access Rd to I-5 SB Ramps	13,600	3,860	B		12,800	D	0.301 0.941	0.657	None	6,450	C	0.474	**15,390**	**E**	**1.132**	**0.657**	**Yes**
I-5 NB Ramps to S Sabodan St	13,600	3,330	B	0.284 0.245	8,030	C	0.590	0.345	None	4,390	B	0.323	9,090	D	0.668	0.346	No
S Sabodan St to SR-99 Ramps	13,600	4,380	B	0.322	9,080	D	0.668	0.346	None	5,550	C	0.408	10,250	D	0.754	0.346	No

Footnotes:

a. Capacities based on Kern County Roadway Classification & LOS table (See *Table 4-3*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

BOLD typeface indicates a potentially significant impact.
Sig? – Significant Impact

TABLE 16–3
NEAR-TERM WITH PROJECT PHASE 1 SATURDAY STREET SEGMENT OPERATIONS - ALTERNATIVE B

Street Segment	Existing Capacity (LOS E)[a]	Existing			Existing + Project Phase 1			Δ V/C	Sig?	Opening Year (2023)			Opening Year (2023) + Project Phase 1			Δ V/C	Sig?
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C			ADT	LOS	V/C	ADT	LOS	V/C		
I-5																	
Copus Rd to SR 166 (Maricopa Hwy)	52,200	39,560	C	0.758	42,920	D	0.822	0.064	No	43,520	D	0.834	46,880	D	0.898	0.064	No
SR 166 (Maricopa Hwy) to SR 99	52,200	39,560	C	0.758	42,250	C	0.809	0.051	No	43,520	D	0.834	46,210	D	0.885	0.052	No
SR 99 to S. Wheeler Ridge Rd	104,400	97,140	D	0.930	103,190	D	0.988	0.058	No	**106,850**	**E**	**1.023**	**112,900**	**E**	**1.081**	**0.058**	**Yes**
SR 99																	
Valpredo Ave to SR 166 (Maricopa Hwy)	78,300	56,110	C	0.717	59,470	C	0.760	0.043	No	61,720	C	0.788	65,080	D	0.831	0.043	No
SR 166 (Maricopa Hwy) to I-5	78,300	56,020	C	0.715	59,380	C	0.758	0.043	No	61,620	C	0.787	64,980	D	0.830	0.043	No
Mettler Frontage Rd W																	
Copus Rd to Valpredo Ave	13,600	1,160	A	0.085	1,160	A	0.085	0.000	No	1,280	A	0.094	1,280	A	0.094	0.000	No
Valpredo Ave to Maricopa Hwy	13,600	1,360	A	0.100	1,360	A	0.100	0.000	No	1,500	A	0.110	1,500	A	0.110	0.000	No
Valpredo Ave																	
I-5 Ramps to SR-99 Ramps	13,600	220	A	0.016	220	A	0.016	0.000	No	240	A	0.018	240	A	0.018	0.000	No
Maricopa Highway																	
East of Wheeler Ridge Access Rd	13,600	2,930	B	0.215	3,670	B	0.270	0.055	No	3,220	B	0.237	3,960	B	0.291	0.054	No
Wheeler Ridge Access Rd to I-5 SB Ramps	13,600	3,060	B	0.225	**17,120**	**E**	**1.259**	**1.034**	**Yes**	3,370	B	0.248	**17,430**	**E**	**1.282**	**1.034**	**Yes**
I-5 NB Ramps to S Sabodan St	13,600	3,040	B	0.224	10,440	D	0.768	0.544	No	3,340	B	0.246	10,740	D	0.790	0.544	No
S Sabodan St to SR-99 Ramps	13,600	3,820	B	0.281	11,220	D	0.825	0.544	No	4,200	B	0.309	11,600	D	0.853	0.544	No

Footnotes:

a. Capacities based on Kern County Roadway Classification & LOS table (See *Table 4-3*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

General Notes:

BOLD typeface indicates a potentially significant impact.
Sig? – Significant Impact

TABLE 16–4
EXISTING + PROJECT PHASE I WEEKDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE B

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,703	251	2,954	62.3	19.5	B
	PM	3,390	294	3,684	61.2	24.2	C
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,541	90	2,631	62.7	17.3	B
	PM	2,738	324	3,062	62.1	20.6	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	1,869	78	1,947	62.2	20.4	C
	PM	2,852	146	2,998	57.8	31.1	D
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,714	70	2,784	58.8	29.6	D
	PM	3,384	125	3,509	**51.0**	**37.1**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	3,248	75	3,173	58.0	24.8	C
	PM	3,735	25	3,710	58.2	28.0	C
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,083	380	2,703	57.1	22.3	C
	PM	3,566	176	3,390	57.7	26.3	C
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	2,648	107	2,541	57.9	20.5	C
	PM	2,896	158	2,738	57.7	21.9	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	1,968	99	1,869	57.9	22.3	C
	PM	2,984	132	2,852	57.8	33.6	D
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,816	102	2,714	57.9	31.4	D
	PM	3,502	118	3,384	**57.9**	**39.0**	**E**

Footnotes:

a. Passenger cars / mile / lane

TABLE 16–5
EXISTING + PROJECT PHASE I SATURDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE B

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,467	359	4,826	57.5	31.4	D
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	3,668	371	4,039	60.2	26.8	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,350	200	3,550	**51.6**	**36.7**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,989	190	4,179	**32.9**	**44.0**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	PM	4,773	15	4,758	58.2	33.7	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	4,620	153	4,467	57.7	32.4	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	3,812	144	3,668	57.8	27.6	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	3,486	136	3,350	**57.8**	**39.4**	**E**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	4,103	114	3,989	**57.9**	**45.8**	**F**

Footnotes:
a. Passenger cars / mile / lane

TABLE 16–6
OPENING YEAR + PROJECT PHASE I WEEKDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE B

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,970	267	3,237	62.0	21.3	C
	PM	3,730	310	4,040	60.4	26.4	C
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	2,800	173	2,973	62.3	19.7	B
	PM	3,010	369	3,379	61.7	22.7	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,060	164	2,224	61.6	23.1	C
	PM	3,140	170	3,310	54.9	34.2	D
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,990	153	3,143	56.0	33.2	D
	PM	3,720	149	3,869	**43.2**	**40.8**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	3,570	80	3,490	58.0	26.7	C
	PM	4,110	30	4,080	58.1	30.1	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,464	484	2,980	56.7	24.3	C
	PM	3,927	197	3,730	57.6	28.4	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	2,984	184	2,800	57.7	22.3	C
	PM	3,197	177	3,020	57.7	23.7	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,234	174	2,060	57.7	24.5	C
	PM	3,287	157	3,130	**57.7**	**36.9**	**E**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	3,169	179	2,990	57.7	34.5	D
	PM	3,865	135	3,730	**57.8**	**42.9**	**F**

Footnotes:
a. Passenger cars / mile / lane

TABLE 16–7
OPENING YEAR + PROJECT PHASE I SATURDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE B

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,910	375	5,285	**54.7**	**34.3**	**F**
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	PM	4,030	395	4,425	58.9	29.3	D
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	3,690	204	3,894	**44.8**	**40.2**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	PM	4,390	195	4,585	**10.5**	**48.3**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	PM	5,250	20	5,230	**58.2**	**38.0**	**F**
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	5,071	161	4,910	57.7	34.6	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	PM	4,181	151	4,030	57.8	29.7	D
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	3,821	141	3,680	**57.8**	**43.2**	**F**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	PM	4,501	121	4,380	**57.9**	**50.2**	**F**

Footnotes:
a. Passenger cars / mile / lane

17.0 ANALYSIS OF LONG-TERM SCENARIOS – ALTERNATIVE B

17.1 Year 2040 Traffic Volumes

The methodology used to forecast the Year 2040 volumes is explained in Section 11.0 Analysis of Long-Term Scenarios – Alternative A1. The same applies for Alternative B since the Year 2040 without Project volumes are the same.

Figure 11-1 depicts the Year 2040 without Project traffic volumes. ***Figure 17-1*** depicts the Year 2040 with Project Alternative B traffic volumes.

17.2 Year 2040 without Project Analysis

The Year 2040 without Project peak hour intersection and segment operations are the same as described in Section 11.2. The delays and levels of service are repeated in *Table 17-1 and 17-2* for the convenience of the reader.

17.3 Year 2040 with Project Analysis

17.3.1 *Intersection Analysis*

Table 17-1 summarizes the Year 2040 + Alternative B Project peak hour intersection operations during the weekday peak hours. As seen in *Table 17-1*, with the addition of Alternative B Project traffic, the minor street left-turn movements at all unsignalized intersections are calculated to continue to operate at LOS C or better except the following:

- Maricopa Highway / I-5 SB Ramps (LOS F during the Weekday AM peak hour)
- Maricopa Highway / I-5 NB Ramps (LOS F during the Weekday AM and PM peak hours)

The Project has a cumulative impact at these intersections in Alternative B.

Appendix M contains the Year 2040 + Entire Alternative B Project intersection analysis worksheets.

17.3.2 *Daily Street Segment Levels of Service*

Table 17-2 summarizes the Year 2040 + Alternative B Project segment operations. As seen in *Table 17-2*, with the addition of Project Alternative B Project traffic, all study area segments are calculated to operate at LOS D or better, except the following:

- **Maricopa Highway:** Wheeler Ridge Access Rd to I-5 SB Ramps (LOS E)

The Project has no significant impact on this segment in Alternative B.

17.3.3 *Ramp Merge Analysis*

Table 17–3 summarizes the operations of the Ramp Merge sections under Year 2040 + Project Alternative B scenario. As seen in *Table 17–3*, with the addition of the Entire Project Alternative B

traffic, two of the four merge sections analyzed are calculated to operate at LOS D or better. The following ramp merge sections are calculated to operate at LOS F:

- SR 166 on-ramp merge to SB I-5 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- SR 166 on-ramp merge to NB I-5 (LOS F during the AM and PM peak hours) - There is no change in LOS with the addition of Project traffic.

17.3.4 *Ramp Diverge Analysis*

Table 17–3 summarizes the operations of the Ramp Diverge sections under Year 2040 + Project Alternative B scenario. As seen in *Table 17–3*, with the addition of the Entire Project Alternative B traffic, three of the five diverge sections analyzed are calculated to operate at LOS D or better. The following ramp diverge sections are calculated to operate at LOS F:

- SB I-5 off-ramp diverge to SR 166 (LOS F during the PM peak hour) - There is no change in LOS with the addition of Project traffic.
- NB I-5 off-ramp diverge to SR 166 (LOS F during the AM and PM peak hours) - There is no change in LOS with the addition of Project traffic.

Appendix M contains the Year 2040 + Entire Alternative B Project Ramp Merge and Diverge analysis worksheets.

TABLE 17–1
YEAR 2040 WEEKDAY INTERSECTION OPERATIONS – ALTERNATIVE B

Intersection	Control Type	Peak Hour	Year 2040 Without Project		Year 2040 With Entire Project		Δ[c] Delay	Sig?
			Delay [a]	LOS [b]	Delay	LOS		
1. Mettler Frontage Rd W. / Valpredo Ave / SR 99 SB Ramps	TWSC [d]	AM	10.5	B	10.5	B	0.0	No
		PM	10.8	B	10.8	B	0.0	No
2. Maricopa Hwy / Wheeler Ridge Rd	TWSC	AM	17.6	C	18.2	C	0.6	No
		PM	11.6	B	11.9	B	0.3	No
3. Maricopa Hwy / I-5 SB Ramps	TWSC	AM	20.8	C	**86.0**	**F**	**65.2**	**Yes**
		PM	12.3	B	24.7	C	12.4	No
4. Maricopa Hwy / I-5 NB Ramps	TWSC	AM	**42.6**	**E**	**>100.0**	**F**	**>10.0**	**Yes**
		PM	13.3	B	**>100.0**	**F**	**>10.0**	**Yes**
5. Maricopa Hwy / S. Sabodan S	TWSC	AM	13.8	B	18.1	C	4.3	No
		PM	11.4	B	16.6	C	5.2	No
6. SR 99 SB Off Ramp / Stevens Dr	TWSC	AM	14.3	B	17.2	C	2.9	No
		PM	10.4	B	11.6	B	1.2	No
7. Maricopa Hwy / Stevens Dr	TWSC	AM	10.9	B	12.5	B	1.6	No
		PM	16.1	C	22.6	C	6.5	No
8. Maricopa Hwy / SR 99 NB Ramps	TWSC	AM	7.8	A	8.6	A	0.8	No
		PM	8.8	A	10.6	B	1.8	No

Footnotes:
a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:
Sig? – Significant Impact?

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

TABLE 17–2
YEAR 2040 WEEKDAY STREET SEGMENT OPERATIONS - ALTERNATIVE B

Street Segment	Existing Capacity (LOS E)[a]	Year 2040 No Project			Year 2040 + Project			Sig?
		ADT[b]	LOS[c]	V/C[d]	ADT	LOS	V/C	
I-5								
Copus Rd to SR 166 (Maricopa Hwy)	52,200	44,100	D	0.845	46,409	D	0.889	No
SR 166 (Maricopa Hwy) to SR 99	52,200	44,100	D	0.845	45,947	D	0.880	No
SR 99 to S. Wheeler Ridge Rd	104,400	99,100	D	0.949	103,256	D	0.989	No
SR 99								
Valpredo Ave to SR 166 (Maricopa Hwy)	78,300	56,090	C	0.716	58,399	C	0.746	No
SR 166 (Maricopa Hwy) to I-5	78,300	54,590	C	0.697	56,899	C	0.727	No
Mettler Frontage Rd W								
Copus Rd to Valpredo Ave	13,600	1,110	A	0.082	1,110	A	0.082	No
Valpredo Ave to Maricopa Hwy	13,600	530	A	0.039	530	A	0.039	No
Valpredo Ave								
I-5 Ramps to SR-99 Ramps	13,600	430	A	0.032	430	A	0.032	No
Maricopa Highway								
East of Wheeler Ridge Access Rd	13,600	7,230	C	0.532	7,733	C	0.569	No
Wheeler Ridge Access Rd to I-5 SB Ramps	13,600	7,550	C	0.555	**17,100**	**E**	**1.257**	**Yes**
I-5 NB Ramps to S Sabodan St	13,600	5,140	B	0.378	10,166	D	0.748	No
S Sabodan St to SR-99 Ramps	13,600	6,490	C	0.477	11,516	D	0.847	No

Footnotes:

a. Capacities based on Kern County Roadway Classification & LOS table (See *Table 4-3*).
b. Average Daily Traffic
c. Volume to Capacity ratio
d. Level of Service
e. Δ denotes a project-induced increase in the Volume to Capacity ratio

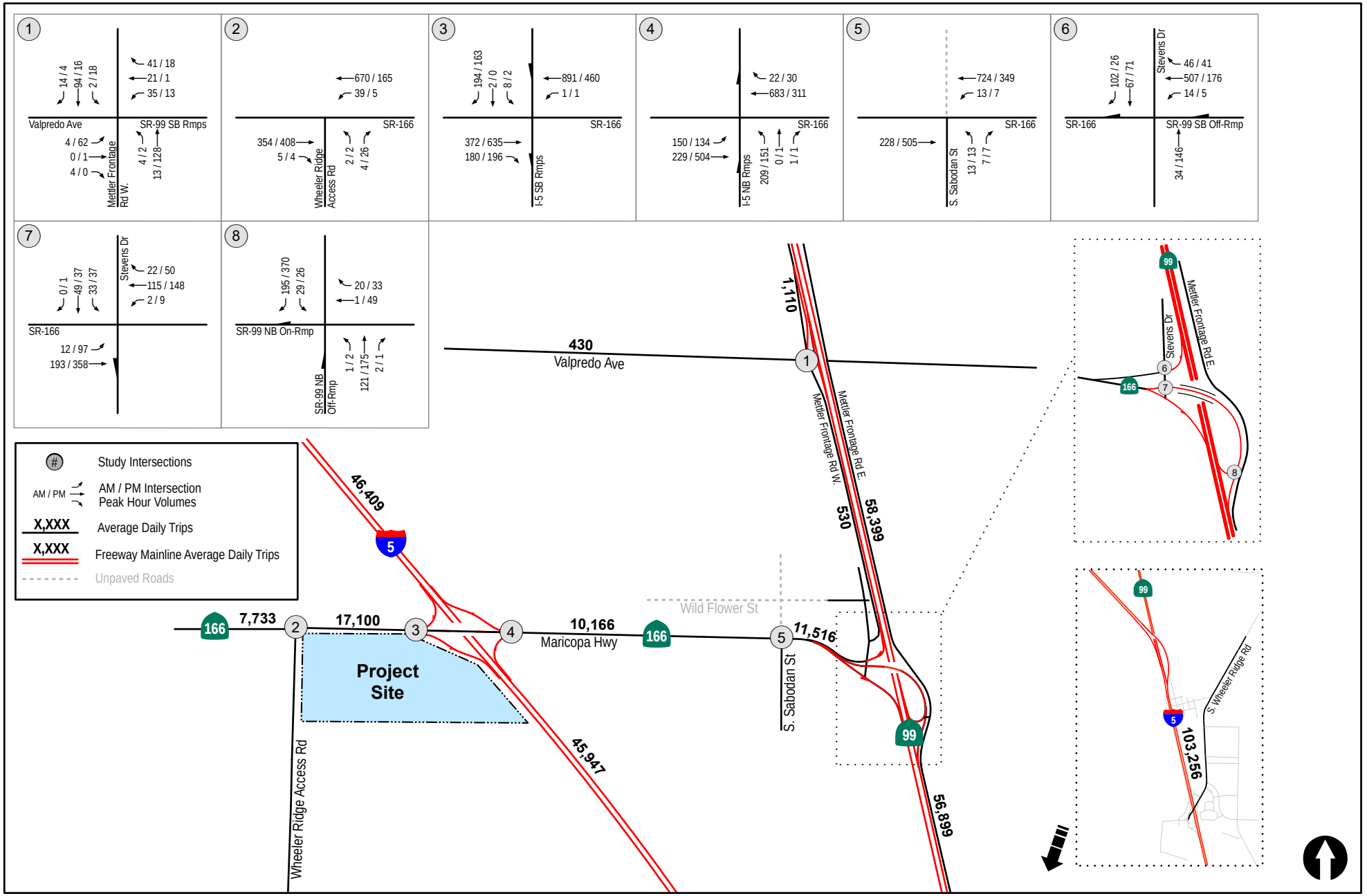
General Notes:

BOLD typeface indicates a potentially significant impact.
Sig? – Significant Impact

TABLE 17–3
YEAR 2040 + ENTIRE PROJECT WEEKDAY RAMP MERGE /DIVERGE OPERATIONS – ALTERNATIVE B

Ramp Merge /Diverge Location	Peak Hour	Volume			Influence Area		LOS
		Mainline Before Merge / Diverge	Ramp	Mainline After Merge / Diverge	On-/Off-Ramp Speed (mi/h)	Density (pc/m/ln) [a]	
RAMP MERGE							
SR 166 to SB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	3,470	312	3,782	61.0	24.8	C
	PM	4,360	361	4,721	58.0	30.8	D
SR 166 to NB SR 99 (3 Mainline lanes/1-lane On-Ramp)	AM	3,280	201	3,481	61.6	22.9	C
	PM	3,520	431	3,951	60.4	26.4	C
SR 166 to SB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	2,410	191	2,601	60.2	26.9	C
	PM	3,670	191	3,861	**45.6**	**39.9**	**F**
SR 166 to NB I-5 (2 Mainline lanes/1-lane On-Ramp)	AM	3,500	181	3,681	**47.9**	**38.8**	**F**
	PM	4,350	171	4,521	**14.7**	**47.6**	**F**
RAMP DIVERGE							
SB SR 99 to Valpredo Avenue (3 Mainline lanes/1-lane On-Ramp)	AM	4,180	90	4,090	58.0	30.2	D
	PM	4,810	40	4,770	58.1	33.8	D
SB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	4,046	566	3,480	56.5	27.5	C
	PM	4,585	215	4,370	57.6	31.9	D
NB SR 99 to SR 166 (3 Mainline lanes/1-lane On-Ramp)	AM	3,486	216	3,270	57.6	25.4	C
	PM	3,725	195	3,530	57.6	26.9	C
SB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	2,606	196	2,410	57.6	28.5	D
	PM	3,835	175	3,660	**57.7**	**43.0**	**F**
NB I-5 to SR 166 (2 Mainline lanes/1-lane On-Ramp)	AM	3,709	209	3,500	**57.6**	**40.3**	**F**
	PM	4,512	152	4,360	**57.8**	**50.0**	**F**

Footnotes:
a. Passenger cars / mile / lane



LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/17/19

Figure 17-1

Year 2040 + Alternative B Project Traffic Volumes

Weekday

TEJON CASINO

18.0 ACCESS DISCUSSION

The project access and recommended traffic control for each alternative is discussed in this section.

18.1 Alternatives A1 and A2

A majority of the project traffic is assumed to access the Project from the northerly extension of S. Sabodan Street, north of SR 166 in both Alternatives A1 and A2. The remaining Project traffic (10% inbound) is assumed to access the Project site via the SR 99 / Valpredo Avenue interchange and the Sabodan Street extension to Valpredo Avenue. The following are recommended:

1. Extend the existing S. Sabodan Street north of SR 166 to Valpredo Avenue.
2. Provide for a future 4-lane cross-section between SR 166 and the Main Casino Driveway on S. Sabodan Street and construct two lanes in Phase 1. Provide two lanes from the Main entrance to Valpredo Avenue.
3. Initially, provide a STOP control at the Main Casino Driveway at Sabodan Street, for traffic exiting the Casino and the following geometry:

   SB – One through /right-turn lane
   NB – One left-turn lane and one through lane
   EB – One left-turn lane, one right-turn lane (with overlap phase when signalized) outbound

   This intersection will need to be signalized in the near future, once traffic volumes on Sabodan Street reach about 7,000 ADT.
4. Extend Wildflower Street from its western terminus to the western boundary of the Alternative A1 Site, along the southern frontage so that a secondary parking lot access is available to patrons.

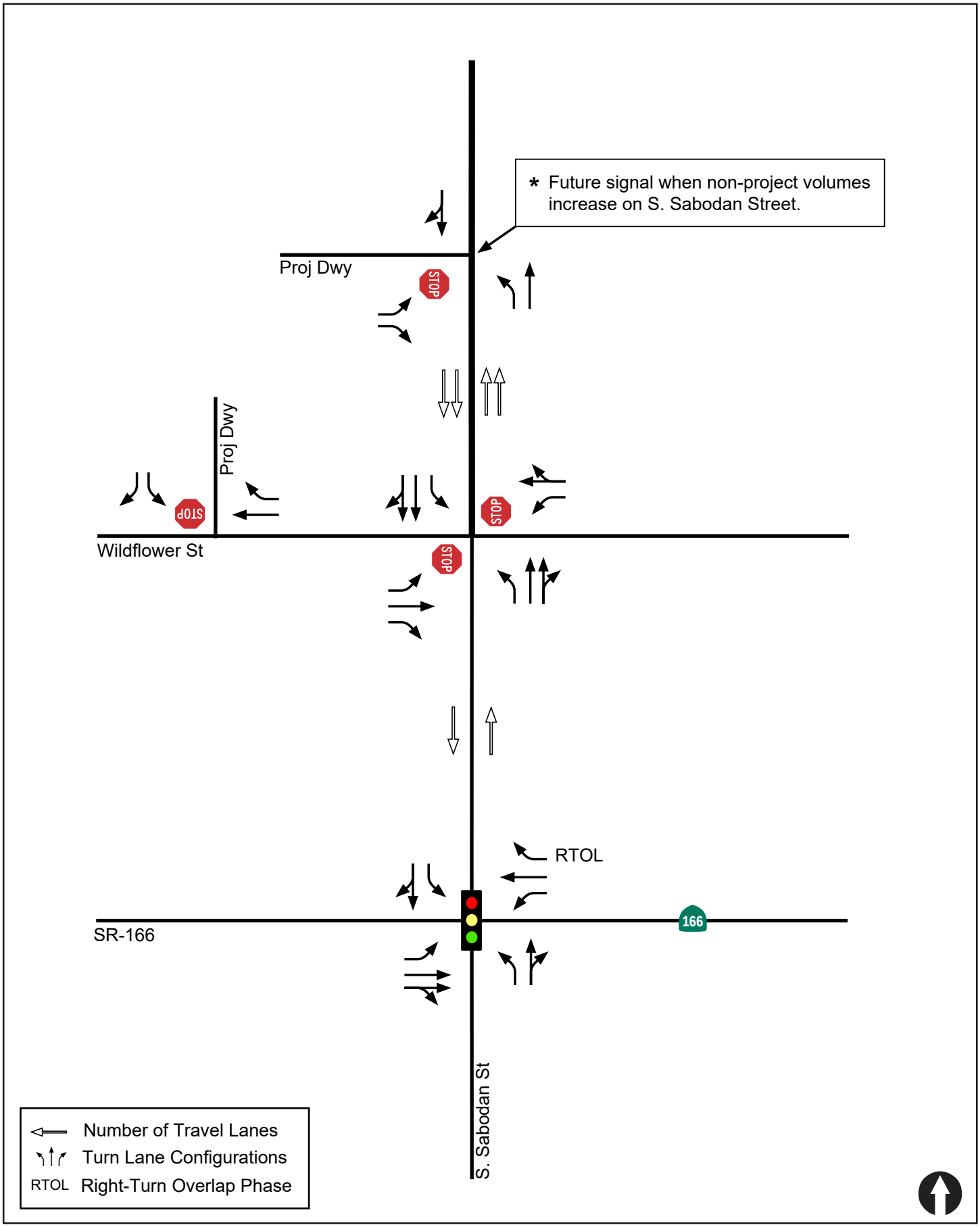
18.2 Alternative B

A majority of the project traffic is assumed to access the Project from the easterly driveway on SR 166 in Alternative B. The remaining Project traffic is assumed to access the Project site at the westerly driveway on SR 166. The following are recommended:

1. Ensure the Project driveway lines up with the existing eastern Chevron Driveway, with the Chevron Driveway being the 4th (north leg) of the intersection.
2. Provide a traffic signal at the main casino resort driveway and provide the following geometry:

   WB – One right-turn lane, one through lane and dual left-turn lanes
   NB – One shared through/left lane and one right-turn lane with an overlap phasing
   EB – One left-turn lane, one through lane and one through/right lane

3. Provide a second EB lane along the site frontage on SR-166 trapping (right-turn) onto the I-5 SB on ramp.
4. Provide a second parking lot access on SR-166, west of the main access.



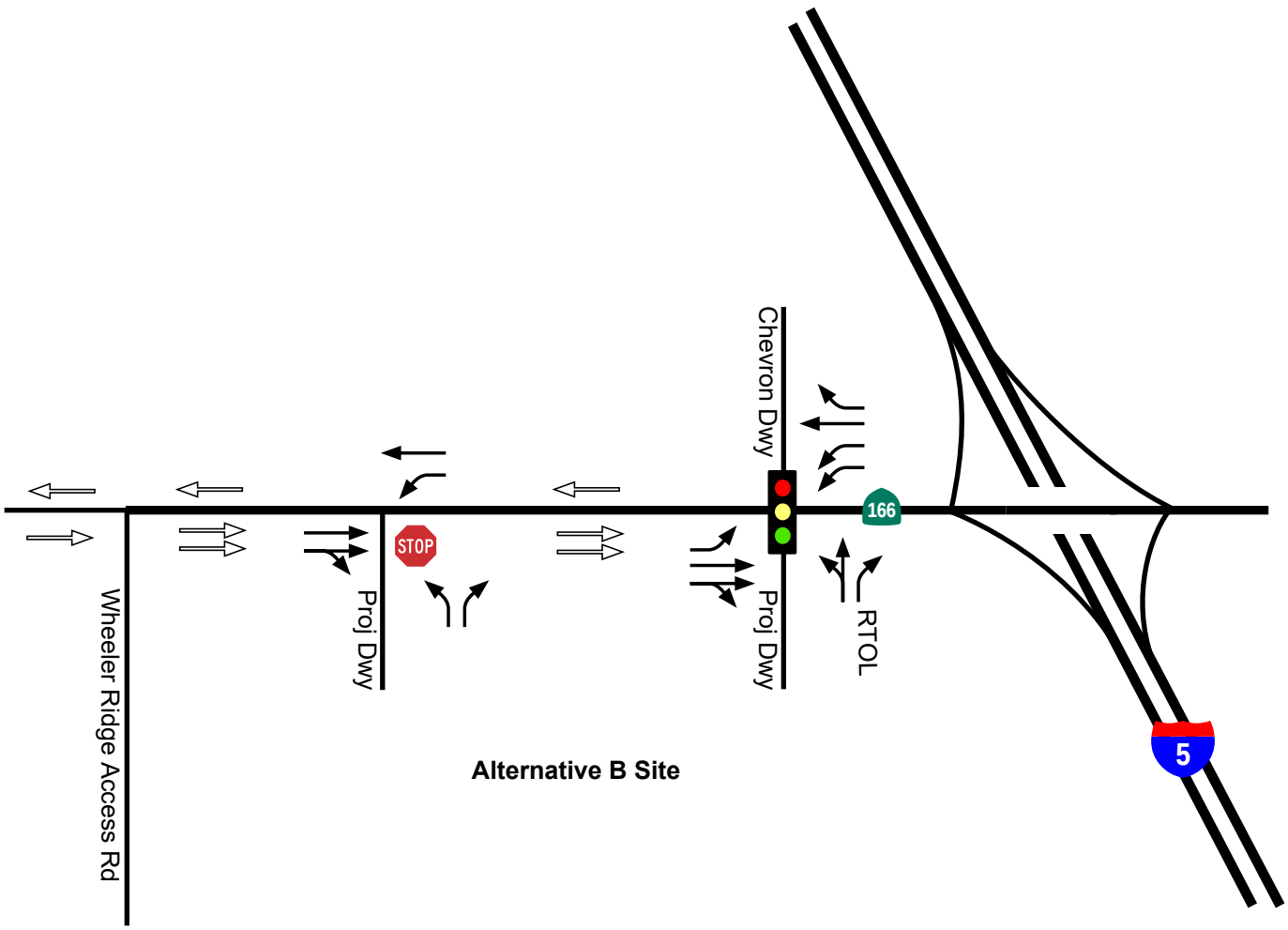
LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 05/23/19

Figure 18-1

Alternative A1 & A2 Phase I Access Recomendations

TEJON CASINO



Number of Travel Lanes
Turn Lane Configurations
RTOL Right-Turn Overlap Phase

LINSCOTT LAW & GREENSPAN engineers

N:\3004\Figures
Date: 01/23/20

Figure 18-2

Alternative B Phase I Access Recomendations

Tejon Casino

19.0 SIGNIFICANCE OF IMPACTS AND MITIGATION MEASURES

19.1 Significance of Impacts

Based on the significance criteria described in Section 5.0, the following significant impacts are calculated for each of the three alternatives.

19.1.1 *Alternative A1*

DIRECT ONLY IMPACT

A1-1 Stevens Drive / Maricopa Highway intersection

DIRECT AND CUMULATIVE IMPACTS

A1-2 Maricopa Highway / S. Sabodan Street intersection

CUMULATIVE ONLY IMPACT

A1-3 Maricopa Highway / I-5 SB Ramps intersection

A1-4 Maricopa Highway / I-5 NB Ramps intersection

A1-5 SR 166 to NB I-5 Ramp Merge

19.1.2 *Alternative A2*

DIRECT ONLY IMPACT

A2-1 Maricopa Highway / Stevens Drive intersection

DIRECT AND CUMULATIVE IMPACTS

A2-2 Maricopa Highway / S. Sabodan Street intersection

CUMULATIVE ONLY IMPACT

A2-3 Maricopa Highway / I-5 SB Ramps intersection

A2-4 Maricopa Highway / I-5 NB Ramps intersection

A2-5 SR 166 to NB I-5 Ramp Merge

19.1.3 *Alternative B*

DIRECT ONLY IMPACT

B-1 Stevens Drive / Maricopa Highway intersection

DIRECT AND CUMULATIVE IMPACTS

B-2 Maricopa Highway / I-5 SB Ramps intersection

B-3 Maricopa Highway / I-5 NB Ramps intersection

19.2 Mitigation Measures

Intersection Control Evaluation (ICE) studies will be conducted prior to the Project construction time to determine the appropriate intersection control for the intersections within Caltrans jurisdiction. ICE refers to the "evolved" decision-making process and framework that a growing number of transportation agencies are adopting to provide a more balanced or holistic approach to the consideration and selection of access strategies and concepts during transportation planning, project identification and initiation processes that contemplate the addition, expansion or "full control" of intersections.

In advance of conducting the ICE studies, the following improvements are recommended to mitigate the direct and cumulative impacts. Section 18.3 includes the fair share calculations for each of the impacts for which a fair share is recommended.

19.2.1 *Alternative A1*

DIRECT ONLY IMPACT

A1-1 Stevens Drive / Maricopa Highway intersection

Install a traffic signal and provide an exclusive westbound left-turn lane on Maricopa Highway at Stevens Drive, or, install a roundabout, based on the recommendations of an ICE study.

DIRECT AND CUMULATIVE IMPACTS

The following mitigation measures will mitigate both the direct and cumulative impacts.

A1-2 Maricopa Highway / S. Sabodan Street

Install a traffic signal and provide the following geometry:

SB – Construct the north leg of the intersection and provide one left-turn lane and one right turn lane in the SB direction and one NB lane.

WB – One right-turn lane, one through lane and one left-turn lane

EB – One left-turn lane, one through lane and one shared through/right lane

NB – One left-turn lane and one shared through/right lane

Alternatively, install a roundabout, based on the recommendations of an ICE study.

CUMULATIVE ONLY IMPACT

A1-3 Maricopa Highway / I-5 SB Ramps intersection

Contribute a fair share towards installing a traffic signal or a roundabout with or without a loop ramp, based on the recommendations of an ICE study.

A1-4 Maricopa Highway / I-5 NB Ramps intersection

Contribute a fair share towards installing a traffic signal or a roundabout with or without a loop ramp, based on the recommendations of an ICE study.

A1-5 SR 166 to NB I-5 Ramp Merge

Contribute a fair share towards providing a 1,000-foot Auxiliary Lane on I-5 North.

19.2.2 *Alternative A2*

DIRECT ONLY IMPACT

A2-1 Stevens Drive / Maricopa Highway intersection

Install a traffic signal and provide an exclusive westbound left-turn lane on Maricopa Highway at Stevens Drive or, install a roundabout, based on the recommendations of an ICE study.

DIRECT AND CUMULATIVE IMPACTS

The following mitigation measures will mitigate both the direct and cumulative impacts.

A2-2 Maricopa Highway / S. Sabodan Street

Install a traffic signal and provide the following geometry:

SB – Construct the north leg of the intersection and provide one left-turn lane and one right turn lane in the SB direction and one NB lane.

WB – One right-turn lane, one through lane and one left-turn lane

EB – One left-turn lane, one through lane and one shared through/right lane

NB – One left-turn lane and one shared through/right lane

Alternatively, install a roundabout, based on the recommendations of an ICE study.

CUMULATIVE IMPACT

A2-3 Maricopa Highway / I-5 SB Ramps intersection

Contribute a fair share towards installing a traffic signal or a roundabout with or without a loop ramp, based on the recommendations of an ICE study.

A2-4 Maricopa Highway / I-5 NB Ramps intersection

Contribute a fair share towards installing a traffic signal or a roundabout with or without a loop ramp, based on the recommendations of an ICE study.

A1-6 SR 166 to NB I-5 Ramp Merge

Contribute a fair share towards providing a 1,000-foot Auxiliary Lane on I-5 Northbound mainline at the merge.

19.2.3 *Alternative B*

DIRECT IMPACT

B-1 Stevens Drive / Maricopa Highway

Install a traffic signal and provide an exclusive westbound left-turn lane on Maricopa Highway at Stevens Drive or, install a roundabout, based on the recommendations of an ICE study.

DIRECT IMPACTS AND CUMULATIVE IMPACTS

The following mitigation measures will mitigate both the direct and cumulative impacts.

B-2 Maricopa Highway / I-5 SB Ramps intersection

Install a traffic signal or a roundabout with or without a loop ramp, based on the recommendations of an ICE study.

B-3 Maricopa Highway / I-5 NB Ramps intersection

Install a traffic signal or a roundabout with or without a loop ramp, based on the recommendations of an ICE study.

19.3 Fair Share Calculations

All significant impacts listed above are within Caltrans jurisdiction. The Caltrans formula for calculating the fair share shown below is used.

Equitable Share Responsibility: Equation C-1

Note: $TE < T_B$, see explanation for TB below.

$$P = \frac{T}{T_B - T_E}$$

Where:

P = The equitable share for the proposed project's traffic impact.

T = The vehicle trips generated by the project during the peak hour of adjacent State highway facility in vehicles per hour (vph).

T_B = The forecasted traffic volume on an impacted State highway facility at the time of general plan build-out (e.g., 20-year model or the furthest future model date feasible), vph.

T_E = The traffic volume existing on the impacted State highway facility plus other approved projects that will generate traffic that has yet to be constructed/opened, vph.

19.3.1 *Alternative A1*

The fair share calculations for Alternative A1 are:

A1-3 Maricopa Highway / I-5 SB Ramps intersection

= (AM Project Traffic) / (Total Future AM Traffic-Total Existing AM traffic), or,

= 123 / (1,309 - 455) = 14%

A1-4 Maricopa Highway / I-5 NB Ramps intersection

= 202 / (1,198 -419) = 26%

A1-5 SR 166 to NB I-5 Ramp Merge

= 92 / (210 - 34) = 52%

19.3.2 *Alternative A2*

The fair share calculations for Alternative A2 are:

A2-3 Maricopa Highway / I-5 SB Ramps intersection

= 110 / (1,298 - 455) = 13%

A2-4 Maricopa Highway / I-5 NB Ramps intersection

= 180 / (1,180 - 419) = 24%

A2-5 SR 166 to NB I-5 Ramp Merge

= 83 / (206 - 34) = 48%

19.3.3 *Alternative B*

There are no fair share mitigation measures in Alternative B.

19.4 Project Traffic Contribution at all Impacted Locations

Table 19-1 summarizes the total amount of Project (Phase 1) traffic at all impacted locations for all three alternatives. As seen in *Table 19-1,* locations where the Project has either a direct or cumulative significant impact are included.

The column entitled "Project Traffic Contribution is the percent of Project traffic at the impacted location. The column entitled "Project Responsibility" refers to the responsibility of the project for the mitigation. If the impact is direct, the Project is responsible for the entire mitigation. If the impact is cumulative, the Project is responsible only for the percent of the Project traffic at the location.

19.5 Post Mitigation Analysis

A post mitigation analysis was conducted to determine if the recommended mitigation measures would mitigate the Project related significant direct and cumulative impacts to a level below significance. The mitigation measure analyzed at all intersections within Caltrans jurisdiction is a traffic signal, to demonstrate that the recommended mitigation measure will adequately mitigate the impact to a level of significance. An ICE evaluation report that will be prepared per Caltrans standards at the time of the required mitigation will analyze other adequate alternate mitigation measures.

19.5.1 *Alternative A1*

Tables 19-2, 19-3 and 19-4 summarize the results of the mitigation analysis for the Alternative A1 significant direct impacts in the Existing + Project Phase 1, Opening Year + Project Phase 1 and Year 2040 + Project Phase 1, scenarios, respectively. As seen in these tables, with the implementation of the recommended mitigation measures, the impacted intersections are calculated to operate at LOS C or better in the near-term and at LOS D or better in the long-term.

19.5.2 *Alternative A2*

Tables 19-5, 19-6 and 19-7 summarize the results of the mitigation analysis for the Alternative A2 significant direct impacts in the Existing + Project Phase 1, Opening Year + Project Phase 1 and Year 2040 + Project Phase 1, scenarios, respectively. As seen in these tables, with the implementation of the recommended mitigation measures, the impacted intersections are calculated to operate at LOS C or better in the near-term and long-term.

19.5.3 *Alternative B*

Tables 19-8, 19-9 and 19-10 summarize the results of the mitigation analysis for the Alternative B significant direct impacts in the Existing + Project Phase 1, Opening Year + Project Phase 1 and Year 2040 + Project Phase 1, scenarios, respectively. As seen in these tables, with the implementation of the recommended mitigation measures, the impacted intersections are calculated to operate at LOS C or better in the near-term and long-term.

Appendix N contains the mitigation analysis worksheets for the mitigation analysis.

TABLE 19-1
FAIR SHARE CALCULATIONS

Location	Traffic Volumes				Project (Traffic) Contribution [c] [T / (T_B – T_E)]	Project Responsibility
	Existing (T_E)	Future [a] (T_B)	Increase [b] (T_B – T_E)	Project Phase 1 (T)		
Alternative A1						
Intersections						
A1-1 Stevens Dr / Maricopa Hwy [d]	420	765	345	302	88%	100%
A1-2 Maricopa Hwy / S. Sabodan St [d]	343	1,430	1,087	747	69%	100%
A1-3 Maricopa Hwy / I-5 SB Ramps [e]	455	1,309	854	123	14%	14%
A1-4 Maricopa Hwy / I-5 NB Ramps [e]	419	1,198	779	202	26%	26%
Ramp Merge						
A1-5 SR 166 to NB I-5 [e]		210	176	92	52%	52%
Alternative A2						
Intersections						
A2-1 Stevens Dr / Maricopa Hwy [d]	420	734	314	271	86%	100%
A2-2 Maricopa Hwy / S. Sabodan St [d]	343	1,237	894	673	75%	100%
A2-3 Maricopa Hwy / I-5 SB Ramps [e]	455	1,298	843	110	13%	13%
A1-4 Maricopa Hwy / I-5 NB Ramps [e]	419	1,180	761	180	24%	24%
Ramp Merge						
A2-5 SR 166 to NB I-5 [e]	34	206	172	83	48%	48%

CONTINUED ON THE NEXT PAGE

34

TABLE 19-1 (CONTINUED)
FAIR SHARE CALCULATIONS

Location	Traffic Volumes				Project (Traffic) Contribution [c]	Project Responsibility
	Existing	Future Volumes [a]	Increase [b]	Project Phase 1		
Alternative B						
Intersections						
B-1 Stevens Drive / Maricopa Hwy [d]	420	719	299	256	86%	100%
B-2 Maricopa Hwy / I-5 SB Ramps [d]	455	1,432	977	469	48%	100%
B-3 Maricopa Hwy / I-5 NB Ramps [d]	356	1,077	721	560	78%	100%

Footnotes:

a. Future Volumes - Opening Year + Project Phase 1, if direct impact, Long-Term + Entire Project, if cumulative impact.
b. Difference of future volume and existing volume.
c. The Project traffic contribution is calculated based on the Caltrans formula.
d. Direct Impact
e. Cumulative impact.

TABLE 19–2
EXISTING WITH PROJECT PHASE 1 INTERSECTION MITIGATION ANALYSIS - ALTERNATIVE A1

Intersection	Control Type	Peak Hour	Pre-Mitigation		Post Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	
5. Maricopa Hwy / S. Sabodan St	TWSC [d]/ Signal	WkDay PM	**>100.0**	**F**	20.2	C	Install a traffic signal and provide the following geometry: **SB** – Construct the north leg of the intersection and provide one left-turn lane and one right turn lane in the SB direction and one NB lane. **WB** – One right-turn lane, one through lane and one left-turn lane **EB** – One left-turn lane, one through lane and one shared through/right lane **NB** – One left-turn lane and one shared through/right lane
		Saturday Pk	**>100.0**	**F**	22.7	C	
7. Maricopa Hwy / Stevens Dr	TWSC [d]/ Signal	Saturday Pk	**41.8**	**E**	11.3	B	Install a traffic signal and provide an exclusive westbound left-turn lane on Maricopa Highway at Stevens Drive.

Footnotes:

a. Average delay expressed in seconds per vehicle.

b. Level of Service

c. Δ denotes the increase in delay due to Project.

d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

1. WkDay AM – Weekday AM Peak Hour
2. WkDay AM – Weekday PM Peak Hour
3. Saturday Pk – Saturday Peak Hour

SIGNAL		UNSIGNAL	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 19–3
OPENING DAY (2023) WITH PROJECT PHASE 1 INTERSECTION MITIGATION ANALYSIS - ALTERNATIVE A1

Intersection	Control Type	Peak Hour	Pre-Mitigation		Post Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	
5. Maricopa Hwy / S. Sabodan St	TWSC [d]/ Signal	WkDay AM	**61.2**	**F**	19.3	B	Install a traffic signal and provide the following geometry: **SB** – Construct the north leg of the intersection and provide one left-turn lane and one right turn lane in the SB direction and one NB lane. **WB** – One right-turn lane, one through lane and one left-turn lane **EB** – One left-turn lane, one through lane and one shared through/right lane **NB** – One left-turn lane and one shared through/right lane
		WkDay PM	**>100.0**		20.0		
		Saturday Pk	**>100.0**		22.7		
			F		B		
			F		C		
7. Maricopa Hwy / Stevens Dr	TWSC [d]/ Signal	Saturday Pk	**54.8**		11.5		Install a traffic signal and provide an exclusive westbound left-turn lane on Maricopa Highway at Stevens Drive.
			F		B		

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service
c. Δ denotes the increase in delay due to Project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

General Notes:

1. WkDay AM – Weekday AM Peak Hour
2. WkDay AM – Weekday PM Peak Hour
3. Saturday Pk – Saturday Peak Hour

SIGNAL		UNSIGNAL	
DELAY/LOS THRESHOLDS		DELAY/LOS THRESHOLDS	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

TABLE 19–4
YEAR 2040 WITH ENTIRE PROJECT INTERSECTION MITIGATION ANALYSIS - ALTERNATIVE A1

Intersection	Control Type	Peak Hour	Pre-Mitigation		Post Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	
3. Maricopa Hwy / I-5 SB Ramps	TWSC [d]/ Signal	AM	**73.1**	**F**	41.1	D	Contribute a fair share towards installing a traffic signal.
4. Maricopa Hwy / I-5 NB Ramps	TWSC [d]/ Signal	AM	**90.4**	**F**	25.2	C	Contribute a fair share towards installing a traffic signal
5. Maricopa Hwy / S. Sabodan St	TWSC [d]/ Signal	AM PM	**>100.0** **>100.0**	**F** **F**	25.8 28.9	C C	Install a traffic signal and provide the following geometry: **SB** – Construct the north leg of the intersection and provide one left-turn lane and one right turn lane in the SB direction and one NB lane. **WB** – One right-turn lane, one through lane and one left-turn lane **EB** – One left-turn lane, one through lane and one shared through/right lane **NB** – One left-turn lane and one shared through/right lane

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service
c. Δ denotes the increase in delay due to Project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNAL		UNSIGNAL	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

General Notes:

1. WkDay AM – Weekday AM Peak Hour
2. WkDay AM – Weekday PM Peak Hour
3. Saturday Pk – Saturday Peak Hour
4. This post-mitigation analysis only includes a traffic signal as the mitigation. Other mitigation measures will be analyzed in the ICE study.

TABLE 19–5
EXISTING WITH PROJECT PHASE 1 INTERSECTION MITIGATION ANALYSIS - ALTERNATIVE A2

Intersection	Control Type	Peak Hour	Pre-Mitigation		Post Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	
5. Maricopa Hwy / S. Sabodan St	TWSC [d]/ Signal	WkDay PM	**53.9**	**F**	19.0	B	Install a traffic signal and provide the following geometry: **SB** – Construct the north leg of the intersection and provide one left-turn lane and one right turn lane in the SB direction and one NB lane. **WB** – One right-turn lane, one through lane and one left-turn lane **EB** – One left-turn lane, one through lane and one shared through/right lane **NB** – One left-turn lane and one shared through/right lane
		Saturday Pk	**>100.0**		21.0		
			F		C		
7. Maricopa Hwy / Stevens Dr	TWSC [d]/ Signal	Saturday Pk	**37.6**		11.2		Install a traffic signal and provide an exclusive westbound left-turn lane on Maricopa Highway at Stevens Drive.
			E		B		

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service
c. Δ denotes the increase in delay due to Project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNAL		UNSIGNAL	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

General Notes:

1. WkDay AM – Weekday AM Peak Hour
2. WkDay AM – Weekday PM Peak Hour
3. Saturday Pk – Saturday Peak Hour
4. This post-mitigation analysis only includes a traffic signal as the mitigation. Other mitigation measures will be analyzed in the ICE study.

TABLE 19–6
OPENING DAY (2023) WITH PROJECT PHASE 1 INTERSECTION MITIGATION ANALYSIS - ALTERNATIVE A2

Intersection	Control Type	Peak Hour	Pre-Mitigation		Post Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	
5. Maricopa Hwy / S. Sabodan St	TWSC [d]/ Signal	WkDay AM	**43.7**	**E**	18.6	B	Install a traffic signal and provide the following geometry: **SB** – Construct the north leg of the intersection and provide one left-turn lane and one right turn lane in the SB direction and one NB lane. **WB** – One right-turn lane, one through lane and one left-turn lane **EB** – One left-turn lane, one through lane and one shared through/right lane **NB** – One left-turn lane and one shared through/right lane
		WkDay PM	**73.3**		18.8		
		Saturday Pk	**>100.0**		20.9		
			F		B		
			F		C		
7. Maricopa Hwy / Stevens Dr	TWSC [d]/ Signal	Saturday Pk	**48.7**		11.4		Install a traffic signal and provide an exclusive westbound left-turn lane on Maricopa Highway at Stevens Drive.
			E		B		

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service
c. Δ denotes the increase in delay due to Project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNAL		UNSIGNAL	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

General Notes:

1. WkDay AM – Weekday AM Peak Hour
2. WkDay AM – Weekday PM Peak Hour
3. Saturday Pk – Saturday Peak Hour
4. This post-mitigation analysis only includes a traffic signal as the mitigation. Other mitigation measures will be analyzed in the ICE study.

TABLE 19–7
YEAR 2040 WITH ENTIRE PROJECT INTERSECTION MITIGATION ANALYSIS - ALTERNATIVE A2

Intersection	Control Type	Peak Hour	Pre-Mitigation		Post Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	
3. Maricopa Hwy / I-5 SB Ramps	TWSC [d]/ Signal	WkDay AM	**64.6**	**F**	8.0	A	Contribute a fair share towards installing a traffic signal.
4. Maricopa Hwy / I-5 NB Ramps	TWSC [d]/ Signal	WkDay AM	**85.3**	**F**	24.6	C	Contribute a fair share towards installing a traffic signal.
5. Maricopa Hwy / S. Sabodan St	TWSC [d]/ Signal	WkDay AM WkDay PM	**>100.0** **>100.0**	**F** **F**	24.1 26.2	C C	Install a traffic signal and provide the following geometry: **SB** – Construct the north leg of the intersection and provide one left-turn lane and one right turn lane in the SB direction and one NB lane. **WB** – One right-turn lane, one through lane and one left-turn lane **EB** – One left-turn lane, one through lane and one shared through/right lane **NB** – One left-turn lane and one shared through/right lane

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service
c. Δ denotes the increase in delay due to Project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNAL		UNSIGNAL	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

General Notes:

1. WkDay AM – Weekday AM Peak Hour
2. WkDay AM – Weekday PM Peak Hour
3. Saturday Pk – Saturday Peak Hour
4. This post-mitigation analysis only includes a traffic signal as the mitigation. Other mitigation measures will be analyzed in the ICE study.

TABLE 19–8
EXISTING WITH PROJECT PHASE 1 INTERSECTION MITIGATION ANALYSIS - ALTERNATIVE B

Intersection	Control Type	Peak Hour	Pre-Mitigation		Post Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	
4. Maricopa Hwy / I-5 NB Ramps	TWSC [d]/ Signal	WkDay PM	**36.3**		25.5		Install a traffic signal.
		Saturday Pk	**>100.0**		12.3		
			E		C		
7. Maricopa Hwy / Stevens Dr	TWSC [d]/ Signal	Saturday Pk	**36.0**	**F**	11.2	B	Install a traffic signal and provide an exclusive westbound left-turn lane on Maricopa Highway at Stevens Drive.
			E		B		

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service
c. Δ denotes the increase in delay due to Project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNAL		UNSIGNAL	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

General Notes:

1. WkDay AM – Weekday AM Peak Hour
2. WkDay AM – Weekday PM Peak Hour
3. Saturday Pk – Saturday Peak Hour
4. This post-mitigation analysis only includes a traffic signal as the mitigation. Other mitigation measures will be analyzed in the ICE study.

TABLE 19–9
OPENING DAY (2023) WITH PROJECT PHASE 1 INTERSECTION MITIGATION ANALYSIS - ALTERNATIVE B

Intersection	Control Type	Peak Hour	Pre-Mitigation		Post Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	
3. Maricopa Hwy / I-5 SB Ramps	TWSC [d]/ Signal	WkDay AM	**38.4**	**E**	22.0	C	Install a traffic signal.
4. Maricopa Hwy / I-5 NB Ramps	TWSC [d]/ Signal	WkDay AM	**>100.0**	**F**	26.6	C	Install a traffic signal.
		WkDay PM	**66.4**		29.4		
		Saturday Pk	**>100.0**	**F**	23.6	C	
			F		C		
7. Maricopa Hwy / Stevens Dr	TWSC [d]/ Signal	Saturday Pk	**45.4**	**E**	11.4	B	Install a traffic signal and provide an exclusive westbound left-turn lane on Maricopa Highway at Stevens Drive.

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service
c. Δ denotes the increase in delay due to Project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNAL		UNSIGNAL	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

General Notes:

1. WkDay AM – Weekday AM Peak Hour
2. WkDay AM – Weekday PM Peak Hour
3. Saturday Pk – Saturday Peak Hour
4. This post-mitigation analysis only includes a traffic signal as the mitigation. Other mitigation measures will be analyzed in the ICE study.

TABLE 19–10
YEAR 2040 WITH ENTIRE PROJECT INTERSECTION MITIGATION ANALYSIS - ALTERNATIVE B

Intersection	Control Type	Peak Hour	Pre-Mitigation		Post Mitigation		Mitigation
			Delay [a]	LOS [b]	Delay	LOS	
3. Maricopa Hwy / I-5 SB Ramps	TWSC [d]/ Signal	WkDay AM	**86.0**	**F**	11.6	B	Contribute a fair share towards installing a traffic signal.
4. Maricopa Hwy / I-5 NB Ramps	TWSC [d]/ Signal	WkDay AM	**>100.0**	**F**	15.7	B	Contribute a fair share towards installing a traffic signal.
		WkDay PM	**>100.0**	**F**	16.0	B	

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service
c. Δ denotes the increase in delay due to Project.
d. TWSC – Two-Way Stop Controlled intersection. Minor street left turn delay is reported.

SIGNAL		UNSIGNAL	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

General Notes:

1. WkDay AM – Weekday AM Peak Hour
2. WkDay AM – Weekday PM Peak Hour
3. Saturday Pk – Saturday Peak Hour
4. This post-mitigation analysis only includes a traffic signal as the mitigation. Other mitigation measures will be analyzed in the ICE study.

19.6 Signal Warrant Analysis

A peak hour signal warrant analysis was conducted for all the intersections where the installation of a traffic signal is recommended as the mitigation measure, in each alternative.

The following assumptions are made in determining the conditions at the subject intersections:

- *Approach Lanes* – One right-turn lane and one left-turn lane will be provided in the southbound direction.

  Page 847 of the California Manual On Uniform Traffic Control Devices (MUTCD) 2014 Edition states "*for an approach with one lane for through and right-turning traffic plus a left-turn lane, if engineering judgment indicates that it should be considered a one-lane approach because the traffic using the left-turn lane is minor, the total traffic volume approaching the intersection should be applied against the signal warrants as a one-lane approach. The approach should be considered two lanes if approximately half of the traffic on the approach turns left and the left-turn lane is of sufficient length to accommodate all left-turn vehicles."*
- *Approach Volumes* – As stated in the MUTCD, "engineering judgment and rationale should be applied to a street approach with one through/left-turn lane plus a right-turn lane. In this case, the degree of conflict of minor-street right-turn traffic with traffic on the major street should be considered. Thus, right-turn traffic should not be included in the minor-street volume if the movement enters the major street with minimal conflict. The approach should be evaluated as a one-lane approach with only the traffic volume in the through/left-turn lane considered."

- The 70% factor is used for all the intersections, since the posted speed limit on the major street exceeds 40 mph and these intersections lie within the built-up area of an isolated community having a population of less than 10,000.

19.6.1 *Alternative A1*

In Alternative A1, the S. Sabodan Street / Maricopa Highway and Stevens Drive / Maricopa Highway intersections are impacted in the Existing + Project Phase 1 Scenario and the I-5 SB Ramps / Maricopa Highway I-5 NB Ramps / Maricopa Highway intersections are impacted in the long-Term. The peak hour signal warrants are conducted in the respective scenarios.

Following are the Signal Warrant Analyses at the above intersections:

A1-1 Stevens Drive / Maricopa Highway Intersection

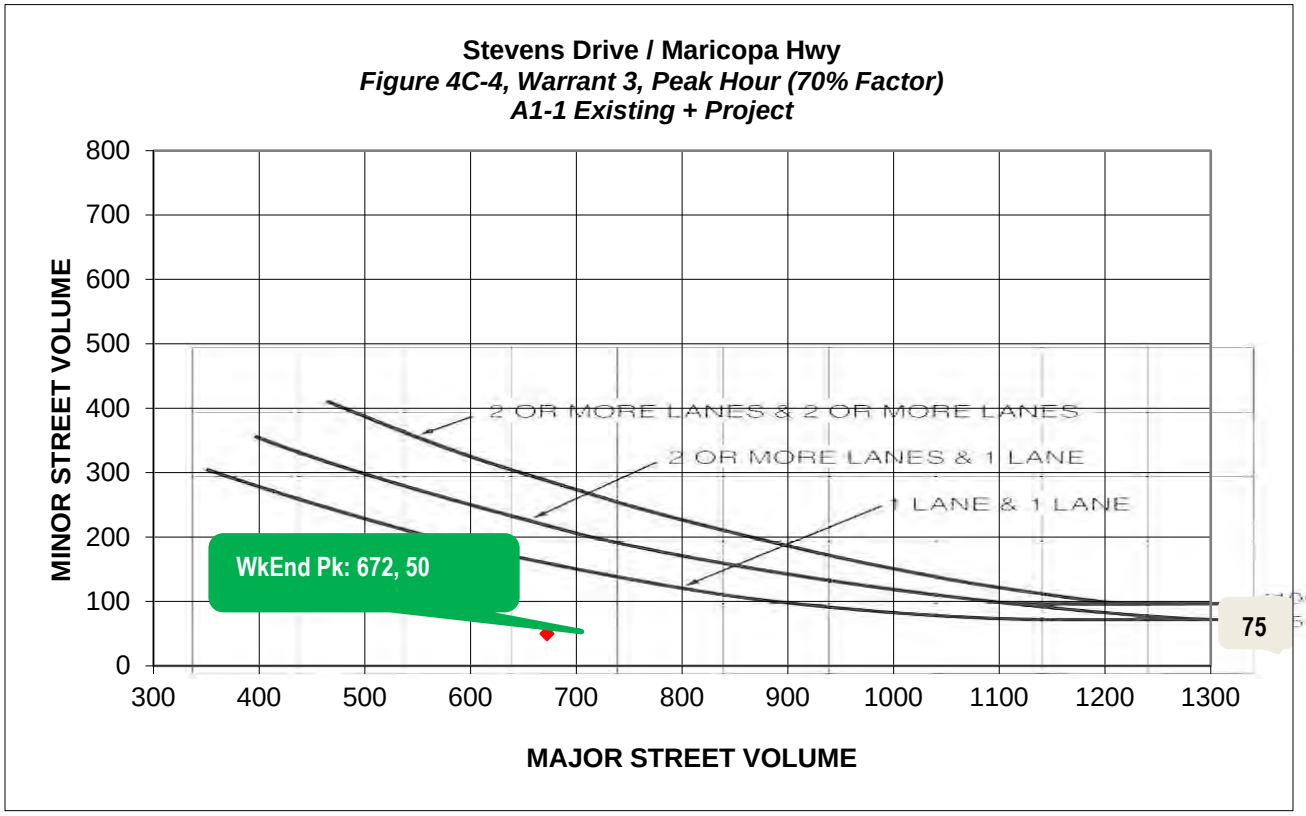
Assumptions:

The following assumptions apply at this intersection for all analysis scenarios.

- At this location, Maricopa Highway is a two-lane road (one lane in each direction) with dedicated EB left-turn lane on Maricopa Highway at the intersection. The minor street has a shared through-right lane. This approach will function and is analyzed as a One-Lane approach.

As described above, a shared through-right lane on southbound Stevens Drive at Maricopa Highway. Based on the number of approach lanes and the MUTCD (previous bullet item), a no reduction in right-turning traffic is assumed. ***Chart 1*** below, depicts the Peak hour warrant plot. As seen in the plot, the warrant is not met at this intersection, since the plot point falls below the curve.

CHART 1



A1-2 S. Sabodan Street / Maricopa Highway Intersection

Assumptions:

The following assumptions apply at this intersection for all analysis scenarios.

- At this location, Maricopa Highway is a two-lane road (one lane in each direction) with dedicated WB left-turn and EB right-turn lanes on Maricopa Highway, at the intersection. The fourth (north leg) does not exist and when built, will have a left-turn lane and a through-right-turn lane. This approach will function and is analyzed as a Two-Lane approach.
- As described above, a shared through-right lane and a left-turn lane is provided on southbound S. Sabodan Street at Maricopa Highway. Based on the number of approach lanes and the MUTCD (previous bullet item), a 100% reduction in right-turning traffic is assumed since the right-turning traffic has its own lane.

Charts 2 and 3 below, depict the peak hour warrant plots for the Weekday PM and Weekend Peak, respectively. As seen in the plots, the peak hour volume warrant is met during both the Weekday PM and Weekend Peak at this intersection, since the plot points fall above the curve.

CHART 2

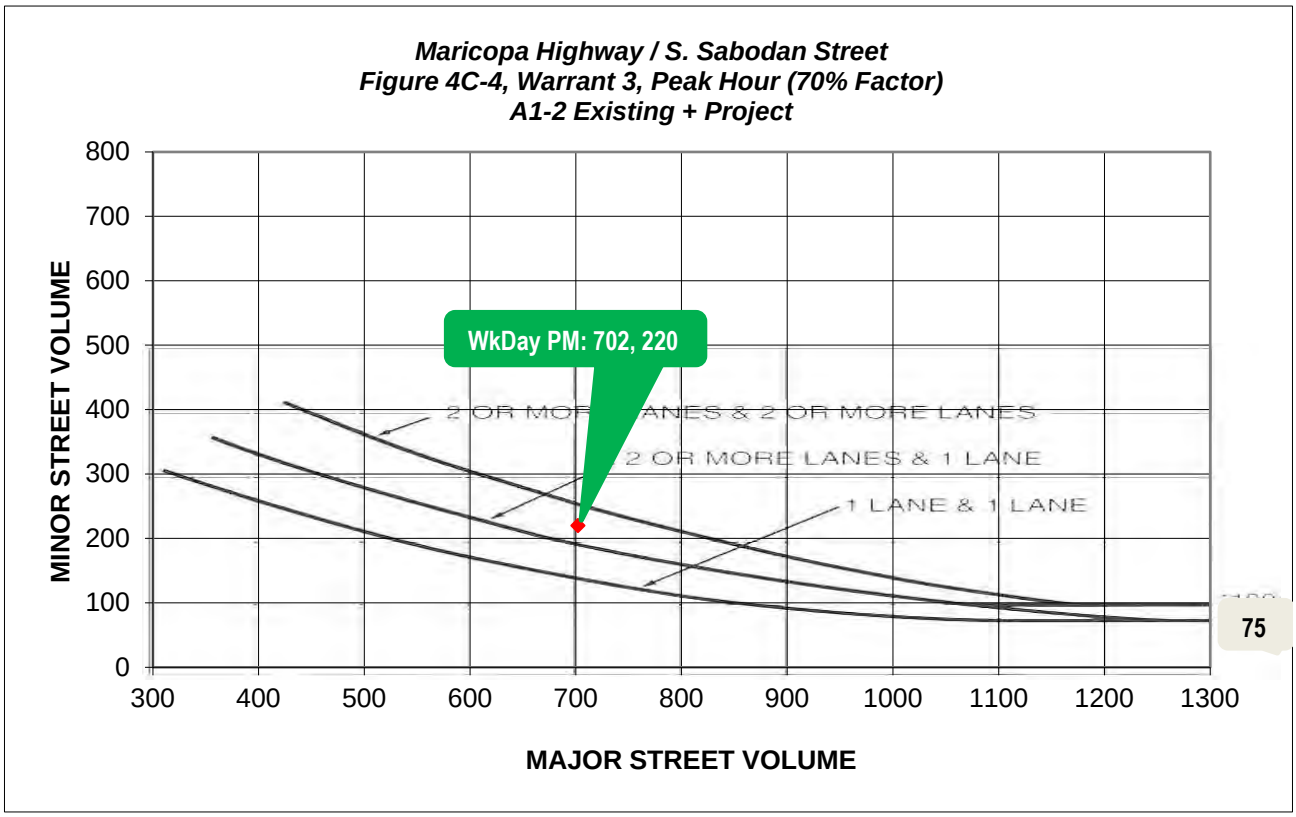
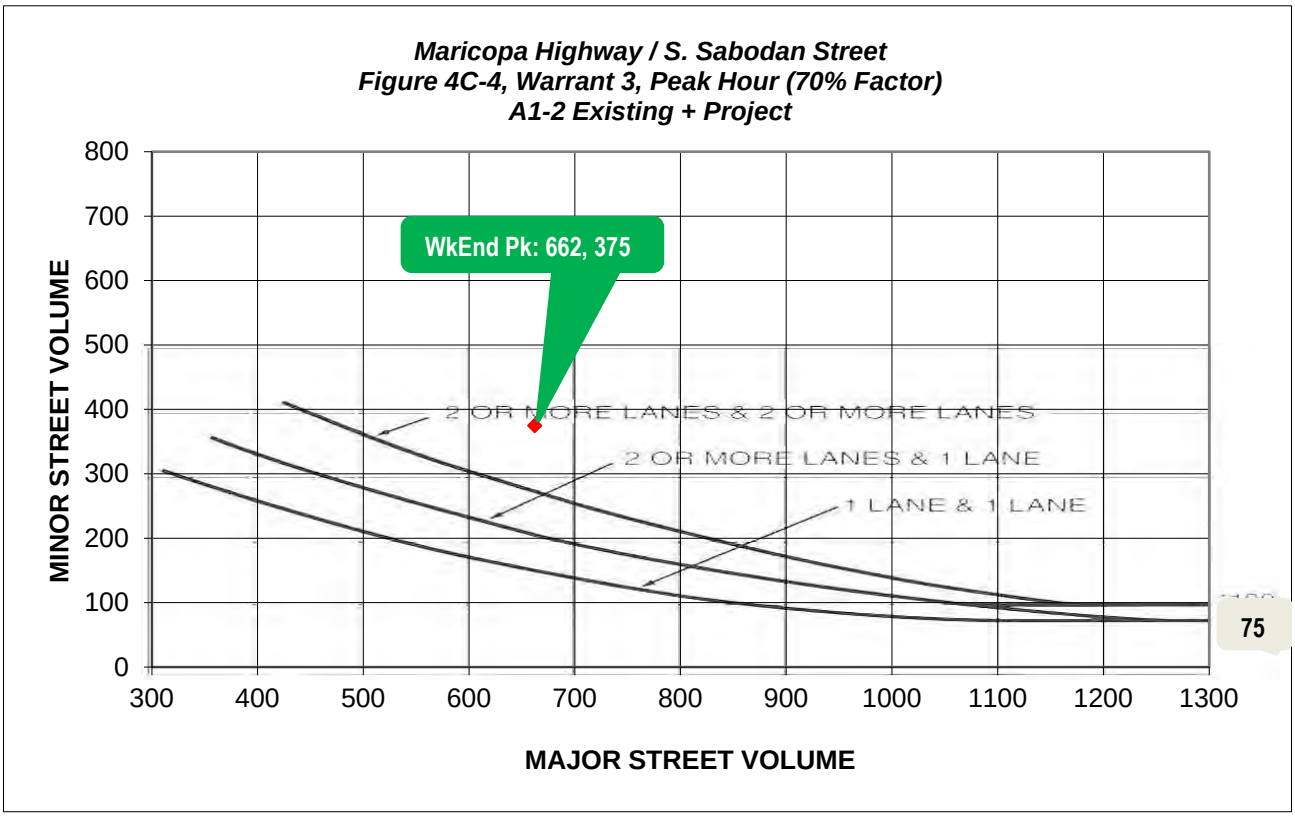


CHART 3


Maricopa Highway / S. Sabodan Street
Figure 4C-4, Warrant 3, Peak Hour (70% Factor)
A1-2 Existing + Project
MINOR STREET VOLUME
800
700
600
500
400
300
200
100
0
WkEnd Pk: 662, 375
2 OR MORE LANES & 2 OR MORE LANES
2 OR MORE LANES & 1 LANE
1 LANE & 1 LANE
75
300
400
500
600
700
800
900
1000
1100
1200
1300
MAJOR STREET VOLUME

A1-3 I-5 SB Ramps / Maricopa Highway Intersection

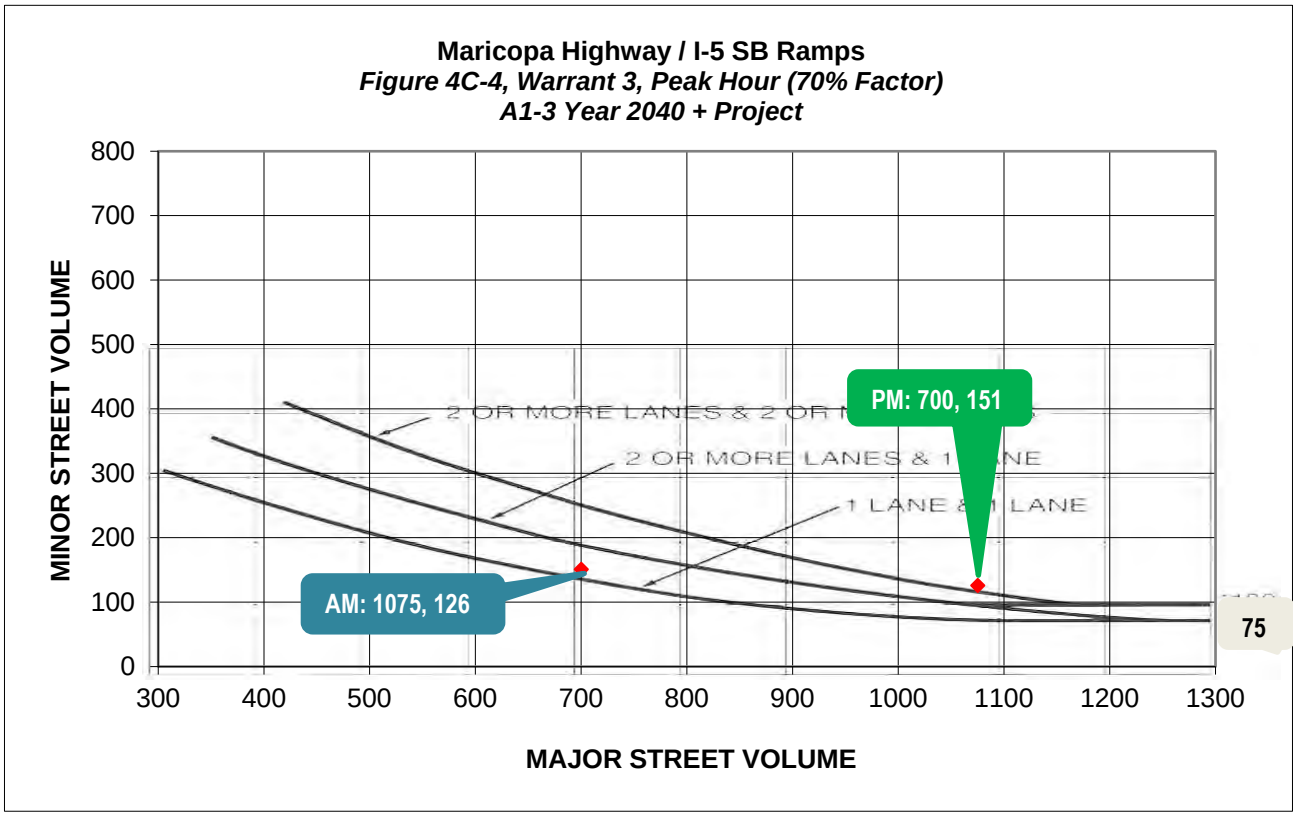
Assumptions:

The following assumptions apply at this intersection for all analysis scenarios.

- At this location, Maricopa Highway is a two-lane road (one lane in each direction). The minor street (SB Off-Ramp) has a shared left-through-right lane and a left-turn lane. This approach will function and is analyzed as a One-Lane approach.
- As described above, a shared left-through-right lane on the southbound ramp at Maricopa Highway. Based on the number of approach lanes and the MUTCD (previous bullet item), a no reduction in right-turning traffic is assumed.

Chart 4 below, depicts the Peak hour warrant plot. As seen in the plot, the warrant is met during the AM and PM peak hours where the plot points fall above the curve.

CHART 4



A1-4 I-5 NB Ramps / Maricopa Highway Intersection

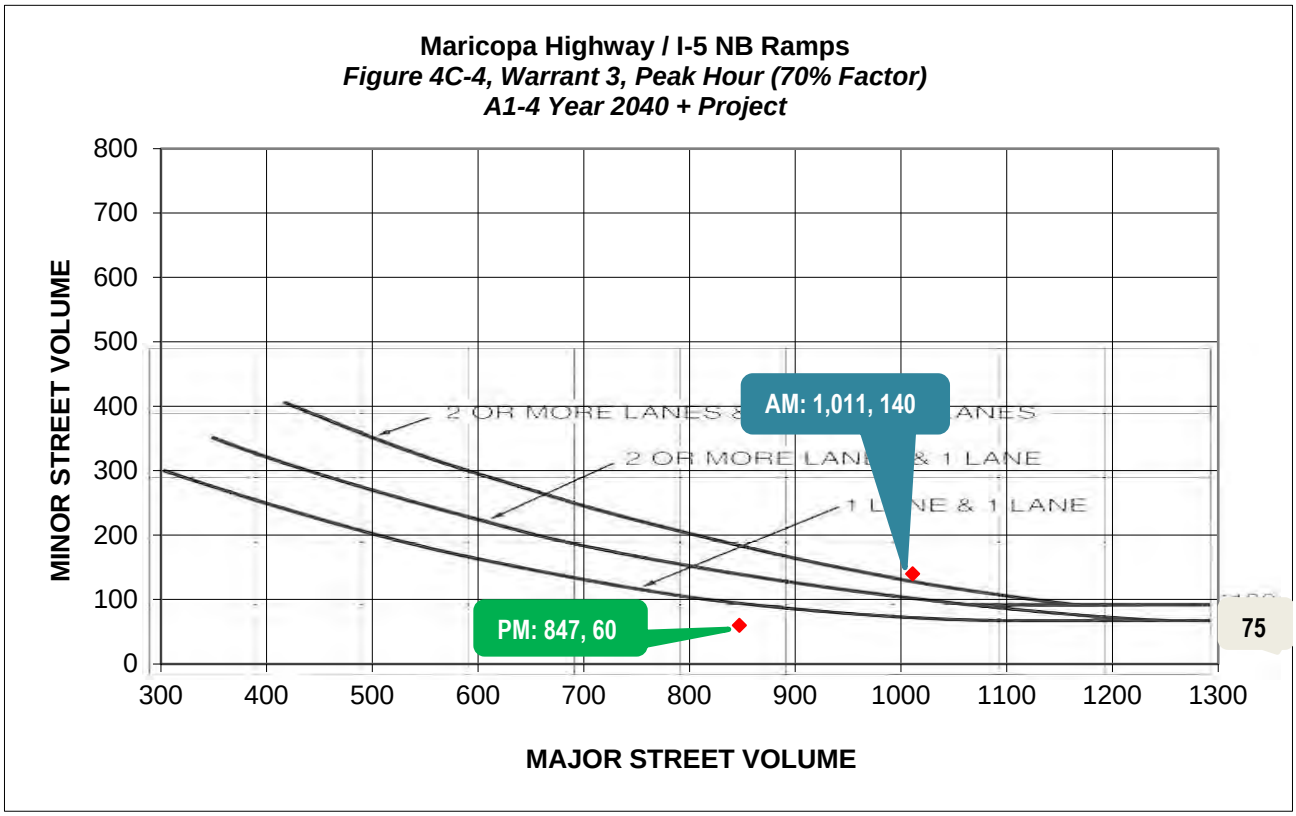
Assumptions:

The following assumptions apply at this intersection for all analysis scenarios.

- At this location, Maricopa Highway is a two-lane road (one lane in each direction). The minor street (NB Off-Ramp) has a shared left-through-right lane and a left-turn lane. This approach will function and is analyzed as a One-Lane approach.
- As described above, a shared left-through-right lane on the northbound ramp at Maricopa Highway. Based on the number of approach lanes and the MUTCD (previous bullet item), a no reduction in right-turning traffic is assumed.

Chart 5 below, depicts the Peak hour warrant plot. As seen in the plot, the warrant is met during the AM peak hour, where the plot points fall above the curve.

CHART 5



19.6.2 *Alternative A2*

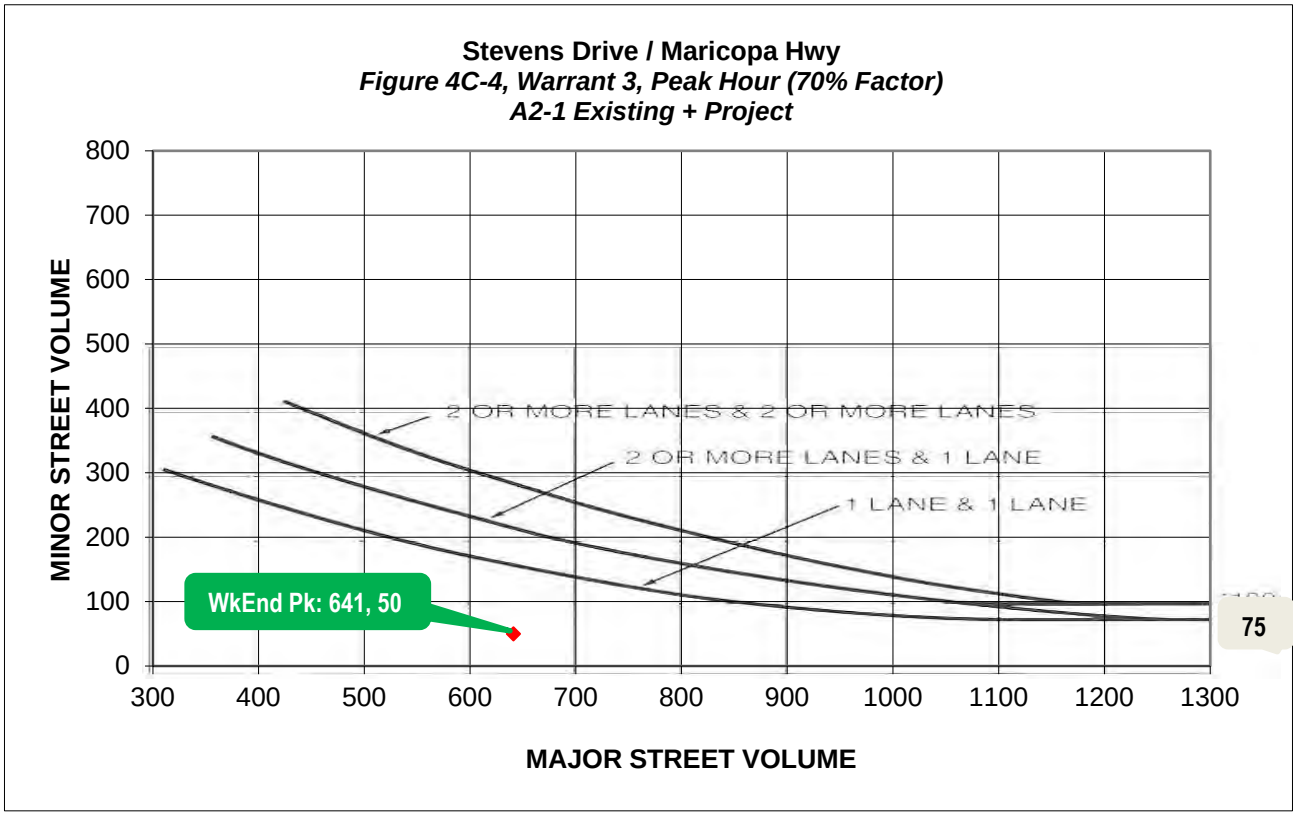
In Alternative A2, the S. Sabodan Street / Maricopa Highway and Stevens Drive / Maricopa Highway intersections are impacted in the Existing + Project Phase 1 Scenario and the I-5 SB Ramps / Maricopa Highway I-5 NB Ramps / Maricopa Highway intersections are impacted in the long-Term. The peak hour signal warrants are conducted in the respective scenarios. Volume and geometry assumptions described in Alternative A1 apply for Alternative A2 and are therefore not repeated here.

Following are the Signal Warrant Analyses at the above intersections:

A2-1 Stevens Drive / Maricopa Highway Intersection

Chart 6 below, depicts the Peak hour warrant plot. As seen in the plot, the warrant is not met at this intersection, since the plot point falls below the curve.

CHART 6



A1-2 S. Sabodan Street / Maricopa Highway Intersection

Charts 7 and 8 below, depict the peak hour warrant plots for the Weekday PM and Weekend Peak, respectively. As seen in the plots, the peak hour volume warrant is met during both the Weekday PM and Weekend Peak at this intersection, since the plot points fall above the curve.

CHART 7

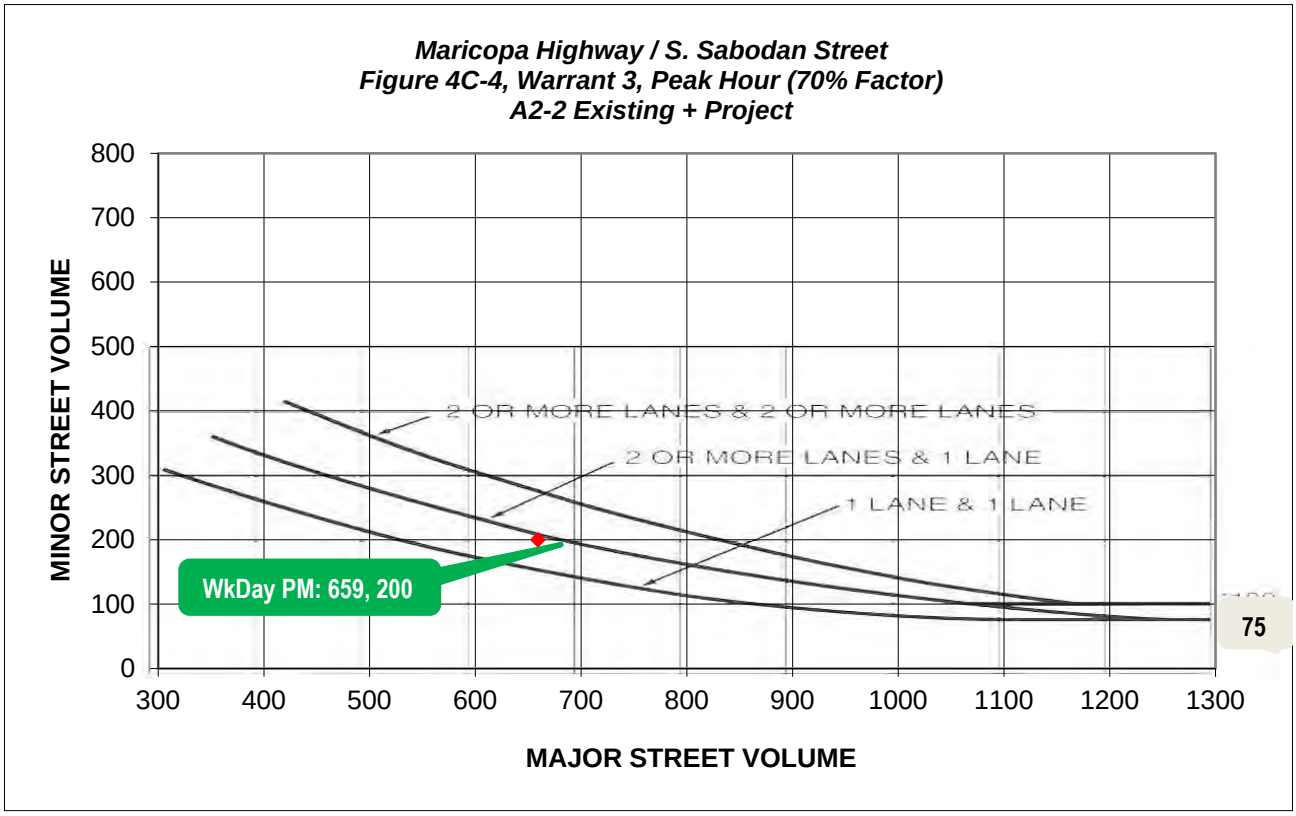
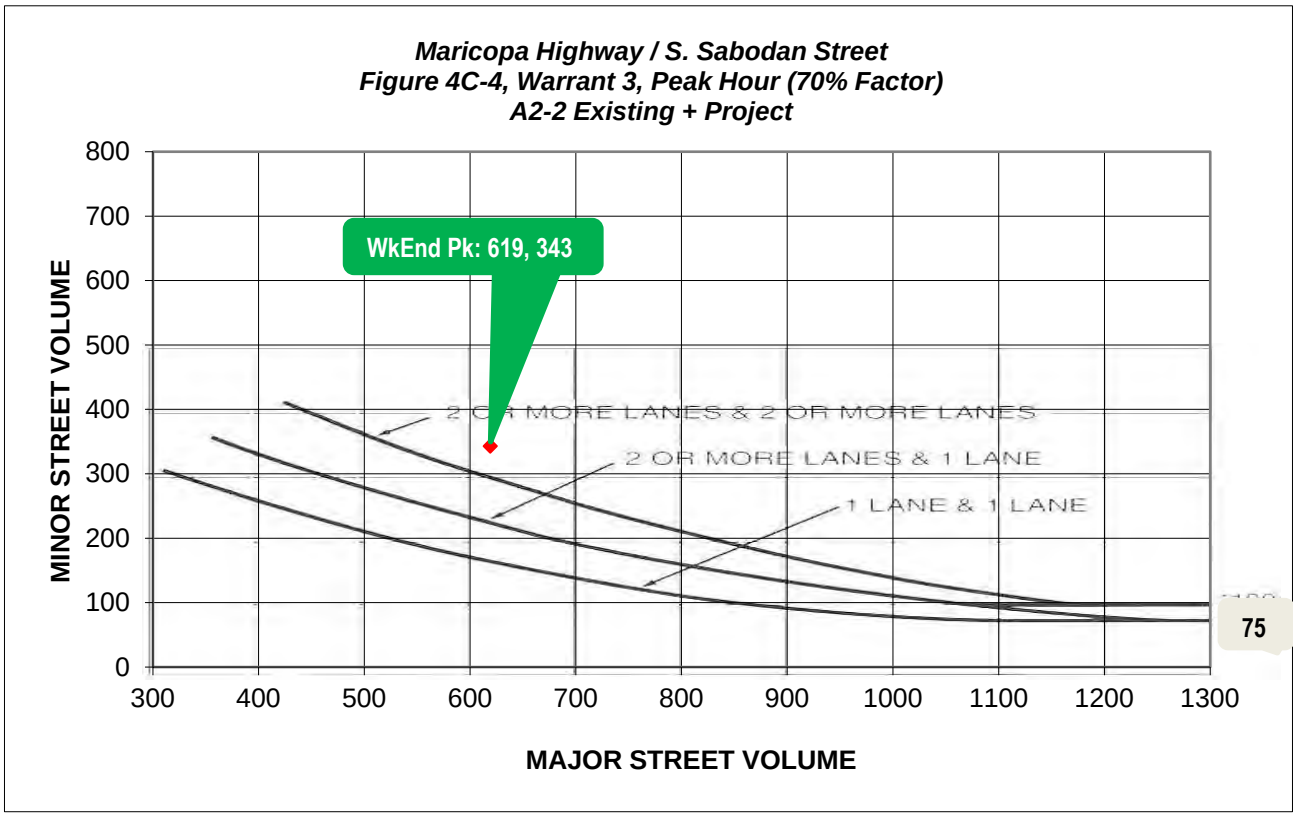


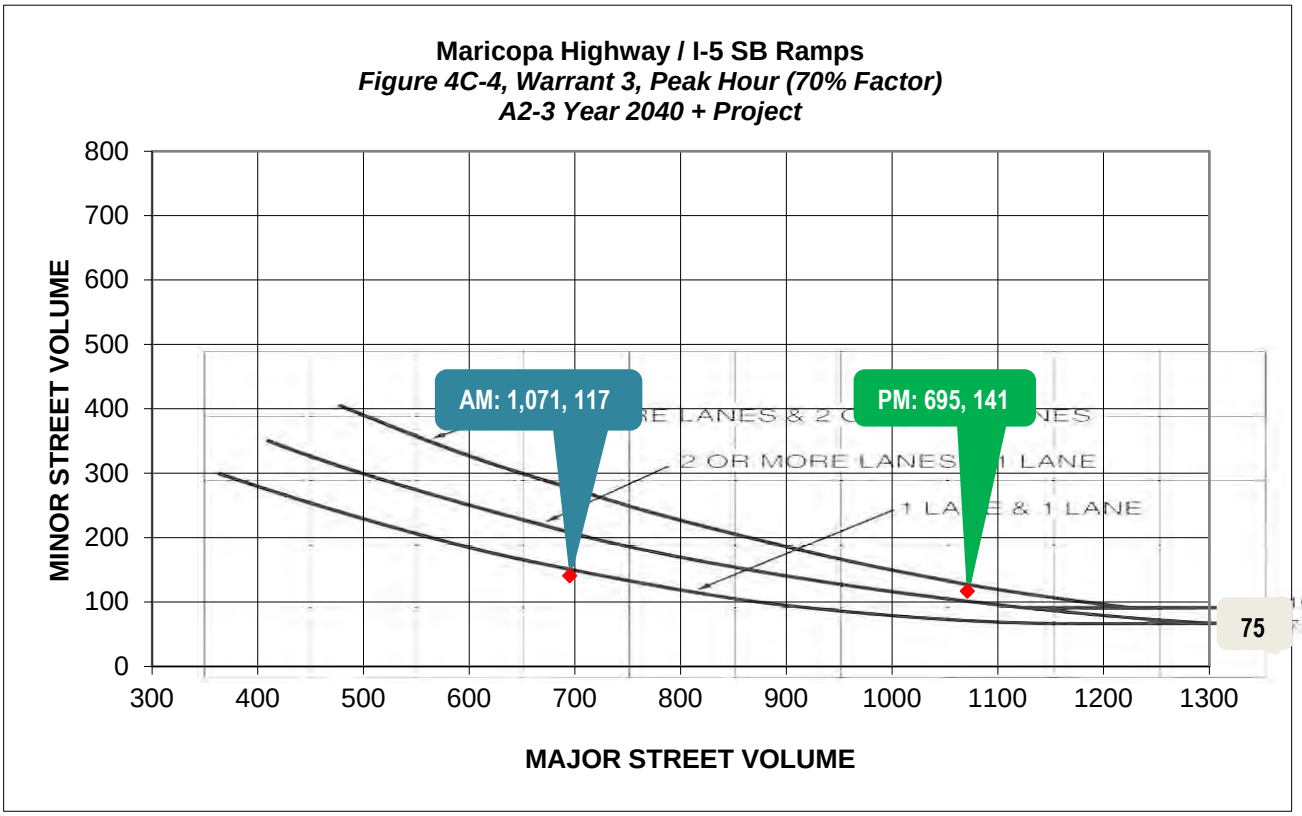
CHART 8


Maricopa Highway / S. Sabodan Street
Figure 4C-4, Warrant 3, Peak Hour (70% Factor)
A2-2 Existing + Project
WkEnd Pk: 619, 343
2 OR MORE LANES & 2 OR MORE LANES
2 OR MORE LANES & 1 LANE
1 LANE & 1 LANE
MINOR STREET VOLUME
MAJOR STREET VOLUME
800
700
600
500
400
300
200
100
0
300
400
500
600
700
800
900
1000
1100
1200
1300
75

A2-3 I-5 SB Ramps / Maricopa Highway Intersection

Chart 9 below, depicts the Peak hour warrant plot. As seen in the plot, the warrant is met during the AM and PM peak hours where the plot points fall above the curve.

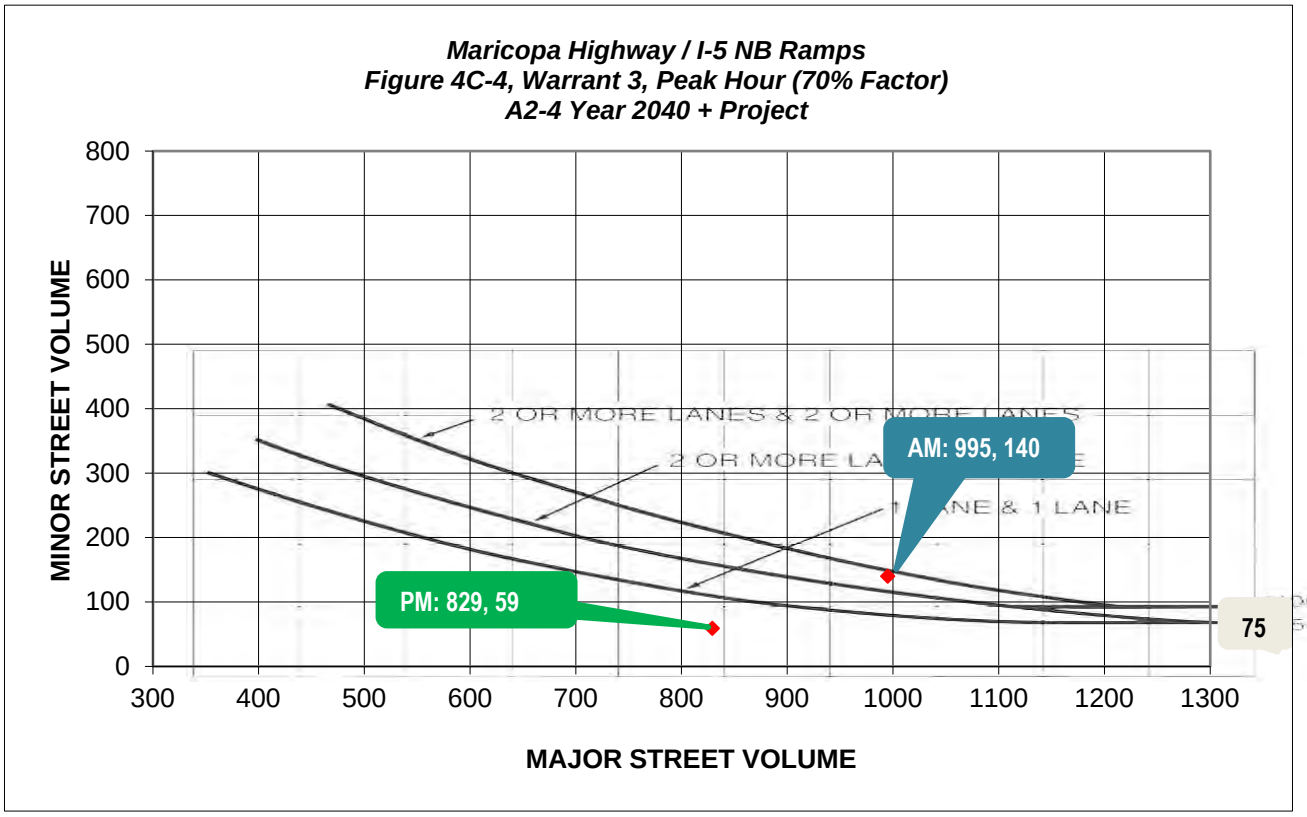
CHART 9



A2-4 I-5 NB Ramps / Maricopa Highway Intersection

Chart 10 below, depicts the Peak hour warrant plot. As seen in the plot, the warrant is met during the AM peak hour, where the plot points fall above the curve.

CHART 10



19.6.3 *Alternative B*

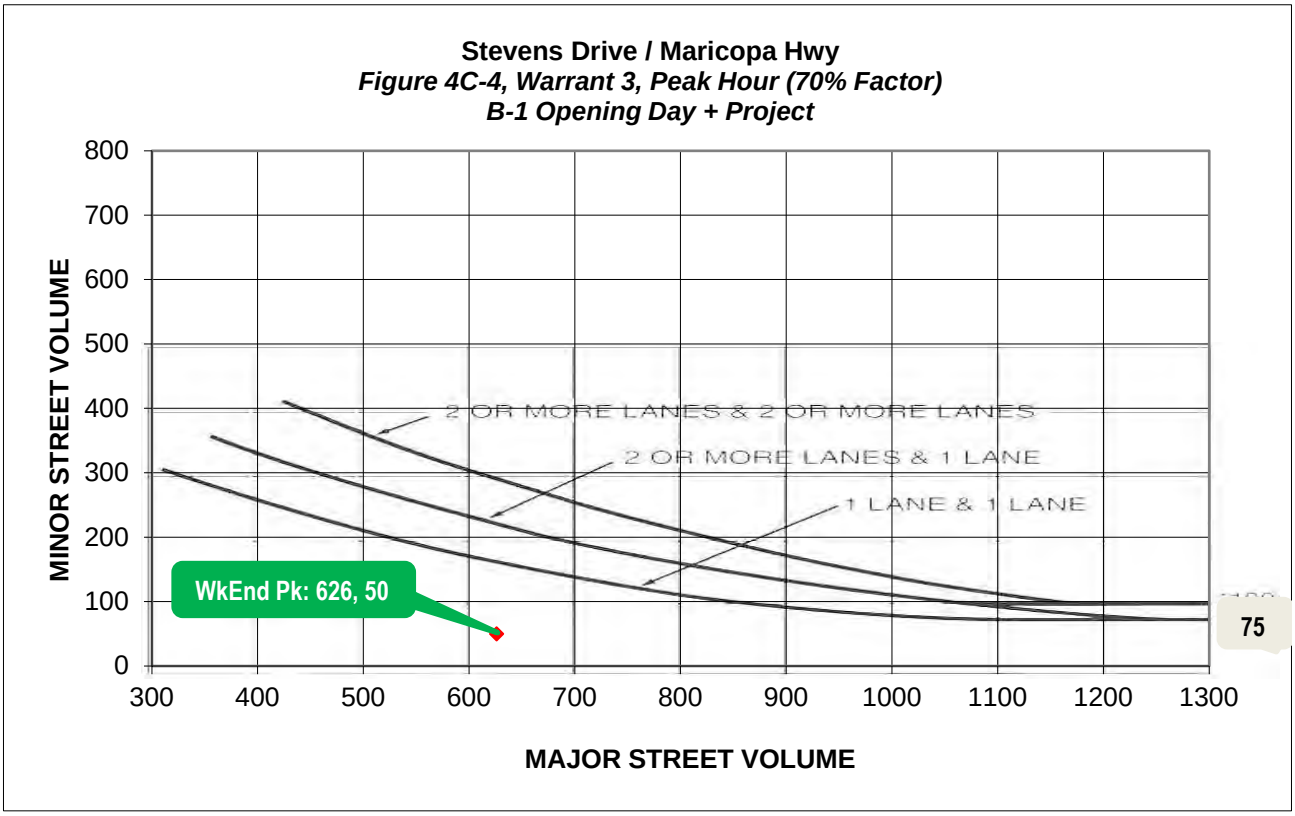
In Alternative B, the S. Sabodan Street / Maricopa Highway and Stevens Drive / Maricopa Highway intersections are impacted in the Existing + Project Phase 1 Scenario and the I-5 SB Ramps / Maricopa Highway I-5 NB Ramps / Maricopa Highway intersections are impacted in the long-Term. The peak hour signal warrants are conducted in the respective scenarios. Volume and geometry assumptions described in Alternative A1 apply for Alternative A2 and are therefore not repeated here.

Following are the Signal Warrant Analyses at the above intersections:

B-1 Stevens Drive / Maricopa Highway Intersection

Chart 11 below, depicts the Peak hour warrant plot. As seen in the plot, the warrant is not met at this intersection, since the plot point falls below the curve.

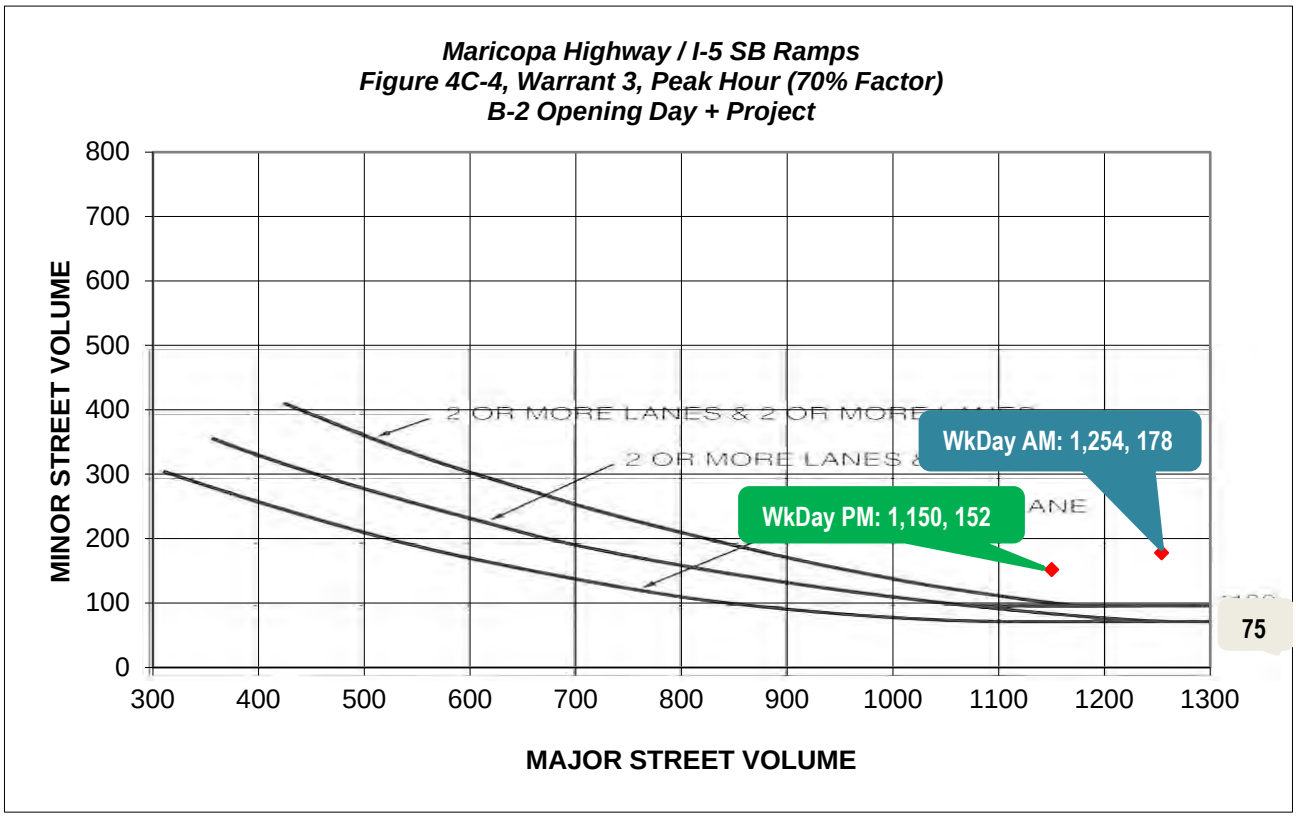
CHART 11



A2-3 I-5 SB Ramps / Maricopa Highway Intersection

Chart 12 below, depicts the peak hour warrant plot. As seen in the plot, the warrant is met during the AM and PM peak hours where the plot points fall above the curve.

CHART 12



A2-4 I-5 NB Ramps / Maricopa Highway Intersection

Charts 13 and 14 below, depicts the Weekday AM and PM and Weekend peak hour warrant plots, respectively. As seen in the plot, the warrant is met during both the Weekday PM and Weekend peak hour peak hour, where the plot points fall above the curve.

CHART 13

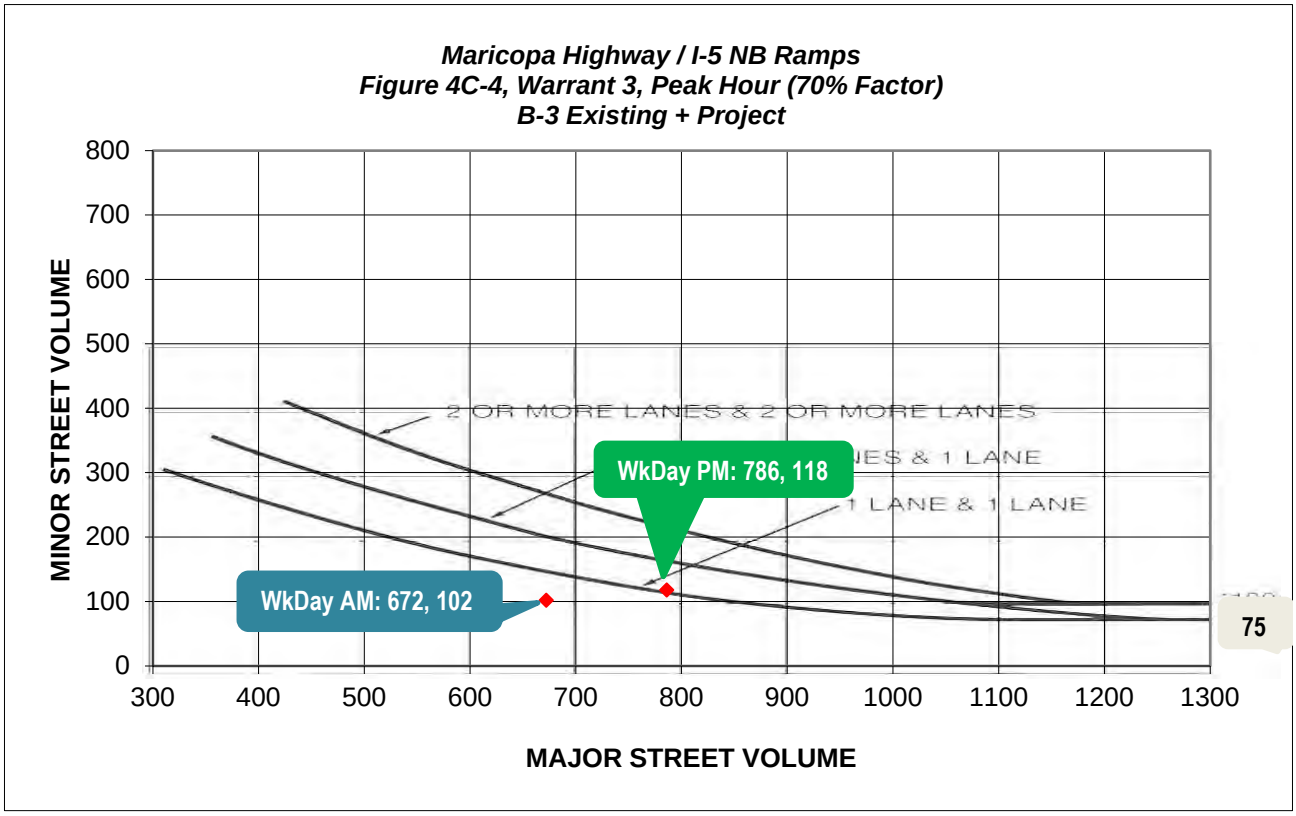
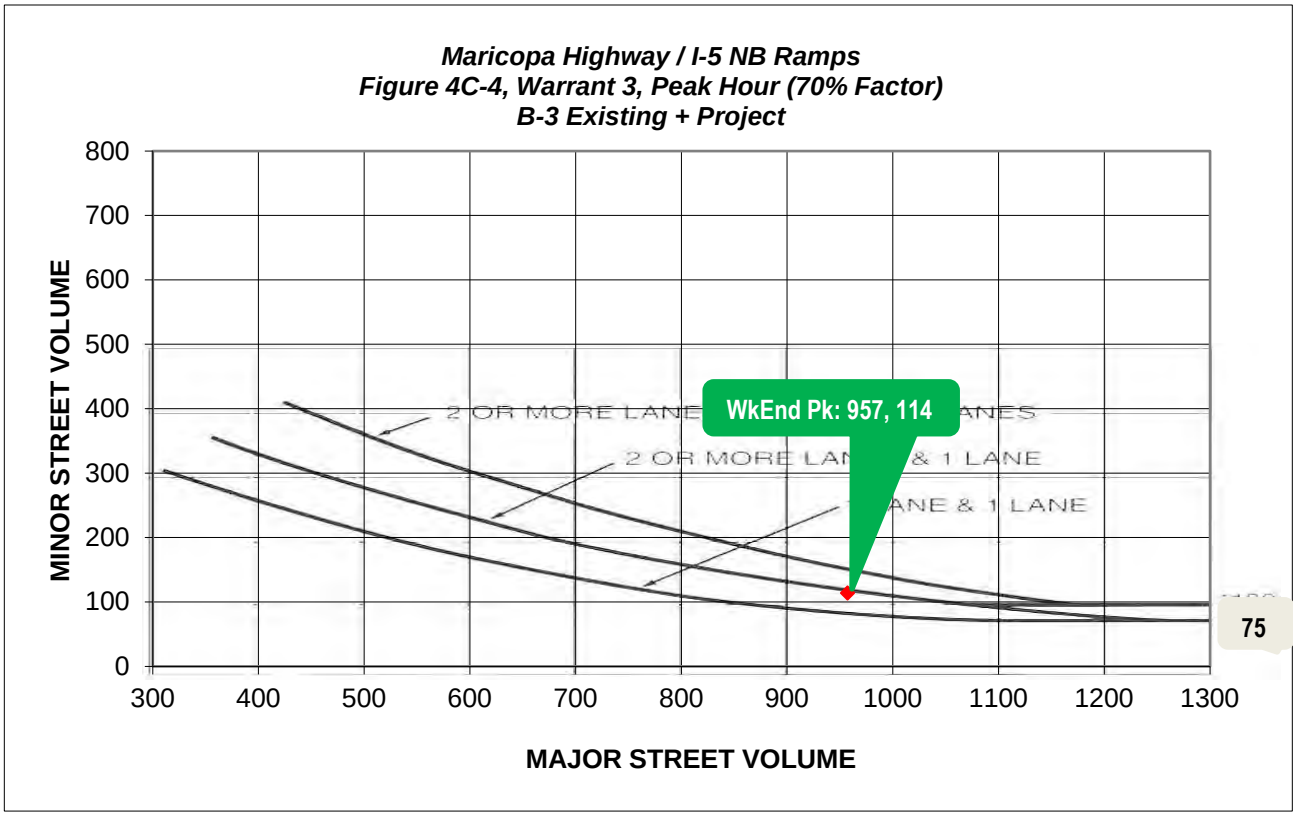


CHART 1



19.6.4 *Signal Warrant Summary*

Table 19-11 is a summary of the intersections where peak hour volume warrant is met in each Alternative.

TABLE 19–11
PEAK HOUR VOLUME WARRANT SUMMARY

Intersection	Alternative A1	Alternative A2	Alternative B
Stevens Drive / Maricopa Highway	No	No	No
S. Sabodan Street / Maricopa Highway	Yes	Yes	Yes
I-5 SB Ramps / Maricopa Highway	Yes	Yes	Yes
I-5 NB Ramps / Maricopa Highway	Yes	Yes	Yes

LINSCOTT
LAW &
GREENSPAN
engineers

TECHNICAL APPENDICES
TEJON CASINO
San Diego, California
October 30, 2019

LLG Ref. 3-18-3004

Linscott, Law & Greenspan, Engineers
4542 Ruffner Street
Suite 100
San Diego, CA 92111
858.300.8800 T
858.300.8810 F
www.llgengineers.com

APPENDICES

APPENDIX	
A.	Intersection and Segment Manual Count Sheets – Weekday and Weekend; Kern County Standards for Traffic Engineering, Caltrans Traffic Impact Study (TIA) guidelines, City of San Diego Guidelines for Traffic Impact Studies and pages from the 2014 Regional Transportation Plan/Sustainable Communities Strategy, Kern County Council of Governments.
B.	Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Existing
C.	Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Existing + Project Phase 1 (Alternative A1)
D.	Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Opening Year (2023)
E.	Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Opening Year (2023) + Project Phase 1 (Alternative A1)
F.	Intersection and Ramp Merge / Diverge Analysis Worksheets – Year 2040 Without Project
G.	Intersection and Ramp Merge / Diverge Analysis Worksheets – Year 2040 With Entire Project (Alternative A1)
H.	Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Existing + Project Phase 1 (Alternative A2)
I.	Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Opening Year (2023) + Project Phase 1 (Alternative A2)
J.	Intersection and Ramp Merge / Diverge Analysis Worksheets – Year 2040 With Entire Project (Alternative A2)
K.	Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Existing + Project Phase 1 (Alternative B)
L.	Weekday and Saturday Intersection and Ramp Merge / Diverge Analysis Worksheets – Opening Year (2023) + Project Phase 1 (Alternative B)
M.	Intersection and Ramp Merge / Diverge Analysis Worksheets – Year 2040 With Entire Project (Alternative B)

APPENDIX A

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS – WEEKDAY AND WEEKEND;

KERN COUNTY STANDARDS FOR TRAFFIC ENGINEERING,

CALTRANS TRAFFIC IMPACT STUDY (TIA) GUIDELINES,

CITY OF SAN DIEGO GUIDELINES FOR TRAFFIC IMPACT STUDIES, AND

PAGES FROM THE 2014 REGIONAL TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY, KERN COUNTY COUNCIL OF GOVERNMENTS.

INTERSECTION AND SEGMENT MANUAL COUNT SHEETS – WEEKDAY AND WEEKEND

Prepared by National Data & Surveying Services

Mettler Frontage Rd W & Valpredo Ave/SR-99 SB on/off Ramps

Peak Hour Turning Movement Count

ID: 18-02111-006
City: Bakersfield

Day: Thursday
Date: 11/01/2018

PEAK HOURS
AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS
AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Mettler Frontage Rd W — SOUTHBOUND

AM	11	73	2	0	45
NOON	0	0	0	0	0
PM	3	13	14	0	161

Valpredo Ave/SR-99 SB on/off Ramp — EASTBOUND

AM	NOON	PM	
30	0	6	
0	0	0	0
3	0	48	0
0	0	1	1
3	0	0	0
AM	NOON	PM	

Valpredo Ave/SR-99 SB on/off Ramp — WESTBOUND

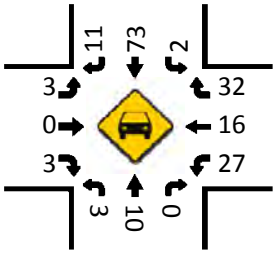
PM	NOON	AM	
14	0	32	0.5
1	0	16	0.5
10	0	27	0
0	0	0	0
15	0	2	
PM	NOON	AM	

Mettler Frontage Rd W — NORTHBOUND

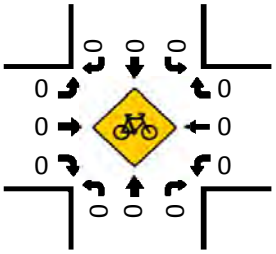
PM	23	0	2	99	0
NOON	0	0	0	0	0
AM	103	0	3	10	0

CONTROL			
2-Way Stop (EB/WB)			
TEV	180 AM	0 NOON	205 PM
PHF	0.78		0.95

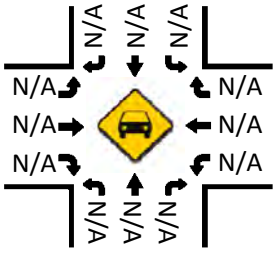
Total Vehicles (AM)



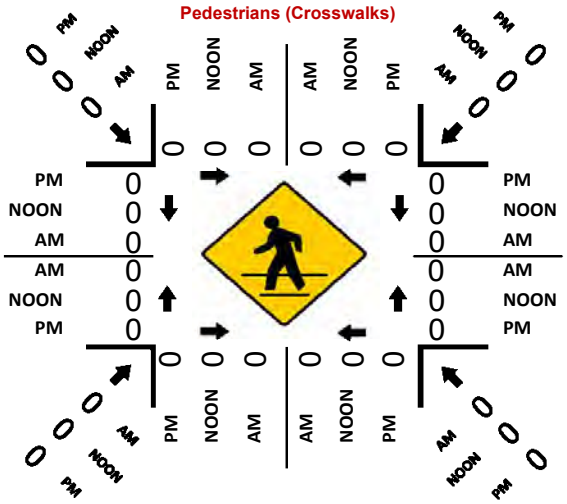
Bikes (AM)



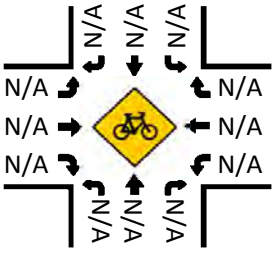
Total Vehicles (NOON)



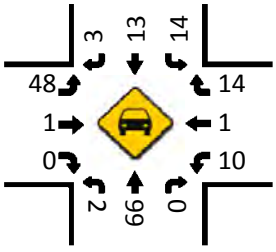
Pedestrians (Crosswalks)



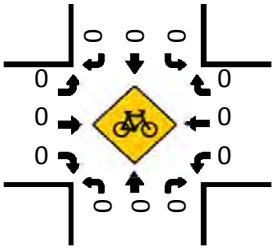
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Wheeler Ridge Access Rd & Maricopa Hwy/CA-166

Peak Hour Turning Movement Count

ID: 18-02111-007
City: Bakersfield

Day: Thursday
Date: 11/01/2018

PEAK HOURS

AM	08:00 AM - 09:00 AM
NOON	NONE
PM	04:15 PM - 05:15 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Wheeler Ridge Access Rd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	0	PM

Maricopa Hwy/CA-166 — EASTBOUND

AM	NOON	PM	
305	0	65	
0	0	0	0
0	0	0	0
52	0	249	1
4	0	3	0
AM	NOON	PM	

Maricopa Hwy/CA-166 — WESTBOUND

PM	NOON	AM	
0	0	0	0
63	0	303	1
4	0	60	0
0	0	0	0
269	0	55	
PM	NOON	AM	

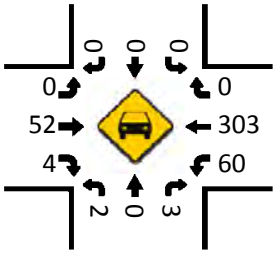
CONTROL
1-Way Stop (NB)

TEV	424 AM	0 NOON	341 PM
PHF	0.88		0.90

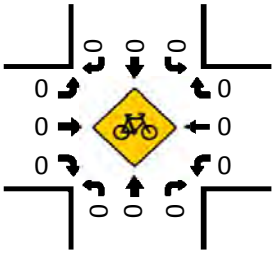
Wheeler Ridge Access Rd — NORTHBOUND

PM	7	0	2	0	20	PM
NOON	0	0	0	0	0	NOON
AM	64	0	2	0	3	AM

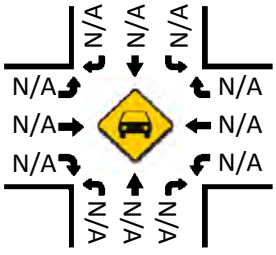
Total Vehicles (AM)



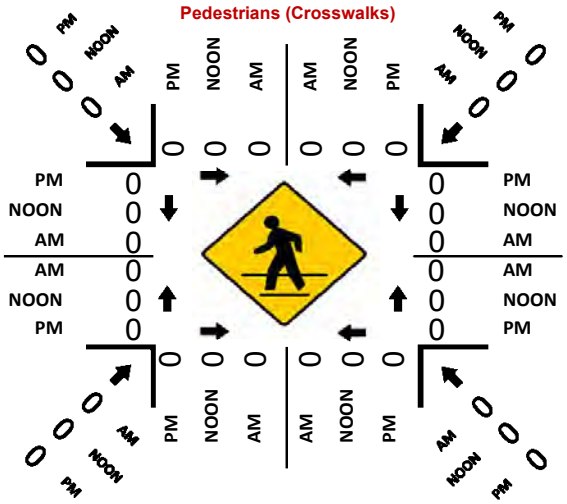
Bikes (AM)



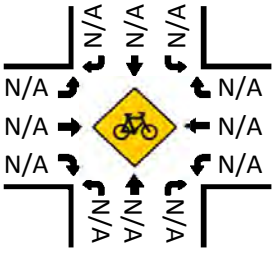
Total Vehicles (NOON)



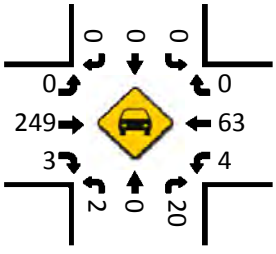
Pedestrians (Crosswalks)



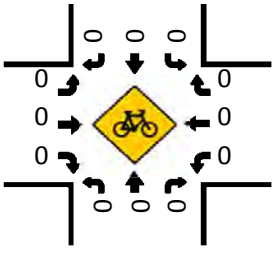
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

I-5 SB Ramps & Maricopa Hwy/CA-166

Peak Hour Turning Movement Count

ID: 18-02111-008
City: Bakersfield

Day: Thursday
Date: 11/01/2018

PEAK HOURS

AM: 08:00 AM - 09:00 AM
NOON: NONE
PM: 04:15 PM - 05:15 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

I-5 SB Ramps — SOUTHBOUND

AM	14	2	6	0	0	AM
NOON	0	0	0	0	0	NOON
PM	21	0	2	0	0	PM

0.5 0.5 0 0

Maricopa Hwy/CA-166 — EASTBOUND

AM	NOON	PM		
373	0	93		
0	0	0	0	
0	0	0	0	
29	0	224	0.5	
38	0	73	0.5	
AM	NOON	PM		

Maricopa Hwy/CA-166 — WESTBOUND

	PM	NOON	AM
0	0	0	0
1	72	0	359
0	1	0	1
0	0	0	0
	226	0	35
	PM	NOON	AM

0 0 0 0

CONTROL

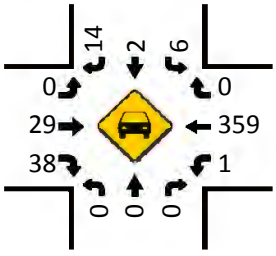
1-Way Stop (SB)

TEV	449 AM	0 NOON	393 PM
PHF	0.81		0.87

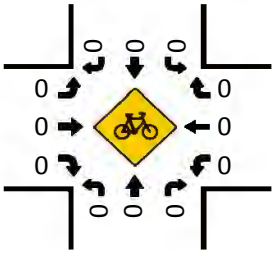
I-5 SB Ramps — NORTHBOUND

PM	74	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	41	0	0	0	0	AM

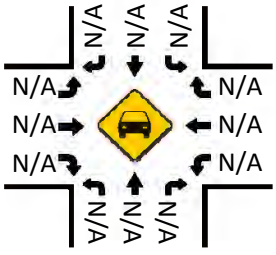
Total Vehicles (AM)



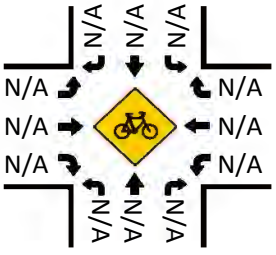
Bikes (AM)



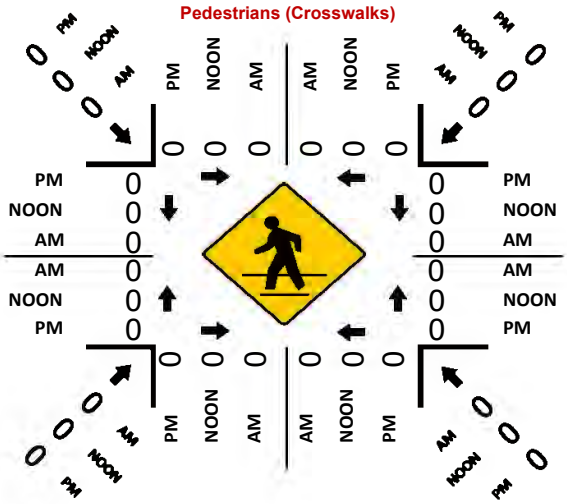
Total Vehicles (NOON)



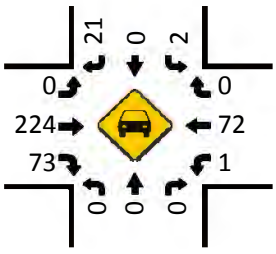
Bikes (NOON)



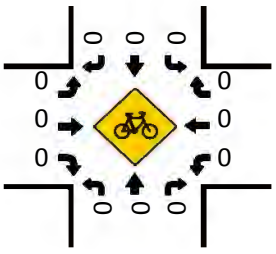
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

I-5 NB Ramps & Maricopa Hwy/CA-166

Peak Hour Turning Movement Count

ID: 18-02111-009
City: Bakersfield

Day: Thursday
Date: 11/01/2018

PEAK HOURS	COUNT PERIODS
07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
NONE	NONE
04:15 PM - 05:15 PM	04:00 PM - 06:00 PM

I-5 NB Ramps — SOUTHBOUND

AM	0	0	0	0	23	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	34	PM

Maricopa Hwy/CA-166 — EASTBOUND

AM	NOON	PM	
366	0	74	
0	0	0	0
6	0	9	0
26	0	218	1
0	0	0	0
AM	NOON	PM	

Maricopa Hwy/CA-166 — WESTBOUND

PM	NOON	AM	
24	0	17	0.5
45	0	327	0.5
0	0	0	0
0	0	0	0
219	0	27	
PM	NOON	AM	

CONTROL: 1-Way Stop (NB)

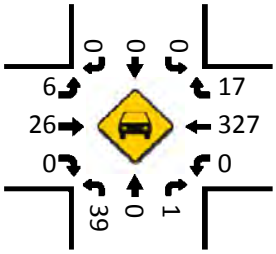
TEV	416 AM	0 NOON	327 PM
PHF	0.88		0.89

I-5 NB Ramps — NORTHBOUND

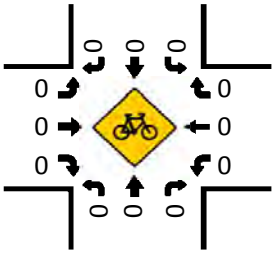
PM	0	0	29	1	1	PM
NOON	0	0	0	0	0	NOON
AM	0	0	39	0	1	AM

0 0 0 0 — 0 0 0.5 0.5

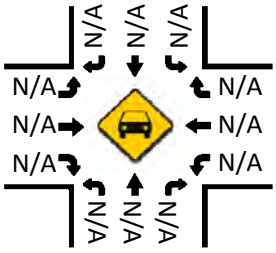
Total Vehicles (AM)



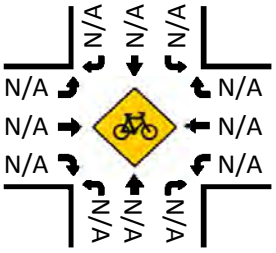
Bikes (AM)



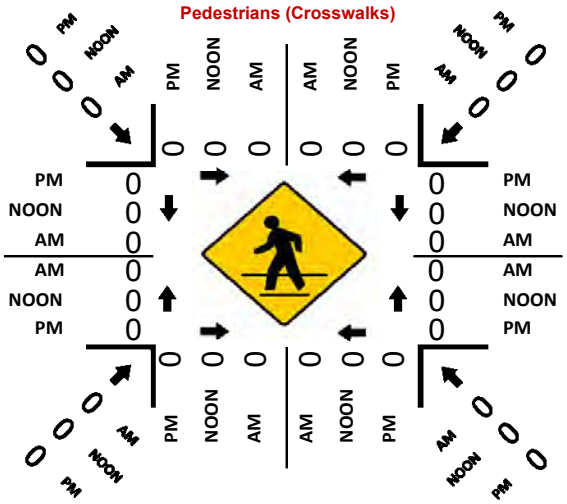
Total Vehicles (NOON)



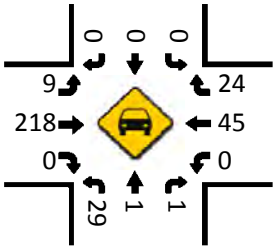
Bikes (NOON)



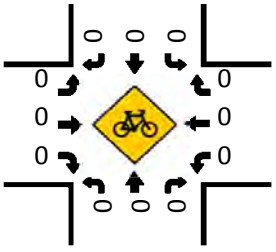
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Stevens Dr & SR-99 SB off-ramp

Peak Hour Turning Movement Count

ID: 18-02111-010
City: Bakersfield

Day: Thursday
Date: 11/01/2018

PEAK HOURS

AM: 07:45 AM - 08:45 AM
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Stevens Dr — SOUTHBOUND

AM	79	52	0	0	60	AM
NOON	0	0	0	0	0	NOON
PM	20	45	0	0	146	PM

SR-99 SB off-ramp — EASTBOUND

AM	NOON	PM		
336	0	51	⇦	
0	0	0	↶	0
0	0	0	↱	0
0	0	0	→	0
0	0	0	↷	0
AM	NOON	PM		

SR-99 SB off-ramp — WESTBOUND

PM	NOON	AM		
32	0	35	↰	1
31	0	257	←	1
3	0	11	↲	0
0	0	0	↳	0
0	0	0	⇨	
PM	NOON	AM		

Stevens Dr — NORTHBOUND

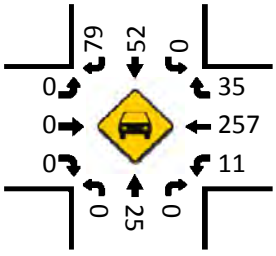
PM	48	0	0	114	0	PM
NOON	0	0	0	0	0	NOON
AM	63	0	0	25	0	AM

CONTROL: 1-Way Stop(WB)

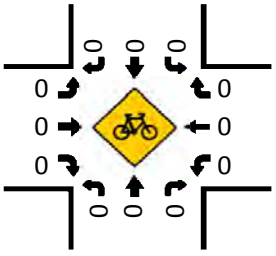
TEV	459 AM	0 NOON	245 PM
PHF	0.90		0.93

Turning movements at the intersection: 0 1 0 0 (SB) | 1 1 0 0 (WB) | 0 0 1 0 (NB)

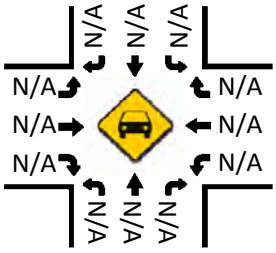
Total Vehicles (AM)



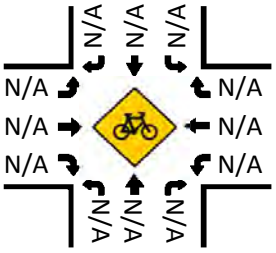
Bikes (AM)



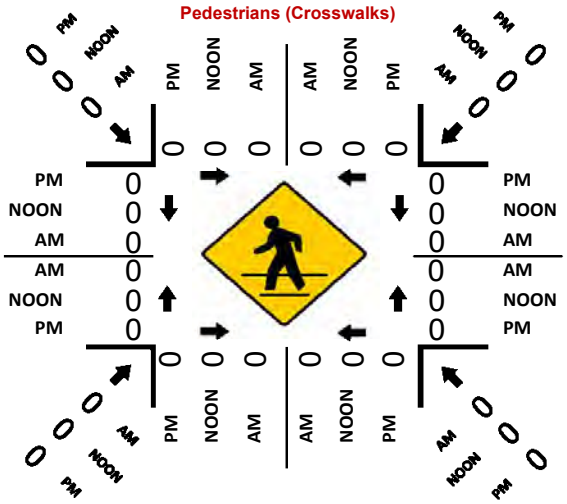
Total Vehicles (NOON)



Bikes (NOON)



Pedestrians (Crosswalks)


PM
NOON
AM
0
0
0
0
0
0
0
0

Prepared by National Data & Surveying Services

Stevens Dr & Maricopa Hwy/CA-166

Peak Hour Turning Movement Count

ID: 18-02111-011
City: Bakersfield

Day: Thursday
Date: 11/01/2018

PEAK HOURS

AM: 07:00 AM - 08:00 AM
NOON: NONE
PM: 04:15 PM - 05:15 PM

COUNT PERIODS

AM: 07:00 AM - 09:00 AM
NOON: NONE
PM: 04:00 PM - 06:00 PM

Stevens Dr — SOUTHBOUND

AM	0	36	23	0	26	AM
NOON	0	0	0	0	0	NOON
PM	1	29	29	0	110	PM

Maricopa Hwy/CA-166 — EASTBOUND

AM	NOON	PM		
23	0	24	⇦	
0	0	0	↶	0
9	0	72	↱	1
40	0	182	→	1
0	0	0	↷	0
AM	NOON	PM		

Maricopa Hwy/CA-166 — WESTBOUND

PM	NOON	AM		
			↶	0
38	0	17	←	1
23	0	23	↰	0
7	0	2	↩	0
0	0	0	⇨	
211	0	63		
PM	NOON	AM		

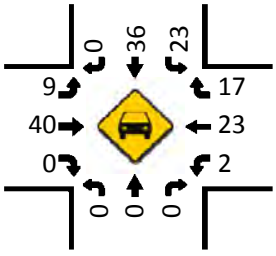
Stevens Dr — NORTHBOUND

PM	36	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	38	0	0	0	0	AM

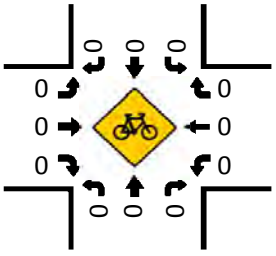
CONTROL: 1-Way Stop(SB)

TEV	150 AM	0 NOON	381 PM
PHF	0.87		0.87

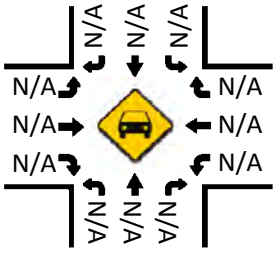
Total Vehicles (AM)



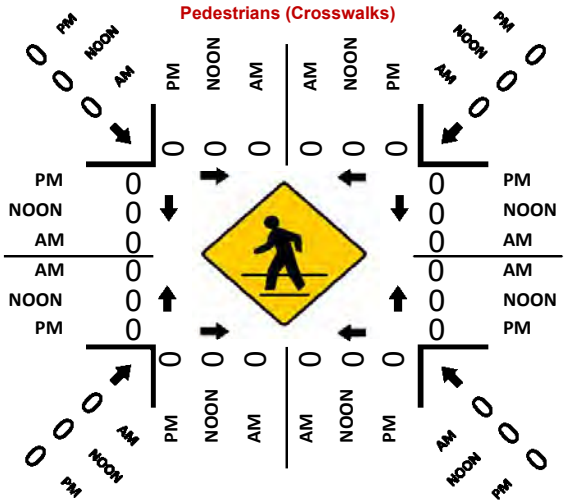
Bikes (AM)



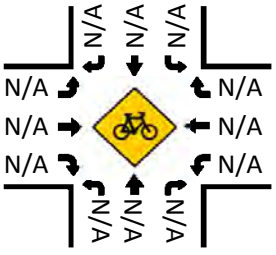
Total Vehicles (NOON)



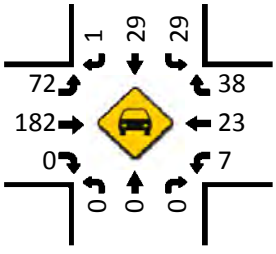
Pedestrians (Crosswalks)



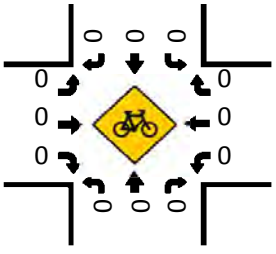
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Maricopa Hwy/CA-166 & SR-99 NB Ramps

Peak Hour Turning Movement Count

ID: 18-02111-012
City: Bakersfield

Day: Thursday
Date: 11/01/2018

PEAK HOURS

AM	07:00 AM - 08:00 AM
NOON	NONE
PM	04:15 PM - 05:15 PM

COUNT PERIODS

AM	07:00 AM - 09:00 AM
NOON	NONE
PM	04:00 PM - 06:00 PM

Maricopa Hwy/CA-166 — SOUTHBOUND

AM	40	0	22	0	42	AM
NOON	0	0	0	0	0	NOON
PM	193	0	20	0	70	PM

SR-99 NB Ramps — EASTBOUND

AM	NOON	PM	
42	0	233	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND — SR-99 NB Ramps

PM	NOON	AM	
25	0	15	0
38	0	1	1
0	0	0	0
0	0	0	0
21	0	24	
PM	NOON	AM	

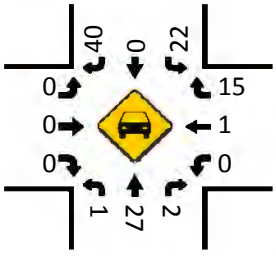
NORTHBOUND — Maricopa Hwy/CA-166

PM	0	0	2	45	1	PM
NOON	0	0	0	0	0	NOON
AM	0	0	1	27	2	AM

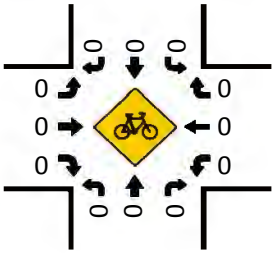
CONTROL: 2-Way Stop(SB/WB)

	AM	NOON	PM
TEV	108	0	324
PHF	0.75		0.88

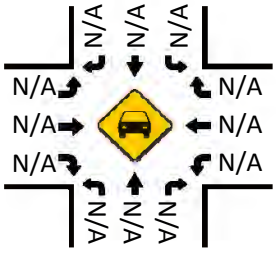
Total Vehicles (AM)



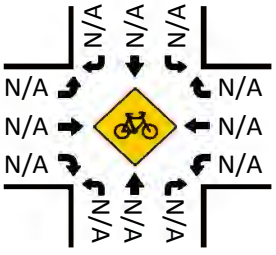
Bikes (AM)



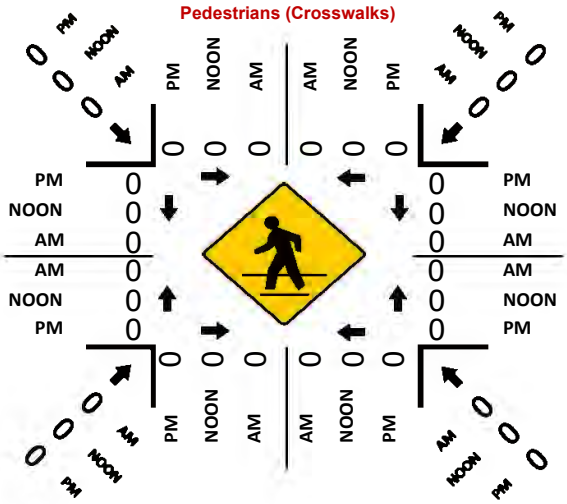
Total Vehicles (NOON)



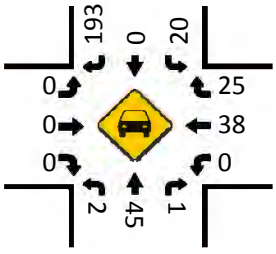
Bikes (NOON)



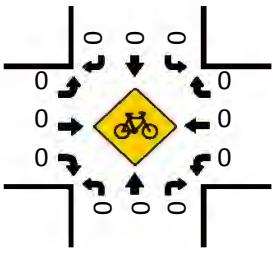
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 16:54
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	88,128 Lane Points
Data Quality	97.7% Observed
Segment Type	VDS
Segment Name	Mainline VDS 601309 - JCT RTE 223 BEAR MTN BLVD 5 NB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Tu,We,Th
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-02-2018	28572	576	97.20
01-03-2018	19737	576	100.00
01-04-2018	18158	576	100.00
01-09-2018	12711	576	100.00
01-10-2018	14365	576	99.70
01-11-2018	15496	576	100.00
01-16-2018	14998	576	97.90
01-17-2018	13505	576	97.60
01-18-2018	14765	576	97.60
01-23-2018	11935	576	100.00
01-24-2018	11674	576	96.20
01-25-2018	12289	576	100.00
01-30-2018	11720	576	100.00
01-31-2018	11486	576	99.70
02-01-2018	12566	576	100.00
02-06-2018	11837	576	100.00
02-07-2018	11390	576	100.00
02-08-2018	12799	576	100.00
02-13-2018	12145	576	100.00
02-14-2018	11715	576	94.80
02-15-2018	15346	576	100.00
02-20-2018	16068	576	100.00
02-21-2018	13680	576	100.00
02-22-2018	15072	576	97.90
02-27-2018	12309	576	99.30
02-28-2018	12384	576	100.00
03-01-2018	13393	576	97.20
03-06-2018	12482	576	81.30
03-07-2018	12202	576	100.00
03-08-2018	13405	576	98.30
03-13-2018	12425	576	99.00
03-14-2018	12806	576	100.00
03-15-2018	14178	576	100.00
03-20-2018	13727	576	100.00
03-21-2018	13600	576	100.00
03-22-2018	15287	576	89.60
03-27-2018	16594	576	100.00
03-28-2018	17024	576	100.00
03-29-2018	21424	576	96.50
04-03-2018	17407	576	99.00
04-04-2018	17823	576	93.80
04-05-2018	19653	576	93.80
04-10-2018	14485	576	57.30
04-11-2018	13646	576	100.00
04-12-2018	14956	576	100.00
04-17-2018	14192	576	93.10
04-18-2018	13483	576	100.00
04-19-2018	15496	576	98.60
04-24-2018	13892	576	97.90
04-25-2018	13902	576	93.10
04-26-2018	15192	576	96.90
05-01-2018	14011	576	69.10
05-02-2018	12949	576	99.30
05-03-2018	15007	576	97.60
05-08-2018	12676	576	99.30
05-09-2018	13962	576	98.30
05-10-2018	16020	576	98.30
05-15-2018	14108	576	100.00
05-16-2018	14305	576	100.00
05-17-2018	16786	576	100.00
05-22-2018	14955	576	98.30
05-23-2018	16833	576	98.60
05-24-2018	22603	576	99.70
05-29-2018	19334	576	99.00
05-30-2018	15149	576	95.50
05-31-2018	16489	576	100.00
06-05-2018	14447	576	99.00
06-06-2018	14711	576	100.00
06-07-2018	17322	576	100.00
06-12-2018	15732	576	99.00
06-13-2018	17005	576	99.00
06-14-2018	21013	576	99.00
06-19-2018	17139	576	99.00
06-20-2018	16783	576	98.60
06-21-2018	19250	576	99.00
06-26-2018	16334	576	99.00
06-27-2018	16533	576	99.00
06-28-2018	18571	576	99.00
07-03-2018	18621	576	99.00
07-05-2018	20059	576	99.00
07-10-2018	16188	576	99.00
07-11-2018	15891	576	99.00
07-12-2018	18361	576	99.00
07-17-2018	16527	576	99.00
07-18-2018	17149	576	99.00
07-19-2018	19872	576	96.20
07-24-2018	17344	576	99.00
07-25-2018	18588	576	99.00
07-26-2018	21291	576	94.40
07-31-2018	17786	576	99.00
08-01-2018	17837	576	99.00
08-02-2018	19697	576	99.00
08-07-2018	17832	576	99.00
08-08-2018	17745	576	99.00
08-09-2018	20499	576	99.00
08-14-2018	17135	576	99.00
08-15-2018	16596	576	98.60
08-16-2018	18800	576	99.00
08-21-2018	15481	576	99.00
08-22-2018	15764	576	98.30
08-23-2018	18098	576	98.60
08-28-2018	13606	576	99.00
08-29-2018	13715	576	99.00
08-30-2018	16953	576	98.30
09-04-2018	17895	576	97.20
09-05-2018	14604	576	67.70
09-06-2018	15398	576	60.80
09-11-2018	12678	576	99.00
09-12-2018	13213	576	99.00
09-13-2018	15148	576	99.00
09-18-2018	13498	576	99.00
09-19-2018	13660	576	99.00
09-20-2018	15909	576	99.00
09-25-2018	13635	576	99.00
09-26-2018	13382	576	99.00
09-27-2018	15185	576	99.00
10-02-2018	13060	576	99.00
10-03-2018	13204	576	99.00
10-04-2018	15215	576	99.00
10-09-2018	13362	576	99.00
10-10-2018	12987	576	99.00
10-11-2018	14659	576	99.00
10-16-2018	13463	576	99.00
10-17-2018	13062	576	99.00
10-18-2018	14636	576	99.00
10-23-2018	13002	576	99.00
10-24-2018	12794	576	99.00
10-25-2018	15097	576	99.00
10-30-2018	13223	576	99.00
10-31-2018	11825	576	97.60
11-01-2018	14791	576	99.00
11-06-2018	12827	576	100.00
11-07-2018	12452	576	100.00
11-08-2018	14389	576	100.00
11-13-2018	14056	576	100.00
11-14-2018	13345	576	99.30
11-15-2018	14436	576	100.00
11-20-2018	29151	576	99.30
11-21-2018	35708	576	99.00
11-27-2018	13922	576	99.00
11-28-2018	12608	576	99.00
11-29-2018	12562	576	99.00
12-04-2018	12590	576	99.00
12-05-2018	12142	576	99.00
12-06-2018	7818	576	96.20
12-11-2018	12907	576	99.00
12-12-2018	13088	576	98.30
12-13-2018	14003	576	99.00
12-18-2018	15216	576	99.00
12-19-2018	15819	576	99.00
12-20-2018	18990	576	99.00
12-26-2018	33788	576	99.00
12-27-2018	29060	576	99.00
	15610		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:00
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	88,128 Lane Points
Data Quality	62.1% Observed
Segment Type	VDS
Segment Name	Mainline VDS 602309 - CT RTE 223 BEAR MTN BLVD 5 SB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Tu,We,Th
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-02-2018	28680	576	97.20
01-03-2018	19737	576	100.00
01-04-2018	18158	576	100.00
01-09-2018	12711	576	100.00
01-10-2018	14369	576	99.70
01-11-2018	15496	576	100.00
01-16-2018	15010	576	97.90
01-17-2018	13512	576	97.60
01-18-2018	14782	576	97.60
01-23-2018	11935	576	100.00
01-24-2018	11677	576	96.20
01-25-2018	12289	576	100.00
01-30-2018	11720	576	100.00
01-31-2018	11490	576	99.70
02-01-2018	12566	576	100.00
02-06-2018	11837	576	100.00
02-07-2018	11390	576	100.00
02-08-2018	12799	576	100.00
02-13-2018	12145	576	100.00
02-14-2018	11715	576	94.80
02-15-2018	15346	576	100.00
02-20-2018	12319	576	98.40
02-21-2018	17314	576	50.00
02-22-2018	15073	576	97.90
02-27-2018	12302	576	99.30
02-28-2018	12384	576	100.00
03-01-2018	13392	576	97.20
03-06-2018	12367	576	81.30
03-07-2018	12202	576	100.00
03-08-2018	13418	576	98.30
03-13-2018	7061	576	99.00
03-14-2018	16659	576	50.00
03-15-2018	20078	576	50.00
03-20-2018	16187	576	50.00
03-21-2018	17243	576	50.00
03-22-2018	20440	576	44.80
03-27-2018	19237	576	50.00
03-28-2018	20951	576	50.00
03-29-2018	25997	576	48.30
04-03-2018	19714	576	49.50
04-04-2018	21265	576	46.90
04-05-2018	24171	576	46.90
04-10-2018	14928	576	28.60
04-11-2018	17511	576	50.00
04-12-2018	22437	576	50.00
04-17-2018	15603	576	46.50
04-18-2018	17093	576	50.00
04-19-2018	22318	576	49.30
04-24-2018	15779	576	49.00
04-25-2018	16887	576	46.50
04-26-2018	20622	576	48.40
05-01-2018	16006	576	34.50
05-02-2018	16172	576	49.70
05-03-2018	20065	576	48.80
05-08-2018	16022	576	49.70
05-09-2018	17175	576	49.10
05-10-2018	21232	576	49.10
05-15-2018	16724	576	50.00
05-16-2018	17497	576	50.00
05-17-2018	21477	576	50.00
05-22-2018	16807	576	49.10
05-23-2018	18481	576	49.30
05-24-2018	23704	576	49.80
05-29-2018	20486	576	49.50
05-30-2018	17932	576	47.70
05-31-2018	20205	576	50.00
06-05-2018	17007	576	49.50
06-06-2018	18168	576	50.00
06-07-2018	21682	576	50.00
06-12-2018	18521	576	49.50
06-13-2018	19826	576	49.50
06-14-2018	26217	576	49.50
06-19-2018	19499	576	49.50
06-20-2018	20447	576	49.30
06-21-2018	23391	576	49.50
06-26-2018	18853	576	49.50
06-27-2018	19565	576	49.50
06-28-2018	22737	576	49.50
07-03-2018	23808	576	49.50
07-05-2018	23966	576	49.50
07-10-2018	18915	576	49.50
07-11-2018	19841	576	49.50
07-12-2018	23432	576	49.50
07-17-2018	19594	576	49.50
07-18-2018	20702	576	49.50
07-19-2018	23469	576	48.10
07-24-2018	20710	576	49.50
07-25-2018	21041	576	49.50
07-26-2018	25606	576	47.20
07-31-2018	20425	576	49.50
08-01-2018	21407	576	49.50
08-02-2018	24211	576	49.50
08-07-2018	19587	576	49.50
08-08-2018	20199	576	49.50
08-09-2018	23502	576	49.50
08-14-2018	20056	576	49.50
08-15-2018	20484	576	49.30
08-16-2018	23080	576	49.50
08-21-2018	18220	576	49.50
08-22-2018	19222	576	49.10
08-23-2018	22025	576	49.30
08-28-2018	16371	576	49.50
08-29-2018	17211	576	49.50
08-30-2018	21380	576	49.10
09-04-2018	14329	576	97.20
09-05-2018	15301	576	67.50
09-06-2018	16302	576	60.80
09-11-2018	16614	576	49.50
09-12-2018	12669	576	99.00
09-13-2018	16042	576	99.00
09-18-2018	12292	576	99.00
09-19-2018	13172	576	99.00
09-20-2018	17398	576	96.90
09-25-2018	16144	576	49.50
09-26-2018	16564	576	49.50
09-27-2018	19986	576	49.50
10-02-2018	15687	576	49.50
10-03-2018	16464	576	49.50
10-04-2018	19935	576	99.00
10-09-2018	16208	576	49.50
10-10-2018	12583	576	95.70
10-11-2018	16727	576	99.00
10-16-2018	15791	576	49.50
10-17-2018	16939	576	49.50
10-18-2018	20896	576	49.50
10-23-2018	15791	576	49.50
10-24-2018	16508	576	49.50
10-25-2018	21198	576	49.50
10-30-2018	16063	576	49.50
10-31-2018	15883	576	48.80
11-01-2018	20072	576	49.50
11-06-2018	15640	576	50.00
11-07-2018	16515	576	50.00
11-08-2018	20622	576	50.00
11-13-2018	17254	576	50.00
11-14-2018	16934	576	49.70
11-15-2018	20889	576	50.00
11-20-2018	32011	576	49.70
11-21-2018	53184	576	99.00
11-27-2018	16396	576	49.50
11-28-2018	16242	576	49.50
11-29-2018	17251	576	49.50
12-04-2018	11719	576	49.50
12-05-2018	11233	576	49.50
12-06-2018	10856	576	48.10
12-11-2018	11048	576	49.50
12-12-2018	11969	576	49.10
12-13-2018	15719	576	49.50
12-18-2018	13529	576	49.50
12-19-2018	15454	576	49.50
12-20-2018	20427	576	49.50
12-26-2018	29638	576	49.50
12-27-2018	28312	576	49.50
	17994		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:16
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	176,256 Lane Points
Data Quality	96.1% Observed
Segment Type	VDS
Segment Name	Mainline VDS 601339 - WHEELER RIDGE RD - I5 NB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Tu,We,Th
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-02-2018	56402	1152	99.00
01-03-2018	44271	1152	99.70
01-04-2018	42702	1152	100.00
01-09-2018	33592	1152	95.80
01-10-2018	38609	1152	100.00
01-11-2018	42250	1152	100.00
01-16-2018	40573	1152	99.70
01-17-2018	36688	1152	100.00
01-18-2018	39404	1152	100.00
01-23-2018	31590	1152	100.00
01-24-2018	31230	1152	99.00
01-25-2018	32789	1152	100.00
01-30-2018	31260	1152	99.70
01-31-2018	31215	1152	99.00
02-01-2018	33183	1152	100.00
02-06-2018	31386	1152	94.10
02-07-2018	31488	1152	100.00
02-08-2018	34056	1152	100.00
02-13-2018	32975	1152	99.70
02-14-2018	31883	1152	90.30
02-15-2018	38760	1152	95.80
02-20-2018	37675	1152	99.30
02-21-2018	34457	1152	100.00
02-22-2018	37366	1152	97.90
02-27-2018	32212	1152	99.00
02-28-2018	33189	1152	99.70
03-01-2018	35794	1152	97.60
03-06-2018	33624	1152	80.90
03-07-2018	33142	1152	100.00
03-08-2018	35564	1152	100.00
03-13-2018	33088	1152	99.00
03-14-2018	33479	1152	100.00
03-15-2018	36325	1152	99.70
03-20-2018	34906	1152	99.70
03-21-2018	32731	1152	99.70
03-22-2018	34422	1152	91.70
03-27-2018	42595	1152	99.30
03-28-2018	44842	1152	100.00
03-29-2018	51654	1152	99.70
04-03-2018	40790	1152	100.00
04-04-2018	40572	1152	99.70
04-05-2018	44051	1152	100.00
04-10-2018	35464	1152	65.60
04-11-2018	35535	1152	100.00
04-12-2018	37939	1152	100.00
04-17-2018	34869	1152	100.00
04-18-2018	34935	1152	100.00
04-19-2018	38651	1152	99.30
04-24-2018	36147	1152	100.00
04-25-2018	36298	1152	100.00
04-26-2018	38735	1152	100.00
05-01-2018	35232	1152	69.10
05-02-2018	34170	1152	100.00
05-03-2018	37974	1152	100.00
05-08-2018	32661	1152	100.00
05-09-2018	35309	1152	98.30
05-10-2018	40443	1152	99.70
05-15-2018	36222	1152	100.00
05-16-2018	36662	1152	100.00
05-17-2018	42021	1152	99.70
05-22-2018	37366	1152	99.70
05-23-2018	39898	1152	100.00
05-24-2018	48856	1152	100.00
05-29-2018	44788	1152	0.00
05-30-2018	42087	1152	0.00
05-31-2018	43625	1152	0.00
06-05-2018	37685	1152	100.00
06-06-2018	38509	1152	100.00
06-07-2018	43799	1152	100.00
06-12-2018	39631	1152	99.00
06-13-2018	41494	1152	99.00
06-14-2018	48030	1152	99.00
06-19-2018	41543	1152	99.00
06-20-2018	41135	1152	99.00
06-21-2018	45787	1152	99.00
06-26-2018	40532	1152	99.00
06-27-2018	40809	1152	99.00
06-28-2018	45262	1152	99.00
07-03-2018	46579	1152	99.00
07-05-2018	47599	1152	99.00
07-10-2018	39969	1152	99.00
07-11-2018	40590	1152	99.00
07-12-2018	45178	1152	99.00
07-17-2018	40873	1152	98.30
07-18-2018	41585	1152	99.00
07-19-2018	47141	1152	96.20
07-24-2018	41790	1152	98.60
07-25-2018	43700	1152	99.00
07-26-2018	48681	1152	94.40
07-31-2018	42915	1152	99.00
08-01-2018	43237	1152	99.00
08-02-2018	47079	1152	99.00
08-07-2018	42866	1152	99.00
08-08-2018	43163	1152	99.00
08-09-2018	47787	1152	99.00
08-14-2018	41748	1152	99.00
08-15-2018	40268	1152	99.00
08-16-2018	43148	1152	99.00
08-21-2018	37957	1152	99.00
08-22-2018	38114	1152	99.00
08-23-2018	42275	1152	99.00
08-28-2018	34839	1152	99.00
08-29-2018	35014	1152	99.00
08-30-2018	41204	1152	98.60
09-04-2018	41748	1152	97.20
09-05-2018	36126	1152	67.70
09-06-2018	39122	1152	60.80
09-11-2018	33497	1152	99.00
09-12-2018	34652	1152	99.00
09-13-2018	38103	1152	99.00
09-18-2018	34735	1152	99.00
09-19-2018	35571	1152	99.00
09-20-2018	39315	1152	99.00
09-25-2018	34976	1152	99.00
09-26-2018	34786	1152	99.00
09-27-2018	38732	1152	99.00
10-02-2018	33973	1152	99.00
10-03-2018	34010	1152	99.00
10-04-2018	39100	1152	99.00
10-09-2018	34440	1152	99.00
10-10-2018	34270	1152	99.00
10-11-2018	37960	1152	99.00
10-16-2018	34977	1152	99.00
10-17-2018	35760	1152	99.00
10-18-2018	39010	1152	99.00
10-23-2018	34227	1152	99.00
10-24-2018	34397	1152	99.00
10-25-2018	38425	1152	99.00
10-30-2018	34503	1152	99.00
10-31-2018	31246	1152	97.60
11-01-2018	37412	1152	99.00
11-06-2018	33886	1152	100.00
11-07-2018	33678	1152	100.00
11-08-2018	37706	1152	100.00
11-13-2018	36402	1152	100.00
11-14-2018	34469	1152	100.00
11-15-2018	37470	1152	100.00
11-20-2018	60196	1152	99.30
11-21-2018	73311	1152	99.00
11-27-2018	34903	1152	99.00
11-28-2018	32967	1152	99.00
11-29-2018	32222	1152	99.00
12-04-2018	33587	1152	99.00
12-05-2018	32284	1152	99.00
12-06-2018	22830	1152	96.20
12-11-2018	34361	1152	99.00
12-12-2018	34539	1152	98.60
12-13-2018	36463	1152	99.00
12-18-2018	38360	1152	99.00
12-19-2018	39182	1152	99.00
12-20-2018	44525	1152	98.60
12-26-2018	65236	1152	99.00
12-27-2018	57758	1152	99.00
	38795		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:23
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	176,256 Lane Points
Data Quality	96.1% Observed
Segment Type	VDS
Segment Name	Mainline VDS 602339 - WHEELER RIDGE RD - I5 SB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Tu,We,Th
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-02-2018	56333	1152	99.00
01-03-2018	44271	1152	99.70
01-04-2018	42702	1152	100.00
01-09-2018	33495	1152	95.80
01-10-2018	38609	1152	100.00
01-11-2018	42250	1152	100.00
01-16-2018	40565	1152	99.70
01-17-2018	36688	1152	100.00
01-18-2018	39404	1152	100.00
01-23-2018	31590	1152	100.00
01-24-2018	31230	1152	99.00
01-25-2018	32789	1152	100.00
01-30-2018	31250	1152	99.70
01-31-2018	31201	1152	99.00
02-01-2018	33183	1152	100.00
02-06-2018	31359	1152	94.10
02-07-2018	31488	1152	100.00
02-08-2018	34056	1152	100.00
02-13-2018	32960	1152	99.70
02-14-2018	31825	1152	90.30
02-15-2018	38621	1152	95.80
02-20-2018	33712	1152	99.30
02-21-2018	35619	1152	100.00
02-22-2018	37354	1152	97.90
02-27-2018	32192	1152	99.00
02-28-2018	33195	1152	99.70
03-01-2018	35794	1152	97.60
03-06-2018	33572	1152	80.90
03-07-2018	33142	1152	100.00
03-08-2018	35564	1152	100.00
03-13-2018	30858	1152	99.00
03-14-2018	32774	1152	100.00
03-15-2018	38629	1152	99.70
03-20-2018	32204	1152	99.70
03-21-2018	32090	1152	99.70
03-22-2018	36375	1152	91.70
03-27-2018	39473	1152	99.30
03-28-2018	42900	1152	100.00
03-29-2018	50387	1152	99.70
04-03-2018	37538	1152	100.00
04-04-2018	39042	1152	99.70
04-05-2018	45163	1152	100.00
04-10-2018	32093	1152	65.60
04-11-2018	34372	1152	100.00
04-12-2018	41141	1152	100.00
04-17-2018	30934	1152	100.00
04-18-2018	33393	1152	100.00
04-19-2018	41504	1152	99.20
04-24-2018	32453	1152	100.00
04-25-2018	34202	1152	100.00
04-26-2018	39572	1152	100.00
05-01-2018	31241	1152	69.10
05-02-2018	32035	1152	100.00
05-03-2018	38476	1152	100.00
05-08-2018	32096	1152	100.00
05-09-2018	33788	1152	98.30
05-10-2018	40548	1152	99.70
05-15-2018	33507	1152	100.00
05-16-2018	34885	1152	100.00
05-17-2018	41124	1152	99.70
05-22-2018	33458	1152	99.70
05-23-2018	36364	1152	100.00
05-24-2018	43729	1152	100.00
05-29-2018	33313	1152	0.00
05-30-2018	33837	1152	0.00
05-31-2018	35810	1152	0.00
06-05-2018	34703	1152	100.00
06-06-2018	36809	1152	100.00
06-07-2018	42457	1152	100.00
06-12-2018	37540	1152	99.00
06-13-2018	39822	1152	99.00
06-14-2018	47995	1152	99.00
06-19-2018	38471	1152	99.00
06-20-2018	38837	1152	99.00
06-21-2018	44235	1152	99.00
06-26-2018	37687	1152	99.00
06-27-2018	38824	1152	99.00
06-28-2018	43964	1152	99.00
07-03-2018	45687	1152	99.00
07-05-2018	46277	1152	99.00
07-10-2018	37747	1152	99.00
07-11-2018	38960	1152	99.00
07-12-2018	44604	1152	99.00
07-17-2018	38263	1152	98.30
07-18-2018	40704	1152	99.00
07-19-2018	44678	1152	96.20
07-24-2018	39776	1152	98.60
07-25-2018	40960	1152	99.00
07-26-2018	47774	1152	94.40
07-31-2018	39863	1152	99.00
08-01-2018	41564	1152	99.00
08-02-2018	45799	1152	99.00
08-07-2018	38908	1152	99.00
08-08-2018	40169	1152	99.00
08-09-2018	44833	1152	99.00
08-14-2018	38553	1152	99.00
08-15-2018	39085	1152	99.00
08-16-2018	42259	1152	99.00
08-21-2018	35320	1152	99.00
08-22-2018	36767	1152	99.00
08-23-2018	40742	1152	99.00
08-28-2018	32478	1152	99.00
08-29-2018	33344	1152	99.00
08-30-2018	40440	1152	98.60
09-04-2018	38088	1152	97.20
09-05-2018	35321	1152	67.70
09-06-2018	36007	1152	60.80
09-11-2018	32899	1152	99.00
09-12-2018	32649	1152	99.00
09-13-2018	38116	1152	99.00
09-18-2018	32429	1152	99.00
09-19-2018	33689	1152	99.00
09-20-2018	39836	1152	99.00
09-25-2018	31926	1152	99.00
09-26-2018	32873	1152	99.00
09-27-2018	38299	1152	99.00
10-02-2018	32184	1152	99.00
10-03-2018	32710	1152	99.00
10-04-2018	39344	1152	99.00
10-09-2018	32294	1152	99.00
10-10-2018	32938	1152	99.00
10-11-2018	38690	1152	99.00
10-16-2018	31840	1152	99.00
10-17-2018	33763	1152	99.00
10-18-2018	39664	1152	99.00
10-23-2018	31855	1152	99.00
10-24-2018	33314	1152	99.00
10-25-2018	40411	1152	99.00
10-30-2018	31805	1152	99.00
10-31-2018	30759	1152	97.60
11-01-2018	38447	1152	99.00
11-06-2018	31378	1152	100.00
11-07-2018	33009	1152	100.00
11-08-2018	38992	1152	100.00
11-13-2018	34417	1152	100.00
11-14-2018	33795	1152	100.00
11-15-2018	39375	1152	100.00
11-20-2018	54225	1152	99.30
11-21-2018	68769	1152	99.00
11-27-2018	32642	1152	99.00
11-28-2018	31991	1152	99.00
11-29-2018	32699	1152	99.00
12-04-2018	31091	1152	99.00
12-05-2018	31526	1152	99.00
12-06-2018	26983	1152	96.20
12-11-2018	31533	1152	99.00
12-12-2018	33575	1152	98.60
12-13-2018	39288	1152	99.00
12-18-2018	35910	1152	99.00
12-19-2018	39376	1152	99.00
12-20-2018	46597	1152	98.60
12-26-2018	69219	1152	99.00
12-27-2018	61427	1152	99.00
	37544		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:33
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	0 Lane Points
Data Quality	0% Observed
Segment Type	VDS
Segment Name	Mainline VDS 601931 - RTE 99 JSO RTE 166 OC NB
start date	04/24/2019 00:00:00
end date	04/24/2019 17:33:33
Day of Week	Tu,We,Th
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
1/2/2018	25,826	864	100
1/3/2018	23,475	864	100
1/4/2018	23,541	864	100
1/9/2018	17,392	864	100
1/10/2018	19,728	864	100
1/11/2018	21,153	864	100
1/16/2018	20,454	864	100
1/17/2018	19,672	864	100
1/18/2018	20,332	864	100
1/23/2018	19,338	864	100
1/24/2018	19,246	864	99
1/25/2018	19,581	864	100
1/30/2018	19,234	864	100
1/31/2018	19,115	864	100
2/1/2018	19,915	864	100
2/6/2018	19,262	864	100
2/7/2018	19,611	864	98.6
2/8/2018	20,601	864	100
2/13/2018	20,121	864	100
2/14/2018	19,331	864	92.4
2/15/2018	22,534	864	100
2/20/2018	27,110	864	0
2/21/2018	26,629	864	0
2/22/2018	27,194	864	0
2/27/2018	18,950	864	99
2/28/2018	20,152	864	100
3/1/2018	21,689	864	97.6
3/6/2018	20,444	864	81.3
3/7/2018	20,298	864	100
3/8/2018	21,488	864	100
3/13/2018	19,791	864	99
3/14/2018	19,713	864	100
3/15/2018	20,748	864	100
3/20/2018	20,404	864	100
3/21/2018	17,820	864	100
3/22/2018	19,019	864	92
3/27/2018	24,943	864	100
3/28/2018	26,979	864	100
3/29/2018	28,498	864	100
4/3/2018	22,309	864	100
4/4/2018	22,244	864	100
4/5/2018	23,921	864	100
4/10/2018	21,107	864	65.6
4/11/2018	21,441	864	100
4/12/2018	21,868	864	100
4/17/2018	20,771	864	100
4/18/2018	20,942	864	100
4/19/2018	22,449	864	100
4/24/2018	21,087	864	100
4/25/2018	21,398	864	100
4/26/2018	22,583	864	100
5/1/2018	20,823	864	69.1
5/2/2018	20,437	864	100
5/3/2018	22,363	864	100
5/8/2018	19,639	864	100
5/9/2018	20,894	864	100
5/10/2018	23,882	864	100
5/15/2018	21,979	864	100
5/16/2018	21,851	864	100
5/17/2018	24,631	864	100
5/22/2018	22,340	864	99.7
5/23/2018	22,359	864	100
5/24/2018	25,270	864	100
5/29/2018	24,469	864	100
5/30/2018	22,714	864	99
5/31/2018	24,783	864	100
6/5/2018	22,640	864	100
6/6/2018	22,972	864	100
6/7/2018	25,491	864	100
6/12/2018	23,064	864	99
6/13/2018	23,712	864	99
6/14/2018	25,961	864	99
6/19/2018	23,846	864	99
6/20/2018	23,634	864	99
6/21/2018	25,733	864	99
6/26/2018	23,529	864	99
6/27/2018	23,520	864	99
6/28/2018	25,721	864	99
7/3/2018	26,855	864	99
7/5/2018	26,720	864	99
7/10/2018	24,116	864	99
7/11/2018	24,742	864	99
7/12/2018	26,538	864	99
7/17/2018	24,935	864	99
7/18/2018	24,843	864	99
7/19/2018	27,563	864	96.2
7/24/2018	25,462	864	99
7/25/2018	25,638	864	99
7/26/2018	28,172	864	94.4
7/31/2018	25,771	864	99
8/1/2018	25,789	864	99
8/2/2018	27,508	864	99
8/7/2018	25,283	864	99
8/8/2018	25,588	864	99
8/9/2018	27,058	864	99
8/14/2018	24,615	864	99
8/15/2018	23,533	864	99
8/16/2018	23,875	864	99
8/21/2018	22,120	864	99
8/22/2018	22,107	864	99
8/23/2018	23,655	864	99
8/28/2018	20,934	864	99
8/29/2018	21,000	864	99
8/30/2018	23,572	864	99
9/4/2018	22,971	864	97.2
9/5/2018	21,202	864	67.7
9/6/2018	22,782	864	60.8
9/11/2018	20,427	864	99
9/12/2018	20,829	864	99
9/13/2018	22,259	864	99
9/18/2018	20,855	864	99
9/19/2018	21,291	864	99
9/20/2018	22,600	864	99
9/25/2018	20,444	864	99
9/26/2018	20,613	864	99
9/27/2018	22,588	864	99
10/2/2018	20,255	864	99
10/3/2018	20,086	864	99
10/4/2018	22,853	864	99
10/9/2018	20,354	864	99
10/10/2018	20,323	864	99
10/11/2018	22,319	864	99
10/16/2018	20,805	864	99
10/17/2018	21,816	864	99
10/18/2018	23,421	864	99
10/23/2018	20,550	864	99
10/24/2018	21,161	864	99
10/25/2018	22,853	864	99
10/30/2018	21,141	864	99
10/31/2018	19,337	864	97.6
11/1/2018	21,970	864	99
11/6/2018	20,817	864	100
11/7/2018	20,992	864	100
11/8/2018	22,774	864	100
11/13/2018	21,758	864	100
11/14/2018	20,654	864	100
11/15/2018	22,188	864	100
11/20/2018	29,792	864	99.3
11/21/2018	35,398	864	99
11/27/2018	20,557	864	99
11/28/2018	20,174	864	99
11/29/2018	18,563	864	99
12/4/2018	20,640	864	99
12/5/2018	19,623	864	99
12/6/2018	14,044	864	96.2
12/11/2018	20,981	864	99
12/12/2018	20,927	864	97.6
12/13/2018	21,846	864	99
12/18/2018	22,712	864	99
12/19/2018	22,648	864	99
12/20/2018	24,569	864	99
12/26/2018	29,416	864	99
12/27/2018	27,030	864	99
	22,522		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:48
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	132,192 Lane Points
Data Quality	96.3% Observed
Segment Type	VDS
Segment Name	Mainline VDS 602931 - RTE 99 JSO RTE 166 SB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Tu,We,Th
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-02-2018	25826	864	100.00
01-03-2018	23475	864	100.00
01-04-2018	23541	864	100.00
01-09-2018	17392	864	100.00
01-10-2018	19728	864	100.00
01-11-2018	21153	864	100.00
01-16-2018	20454	864	100.00
01-17-2018	19672	864	100.00
01-18-2018	20332	864	100.00
01-23-2018	19338	864	100.00
01-24-2018	19246	864	99.00
01-25-2018	19581	864	100.00
01-30-2018	19234	864	100.00
01-31-2018	19115	864	100.00
02-01-2018	19915	864	100.00
02-06-2018	19262	864	100.00
02-07-2018	19727	864	98.60
02-08-2018	20601	864	100.00
02-13-2018	20121	864	100.00
02-14-2018	19513	864	92.40
02-15-2018	22534	864	100.00
02-20-2018	25594	864	0.00
02-21-2018	25334	864	0.00
02-22-2018	25794	864	0.00
02-27-2018	18940	864	99.00
02-28-2018	20152	864	100.00
03-01-2018	21689	864	97.60
03-06-2018	20444	864	81.30
03-07-2018	20298	864	100.00
03-08-2018	21488	864	100.00
03-13-2018	17096	864	99.00
03-14-2018	18362	864	100.00
03-15-2018	20205	864	100.00
03-20-2018	18114	864	100.00
03-21-2018	16666	864	100.00
03-22-2018	18888	864	92.00
03-27-2018	22456	864	100.00
03-28-2018	23900	864	100.00
03-29-2018	26098	864	100.00
04-03-2018	19735	864	100.00
04-04-2018	19780	864	100.00
04-05-2018	22114	864	100.00
04-10-2018	18286	864	65.60
04-11-2018	18979	864	100.00
04-12-2018	20306	864	100.00
04-17-2018	17890	864	100.00
04-18-2018	18521	864	100.00
04-19-2018	20911	864	100.00
04-24-2018	18087	864	100.00
04-25-2018	18727	864	100.00
04-26-2018	20473	864	100.00
05-01-2018	17773	864	69.10
05-02-2018	18046	864	100.00
05-03-2018	20502	864	100.00
05-08-2018	18416	864	100.00
05-09-2018	19142	864	100.00
05-10-2018	21435	864	100.00
05-15-2018	19057	864	100.00
05-16-2018	19498	864	100.00
05-17-2018	21247	864	100.00
05-22-2018	19088	864	99.70
05-23-2018	19913	864	100.00
05-24-2018	21960	864	100.00
05-29-2018	21852	864	100.00
05-30-2018	19828	864	99.00
05-31-2018	21407	864	100.00
06-05-2018	19848	864	100.00
06-06-2018	20697	864	100.00
06-07-2018	22571	864	100.00
06-12-2018	20648	864	99.00
06-13-2018	21262	864	99.00
06-14-2018	23114	864	99.00
06-19-2018	20492	864	99.00
06-20-2018	19876	864	99.00
06-21-2018	23065	864	99.00
06-26-2018	20517	864	99.00
06-27-2018	20964	864	99.00
06-28-2018	22955	864	99.00
07-03-2018	23373	864	99.00
07-05-2018	23989	864	99.00
07-10-2018	20669	864	99.00
07-11-2018	21319	864	99.00
07-12-2018	23221	864	99.00
07-17-2018	21152	864	99.00
07-18-2018	22095	864	99.00
07-19-2018	23747	864	96.20
07-24-2018	21460	864	99.00
07-25-2018	22411	864	99.00
07-26-2018	24469	864	94.40
07-31-2018	21390	864	99.00
08-01-2018	22143	864	99.00
08-02-2018	23692	864	99.00
08-07-2018	21089	864	99.00
08-08-2018	21678	864	99.00
08-09-2018	23184	864	99.00
08-14-2018	20405	864	99.00
08-15-2018	20354	864	99.00
08-16-2018	20404	864	99.00
08-21-2018	18909	864	99.00
08-22-2018	19396	864	99.00
08-23-2018	20444	864	99.00
08-28-2018	18024	864	99.00
08-29-2018	18399	864	99.00
08-30-2018	20587	864	99.00
09-04-2018	20768	864	97.20
09-05-2018	19544	864	67.70
09-06-2018	19493	864	60.80
09-11-2018	18299	864	99.00
09-12-2018	18164	864	99.00
09-13-2018	20177	864	99.00
09-18-2018	18291	864	99.00
09-19-2018	18730	864	99.00
09-20-2018	20445	864	99.00
09-25-2018	17705	864	99.00
09-26-2018	18488	864	99.00
09-27-2018	20102	864	99.00
10-02-2018	17874	864	99.00
10-03-2018	17864	864	99.00
10-04-2018	20192	864	99.00
10-09-2018	18018	864	99.00
10-10-2018	18392	864	99.00
10-11-2018	20239	864	99.00
10-16-2018	18099	864	99.00
10-17-2018	18824	864	99.00
10-18-2018	20712	864	99.00
10-23-2018	18069	864	99.00
10-24-2018	18766	864	99.00
10-25-2018	21086	864	99.00
10-30-2018	17846	864	99.00
10-31-2018	17099	864	97.60
11-01-2018	20103	864	99.00
11-06-2018	18046	864	100.00
11-07-2018	18347	864	100.00
11-08-2018	20415	864	100.00
11-13-2018	19205	864	100.00
11-14-2018	18523	864	100.00
11-15-2018	20151	864	100.00
11-20-2018	23597	864	99.30
11-21-2018	27027	864	99.00
11-27-2018	18273	864	99.00
11-28-2018	17738	864	99.00
11-29-2018	17197	864	99.00
12-04-2018	17616	864	99.00
12-05-2018	17486	864	99.00
12-06-2018	14296	864	96.20
12-11-2018	18160	864	99.00
12-12-2018	18933	864	97.60
12-13-2018	20681	864	99.00
12-18-2018	19452	864	99.00
12-19-2018	20664	864	99.00
12-20-2018	22392	864	99.00
12-26-2018	32975	864	99.00
12-27-2018	27398	864	99.00
	20394		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:59
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	132,192 Lane Points
Data Quality	95.1% Observed
Segment Type	VDS
Segment Name	Mainline VDS 601376 - 99/I5 Interchange
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Tu,We,Th
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-02-2018	25028	864	99.30
01-03-2018	22748	864	100.00
01-04-2018	22713	864	100.00
01-09-2018	17337	864	99.70
01-10-2018	19372	864	99.30
01-11-2018	20671	864	100.00
01-16-2018	19884	864	99.70
01-17-2018	18875	864	100.00
01-18-2018	19491	864	99.70
01-23-2018	18128	864	100.00
01-24-2018	18278	864	98.30
01-25-2018	18883	864	100.00
01-30-2018	18199	864	99.70
01-31-2018	18083	864	100.00
02-01-2018	18993	864	99.70
02-06-2018	18196	864	100.00
02-07-2018	18486	864	100.00
02-08-2018	19724	864	100.00
02-13-2018	19340	864	100.00
02-14-2018	18277	864	94.80
02-15-2018	21787	864	99.70
02-20-2018	20171	864	100.00
02-21-2018	19154	864	100.00
02-22-2018	20547	864	97.60
02-27-2018	18393	864	99.00
02-28-2018	19322	864	99.70
03-01-2018	20735	864	97.60
03-06-2018	19640	864	81.30
03-07-2018	19266	864	100.00
03-08-2018	20768	864	99.30
03-13-2018	18908	864	98.60
03-14-2018	19198	864	98.60
03-15-2018	20208	864	99.70
03-20-2018	19623	864	99.30
03-21-2018	17549	864	99.70
03-22-2018	18687	864	97.60
03-27-2018	24079	864	100.00
03-28-2018	28168	864	99.30
03-29-2018	27965	864	99.30
04-03-2018	21401	864	99.70
04-04-2018	21429	864	99.00
04-05-2018	22949	864	98.60
04-10-2018	19925	864	65.60
04-11-2018	20218	864	99.30
04-12-2018	21267	864	99.30
04-17-2018	19492	864	99.70
04-18-2018	20017	864	99.70
04-19-2018	21657	864	100.00
04-24-2018	20528	864	100.00
04-25-2018	21005	864	100.00
04-26-2018	21875	864	99.30
05-01-2018	19649	864	68.80
05-02-2018	26148	864	0.00
05-03-2018	21675	864	99.70
05-08-2018	18662	864	100.00
05-09-2018	20010	864	99.70
05-10-2018	22545	864	99.70
05-15-2018	20643	864	99.00
05-16-2018	20756	864	100.00
05-17-2018	23444	864	99.30
05-22-2018	20874	864	99.70
05-23-2018	20983	864	100.00
05-24-2018	24302	864	99.30
05-29-2018	23121	864	100.00
05-30-2018	21473	864	98.60
05-31-2018	23864	864	99.70
06-05-2018	21769	864	100.00
06-06-2018	22139	864	99.70
06-07-2018	24431	864	99.00
06-12-2018	21957	864	99.00
06-13-2018	22788	864	98.60
06-14-2018	25091	864	99.00
06-19-2018	22737	864	98.60
06-20-2018	22630	864	99.00
06-21-2018	24625	864	99.00
06-26-2018	22284	864	99.00
06-27-2018	22784	864	98.60
06-28-2018	24881	864	98.30
07-03-2018	26158	864	98.60
07-05-2018	25781	864	98.30
07-10-2018	22431	864	99.00
07-11-2018	23300	864	98.30
07-12-2018	25003	864	98.60
07-17-2018	23087	864	99.00
07-18-2018	23203	864	97.90
07-19-2018	25675	864	96.90
07-24-2018	23408	864	99.00
07-25-2018	23832	864	98.60
07-26-2018	25775	864	98.60
07-31-2018	23922	864	98.60
08-01-2018	23991	864	98.30
08-02-2018	25674	864	98.30
08-07-2018	23291	864	99.00
08-08-2018	23886	864	98.60
08-09-2018	25613	864	97.90
08-14-2018	22716	864	99.00
08-15-2018	22006	864	99.00
08-16-2018	22480	864	98.60
08-21-2018	20821	864	97.90
08-22-2018	20901	864	98.30
08-23-2018	22589	864	97.90
08-28-2018	19848	864	98.30
08-29-2018	20097	864	98.30
08-30-2018	22629	864	99.00
09-04-2018	21996	864	97.20
09-05-2018	20109	864	67.70
09-06-2018	21877	864	60.10
09-11-2018	19356	864	98.60
09-12-2018	19940	864	97.90
09-13-2018	21366	864	98.60
09-18-2018	19890	864	98.30
09-19-2018	20402	864	97.60
09-20-2018	21751	864	97.90
09-25-2018	21839	864	49.30
09-26-2018	25824	864	0.00
09-27-2018	26927	864	0.00
10-02-2018	19457	864	99.00
10-03-2018	19257	864	98.30
10-04-2018	22270	864	99.00
10-09-2018	19870	864	98.30
10-10-2018	19707	864	98.30
10-11-2018	21650	864	99.00
10-16-2018	19872	864	99.00
10-17-2018	20704	864	98.60
10-18-2018	22660	864	99.00
10-23-2018	19511	864	98.30
10-24-2018	19792	864	99.00
10-25-2018	21597	864	99.00
10-30-2018	19711	864	98.30
10-31-2018	18059	864	97.60
11-01-2018	20942	864	98.60
11-06-2018	19630	864	100.00
11-07-2018	19638	864	100.00
11-08-2018	21564	864	100.00
11-13-2018	27019	864	0.00
11-14-2018	19584	864	99.30
11-15-2018	21310	864	99.70
11-20-2018	28480	864	99.30
11-21-2018	34668	864	99.00
11-27-2018	19336	864	99.00
11-28-2018	18705	864	99.00
11-29-2018	18088	864	99.00
12-04-2018	19525	864	99.00
12-05-2018	18616	864	99.00
12-06-2018	13351	864	96.20
12-11-2018	19795	864	98.30
12-12-2018	19763	864	97.90
12-13-2018	20641	864	99.00
12-18-2018	21230	864	99.00
12-19-2018	21178	864	99.00
12-20-2018	23535	864	98.60
12-26-2018	28782	864	99.00
12-27-2018	26200	864	99.00
	21556		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 18:05
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	132,192 Lane Points
Data Quality	94.9% Observed
Segment Type	VDS
Segment Name	Mainline VDS 602376 - 99/I5 Interchange
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Tu,We,Th
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-02-2018	24637	864	99.30
01-03-2018	21925	864	100.00
01-04-2018	22429	864	100.00
01-09-2018	15876	864	99.70
01-10-2018	18074	864	99.30
01-11-2018	19551	864	100.00
01-16-2018	18400	864	99.70
01-17-2018	18530	864	100.00
01-18-2018	19595	864	99.70
01-23-2018	17429	864	100.00
01-24-2018	17936	864	98.30
01-25-2018	19239	864	100.00
01-30-2018	17586	864	99.70
01-31-2018	17963	864	100.00
02-01-2018	19224	864	99.70
02-06-2018	17735	864	100.00
02-07-2018	18169	864	100.00
02-08-2018	19992	864	100.00
02-13-2018	18513	864	100.00
02-14-2018	18526	864	94.80
02-15-2018	22142	864	99.70
02-20-2018	19328	864	100.00
02-21-2018	18964	864	100.00
02-22-2018	20641	864	97.60
02-27-2018	17626	864	99.00
02-28-2018	19307	864	99.70
03-01-2018	20834	864	97.60
03-06-2018	18576	864	81.30
03-07-2018	19688	864	100.00
03-08-2018	21219	864	99.30
03-13-2018	18836	864	98.60
03-14-2018	19023	864	98.60
03-15-2018	21113	864	99.70
03-20-2018	18807	864	99.30
03-21-2018	17433	864	99.70
03-22-2018	19266	864	97.60
03-27-2018	23255	864	100.00
03-28-2018	24793	864	99.30
03-29-2018	26971	864	99.30
04-03-2018	20559	864	99.70
04-04-2018	20651	864	99.00
04-05-2018	23006	864	98.60
04-10-2018	19067	864	65.60
04-11-2018	19767	864	99.30
04-12-2018	21161	864	99.30
04-17-2018	18647	864	99.70
04-18-2018	19312	864	99.70
04-19-2018	22044	864	100.00
04-24-2018	19448	864	100.00
04-25-2018	20276	864	100.00
04-26-2018	21223	864	99.30
05-01-2018	18571	864	68.80
05-02-2018	22894	864	0.00
05-03-2018	21196	864	99.70
05-08-2018	19130	864	100.00
05-09-2018	19735	864	99.70
05-10-2018	22042	864	99.70
05-15-2018	19846	864	99.00
05-16-2018	20140	864	100.00
05-17-2018	22111	864	99.30
05-22-2018	19697	864	99.70
05-23-2018	20557	864	100.00
05-24-2018	22529	864	99.30
05-29-2018	22728	864	100.00
05-30-2018	20680	864	98.60
05-31-2018	22294	864	99.70
06-05-2018	20587	864	100.00
06-06-2018	21542	864	99.70
06-07-2018	23281	864	99.00
06-12-2018	21429	864	99.00
06-13-2018	22028	864	98.60
06-14-2018	24028	864	99.00
06-19-2018	21530	864	98.60
06-20-2018	20685	864	99.00
06-21-2018	23636	864	99.00
06-26-2018	21273	864	99.00
06-27-2018	21989	864	98.60
06-28-2018	23869	864	98.30
07-03-2018	24158	864	98.60
07-05-2018	24856	864	98.30
07-10-2018	21373	864	99.00
07-11-2018	22021	864	98.30
07-12-2018	24324	864	98.60
07-17-2018	21883	864	99.00
07-18-2018	22849	864	97.90
07-19-2018	24582	864	96.90
07-24-2018	22392	864	99.00
07-25-2018	23089	864	98.60
07-26-2018	24957	864	98.60
07-31-2018	22260	864	98.60
08-01-2018	22873	864	98.30
08-02-2018	24695	864	98.30
08-07-2018	22005	864	99.00
08-08-2018	22333	864	98.60
08-09-2018	24052	864	97.90
08-14-2018	21415	864	99.00
08-15-2018	21137	864	99.00
08-16-2018	21115	864	98.60
08-21-2018	19718	864	97.90
08-22-2018	20158	864	98.30
08-23-2018	21400	864	97.90
08-28-2018	18867	864	98.30
08-29-2018	19377	864	98.30
08-30-2018	21380	864	99.00
09-04-2018	21556	864	97.20
09-05-2018	20211	864	67.70
09-06-2018	20339	864	60.10
09-11-2018	18985	864	98.60
09-12-2018	19005	864	97.90
09-13-2018	20950	864	98.60
09-18-2018	19001	864	98.30
09-19-2018	19604	864	97.60
09-20-2018	21301	864	97.90
09-25-2018	20405	864	49.30
09-26-2018	22989	864	0.00
09-27-2018	23809	864	0.00
10-02-2018	18645	864	99.00
10-03-2018	18427	864	98.30
10-04-2018	21065	864	99.00
10-09-2018	18931	864	98.30
10-10-2018	19238	864	98.30
10-11-2018	21010	864	99.00
10-16-2018	18737	864	99.00
10-17-2018	19460	864	98.60
10-18-2018	21269	864	99.00
10-23-2018	18770	864	98.30
10-24-2018	19527	864	99.00
10-25-2018	21821	864	99.00
10-30-2018	18694	864	98.30
10-31-2018	17655	864	97.60
11-01-2018	20727	864	98.60
11-06-2018	18676	864	100.00
11-07-2018	19194	864	100.00
11-08-2018	21068	864	100.00
11-13-2018	23637	864	0.00
11-14-2018	19306	864	99.30
11-15-2018	20866	864	99.70
11-20-2018	24270	864	99.30
11-21-2018	27826	864	99.00
11-27-2018	18914	864	99.00
11-28-2018	18369	864	99.00
11-29-2018	17908	864	99.00
12-04-2018	18450	864	99.00
12-05-2018	18306	864	99.00
12-06-2018	14849	864	96.20
12-11-2018	18861	864	98.30
12-12-2018	19681	864	97.90
12-13-2018	21229	864	99.00
12-18-2018	20503	864	99.00
12-19-2018	21726	864	99.00
12-20-2018	23133	864	98.60
12-26-2018	41734	864	66.00
12-27-2018	28201	864	99.00
	20866		

Prepared by NDS/ATD

VOLUME

Mettler Frontage Rd W Bet. Copus Rd & Valpredo Ave

Day: Thursday
Date: 11/1/2018

City: Bakersfield
Project #: CA18_2112_007

DAILY TOTALS	NB	SB	EB	WB	Total
	436	426	0	0	862

AM Period	NB		SB		EB		WB		TOTAL	
00:00	0		0						0	
00:15	0		0						0	
00:30	0		0						0	
00:45	0		0						0	
01:00	0		0						0	
01:15	0		0						0	
01:30	0		0						0	
01:45	0		0						0	
02:00	0		0						0	
02:15	0		0						0	
02:30	0		0						0	
02:45	0		0						0	
03:00	0		0						0	
03:15	0		1						1	
03:30	0		1						1	
03:45	0		0		2				0	2
04:00	0		1						1	
04:15	0		1						1	
04:30	0		0						0	
04:45	0		4		6				4	6
05:00	0		7						7	
05:15	0		5						5	
05:30	1		35						36	
05:45	2	3	37		84				39	87
06:00	2		80						82	
06:15	3		27						30	
06:30	4		8						12	
06:45	5	14	7		122				12	136
07:00	3		8						11	
07:15	3		4						7	
07:30	3		12						15	
07:45	3	12	6		30				9	42
08:00	5		7						12	
08:15	4		3						7	
08:30	3		4						7	
08:45	2	14	6		20				8	34
09:00	7		6						13	
09:15	4		6						10	
09:30	1		2						3	
09:45	2	14	8		22				10	36
10:00	3		3						6	
10:15	3		1						4	
10:30	5		5						10	
10:45	0	11	3		12				3	23
11:00	6		5						11	
11:15	1		2						3	
11:30	6		2						8	
11:45	6	19	4		13				10	32
TOTALS		87			311					**398**
SPLIT %		21.9%			78.1%					**46.2%**

PM Period	NB		SB		EB		WB		TOTAL	
12:00	7		3						10	
12:15	3		5						8	
12:30	3		4						7	
12:45	4	17	2		14				6	31
13:00	8		6						14	
13:15	9		7						16	
13:30	4		6						10	
13:45	5	26	4		23				9	49
14:00	10		5						15	
14:15	15		7						22	
14:30	15		13						28	
14:45	11	51	7		32				18	83
15:00	93		7						100	
15:15	17		3						20	
15:30	8		5						13	
15:45	14	132	3		18				17	150
16:00	14		0						14	
16:15	9		1						10	
16:30	24		4						28	
16:45	10	57	1		6				11	63
17:00	10		0						10	
17:15	9		1						10	
17:30	3		2						5	
17:45	3	25	1		4				4	29
18:00	2		2						4	
18:15	2		2						4	
18:30	3		2						5	
18:45	2	9	1		7				3	16
19:00	1		0						1	
19:15	2		1						3	
19:30	0		3						3	
19:45	1	4	1		5				2	9
20:00	1		1						2	
20:15	3		1						4	
20:30	5		0						5	
20:45	1	10	0		2				1	12
21:00	0		1						1	
21:15	0		0						0	
21:30	1		0						1	
21:45	0	1	0		1				0	2
22:00	0		0						0	
22:15	0		1						1	
22:30	0		0						0	
22:45	0		0		1				0	1
23:00	0		0						0	
23:15	0		1						1	
23:30	13		0						13	
23:45	4	17	1		2				5	19
TOTALS		349			115					**464**
SPLIT %		75.2%			24.8%					**53.8%**

DAILY TOTALS	NB	SB	EB	WB	Total
	436	426	0	0	862

AM Peak Hour	11:30	05:30			**05:30**
AM Pk Volume	22	179			**187**
Pk Hr Factor	0.786	0.559			**0.570**
7 - 9 Volume	26	50	0	0	**76**
7 - 9 Peak Hour	07:30	07:00			**07:15**
7 - 9 Pk Volume	15	30	0	0	**43**
Pk Hr Factor	0.750	0.625	0.000	0.000	**0.717**

PM Peak Hour	14:30	14:15			**14:15**
PM Pk Volume	136	34			**168**
Pk Hr Factor	0.366	0.654			**0.420**
4 - 6 Volume	82	10	0	0	**92**
4 - 6 Peak Hour	16:00	16:00			**16:00**
4 - 6 Pk Volume	57	6	0	0	**63**
Pk Hr Factor	0.594	0.375	0.000	0.000	**0.563**

Prepared by NDS/ATD

VOLUME

Mettler Frontage Rd W Bet. Valpredo Ave & Maricopa Hwy

Day: Thursday
Date: 11/1/2018

City: Bakersfield
Project #: CA18_2112_008

DAILY TOTALS	NB	SB	EB	WB	Total
	213	192	0	0	405

AM Period	NB		SB		EB		WB		TOTAL	
00:00	0		0						0	
00:15	0		0						0	
00:30	0		0						0	
00:45	0		0						0	
01:00	0		0						0	
01:15	0		0						0	
01:30	0		0						0	
01:45	0		0						0	
02:00	0		0						0	
02:15	0		0						0	
02:30	0		0						0	
02:45	0		0						0	
03:00	0		0						0	
03:15	0		0						0	
03:30	0		1						1	
03:45	0		0		1				0	1
04:00	0		0						0	
04:15	0		0						0	
04:30	0		0						0	
04:45	0		0						0	
05:00	0		2						2	
05:15	0		2						2	
05:30	1		12						13	
05:45	0	1	20	36					20	37
06:00	6		29						35	
06:15	1		10						11	
06:30	3		7						10	
06:45	5	15	2	48					7	63
07:00	1		2						3	
07:15	0		1						1	
07:30	2		7						9	
07:45	6	9	5	15					11	24
08:00	4		3						7	
08:15	3		4						7	
08:30	4		6						10	
08:45	1	12	3	16					4	28
09:00	3		2						5	
09:15	0		2						2	
09:30	2		3						5	
09:45	1	6	2	9					3	15
10:00	3		2						5	
10:15	1		0						1	
10:30	0		5						5	
10:45	0	4	1	8					1	12
11:00	5		1						6	
11:15	0		0						0	
11:30	2		2						4	
11:45	0	7	2	5					2	12
TOTALS		54		138						**192**
SPLIT %		28.1%		71.9%						**47.4%**

PM Period	NB		SB		EB		WB		TOTAL	
12:00	4		0						4	
12:15	2		1						3	
12:30	2		4						6	
12:45	1	9	1	6					2	15
13:00	6		5						11	
13:15	8		2						10	
13:30	4		4						8	
13:45	4	22	1	12					5	34
14:00	4		1						5	
14:15	5		2						7	
14:30	6		2						8	
14:45	1	16	1	6					2	22
15:00	42		5						47	
15:15	6		2						8	
15:30	3		7						10	
15:45	8	59	2	16					10	75
16:00	8		0						8	
16:15	4		1						5	
16:30	17		5						22	
16:45	4	33	1	7					5	40
17:00	9		1						10	
17:15	4		1						5	
17:30	0		1						1	
17:45	2	15	0	3					2	18
18:00	1		0						1	
18:15	0		0						0	
18:30	0		1						1	
18:45	1	2	0	1					1	3
19:00	1		1						2	
19:15	0		0						0	
19:30	0		0						0	
19:45	1	2	0	1					1	3
20:00	0		0						0	
20:15	0		0						0	
20:30	0		0						0	
20:45	0		0						0	
21:00	0		0						0	
21:15	0		0						0	
21:30	0		0						0	
21:45	0		0						0	
22:00	0		0						0	
22:15	0		0						0	
22:30	0		1						1	
22:45	0		0		1				0	1
23:00	0		0						0	
23:15	0		0						0	
23:30	1		0						1	
23:45	0	1	1	1					1	2
TOTALS		159		54						**213**
SPLIT %		74.6%		25.4%						**52.6%**

DAILY TOTALS	NB	SB	EB	WB	Total
	213	192	0	0	405

AM Peak Hour	07:45	05:30			**05:30**	**PM Peak Hour**	15:00	15:00			**15:00**
AM Pk Volume	17	71			**79**	**PM Pk Volume**	59	16			**75**
Pk Hr Factor	0.708	0.612			**0.564**	**Pk Hr Factor**	0.351	0.571			**0.399**
7 - 9 Volume	21	31	0	0	**52**	**4 - 6 Volume**	48	10	0	0	**58**
7 - 9 Peak Hour	07:45	07:30			**07:45**	**4 - 6 Peak Hour**	16:15	16:15			**16:15**
7 - 9 Pk Volume	17	19	0	0	**35**	**4 - 6 Pk Volume**	34	8	0	0	**42**
Pk Hr Factor	0.708	0.679	0.000	0.000	**0.795**	**Pk Hr Factor**	0.500	0.400	0.000	0.000	**0.477**

Prepared by NDS/ATD

VOLUME

Valpredo Ave Bet. I-5 Ramps & SR-99 Ramps

Day: Thursday
Date: 11/1/2018

City: Bakersfield
Project #: CA18_2112_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	165	172	337

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			0		0		0		12:00			2		3		5	
00:15			0		0		0		12:15			4		3		7	
00:30			0		0		0		12:30			1		2		3	
00:45			0		0		0		12:45			5	12	3	11	8	23
01:00			0		0		0		13:00			2		1		3	
01:15			0		0		0		13:15			1		1		2	
01:30			0		0		0		13:30			3		0		3	
01:45			0		0		0		13:45			1	7	6	8	7	15
02:00			0		0		0		14:00			5		2		7	
02:15			0		0		0		14:15			1		1		2	
02:30			0		0		0		14:30			4		4		8	
02:45			0		0		0		14:45			2	12	3	10	5	22
03:00			0		0		0		15:00			4		1		5	
03:15			0		0		0		15:15			3		4		7	
03:30			1		0		1		15:30			4		2		6	
03:45			0	1	0		0	1	15:45			8	19	2	9	10	28
04:00			0		0		0		16:00			6		0		6	
04:15			1		0		1		16:15			5		0		5	
04:30			0		2		2		16:30			14		2		16	
04:45			1	2	0	2	1	4	16:45			7	32	2	4	9	36
05:00			0		0		0		17:00			10		0		10	
05:15			0		1		1		17:15			3		1		4	
05:30			1		3		4		17:30			3		0		3	
05:45			1	2	4	8	5	10	17:45			8	24	1	2	9	26
06:00			0		4		4		18:00			1		2		3	
06:15			2		6		8		18:15			1		0		1	
06:30			1		11		12		18:30			0		1		1	
06:45			1	4	9	30	10	34	18:45			0	2	0	3	0	5
07:00			0		4		4		19:00			1		1		2	
07:15			2		5		7		19:15			0		1		1	
07:30			2		4		6		19:30			1		0		1	
07:45			1	5	2	15	3	20	19:45			0	2	1	3	1	5
08:00			0		8		8		20:00			1		0		1	
08:15			1		10		11		20:15			0		1		1	
08:30			2		12		14		20:30			1		0		1	
08:45			7	10	9	39	16	49	20:45			2	4	1	2	3	6
09:00			4		5		9		21:00			0		1		1	
09:15			1		0		1		21:15			0		0		0	
09:30			1		0		1		21:30			0		2		2	
09:45			2	8	4	9	6	17	21:45			0		1	4	1	4
10:00			2		0		2		22:00			1		0		1	
10:15			1		3		4		22:15			0		0		0	
10:30			5		1		6		22:30			0		0		0	
10:45			3	11	0	4	3	15	22:45			0	1	0		0	1
11:00			0		3		3		23:00			0		1		1	
11:15			1		3		4		23:15			0		0		0	
11:30			2		2		4		23:30			0		0		0	
11:45			4	7	0	8	4	15	23:45			0		0	1	0	1
TOTALS				50		115		165	TOTALS				115		57		172
SPLIT %				30.3%		69.7%		49.0%	SPLIT %				66.9%		33.1%		51.0%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	165	172	337

AM Peak Hour			08:15	08:00	08:15	PM Peak Hour			16:15	13:45	16:15
AM Pk Volume			14	39	50	PM Pk Volume			36	13	40
Pk Hr Factor			0.500	0.813	0.781	Pk Hr Factor			0.643	0.542	0.625
7 - 9 Volume	0	0	15	54	69	4 - 6 Volume	0	0	56	6	62
7 - 9 Peak Hour			08:00	08:00	08:00	4 - 6 Peak Hour			16:15	16:30	16:15
7 - 9 Pk Volume	0	0	10	39	49	4 - 6 Pk Volume	0	0	36	5	40
Pk Hr Factor	0.000	0.000	0.357	0.813	0.766	Pk Hr Factor	0.000	0.000	0.643	0.625	0.625

Prepared by NDS/ATD

VOLUME

Maricopa Hwy E/O Wheeler Ridge Access Rd

Day: Thursday
Date: 11/1/2018

City: Bakersfield
Project #: CA18_2112_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,920	1,701	3,621

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			3				3		12:00			28		27		55	
00:15			0		0		0		12:15			27		25		52	
00:30			4		1		5		12:30			40		16		56	
00:45			2	9	1	2	3	11	12:45			23	118	13	81	36	199
01:00			3		5		8		13:00			34		15		49	
01:15			6		2		8		13:15			34		18		52	
01:30			3		0		3		13:30			20		23		43	
01:45			3	15	3	10	6	25	13:45			26	114	25	81	51	195
02:00			1		7		8		14:00			31		26		57	
02:15			0		4		4		14:15			35		21		56	
02:30			4		0		4		14:30			29		26		55	
02:45			4	9	1	12	5	21	14:45			53	148	18	91	71	239
03:00			4		1		5		15:00			58		18		76	
03:15			6		1		7		15:15			50		20		70	
03:30			6		3		9		15:30			57		22		79	
03:45			3	19	2	7	5	26	15:45			89	254	17	77	106	331
04:00			5		3		8		16:00			77		19		96	
04:15			7		4		11		16:15			66		18		84	
04:30			6		11		17		16:30			72		12		84	
04:45			5	23	9	27	14	50	16:45			62	277	20	69	82	346
05:00			6		15		21		17:00			58		14		72	
05:15			12		24		36		17:15			40		13		53	
05:30			9		29		38		17:30			53		19		72	
05:45			5	32	25	93	30	125	17:45			32	183	10	56	42	239
06:00			8		52		60		18:00			28		13		41	
06:15			14		44		58		18:15			28		13		41	
06:30			19		39		58		18:30			29		15		44	
06:45			15	56	47	182	62	238	18:45			20	105	10	51	30	156
07:00			13		41		54		19:00			9		13		22	
07:15			11		40		51		19:15			16		5		21	
07:30			26		42		68		19:30			17		7		24	
07:45			14	64	66	189	80	253	19:45			8	50	3	28	11	78
08:00			18		71		89		20:00			12		8		20	
08:15			19		76		95		20:15			8		9		17	
08:30			19		84		103		20:30			9		8		17	
08:45			20	76	73	304	93	380	20:45			9	38	3	28	12	66
09:00			20		37		57		21:00			6		1		7	
09:15			12		40		52		21:15			14		2		16	
09:30			20		19		39		21:30			9		7		16	
09:45			17	69	21	117	38	186	21:45			7	36	5	15	12	51
10:00			17		20		37		22:00			9		0		9	
10:15			17		19		36		22:15			5		3		8	
10:30			19		18		37		22:30			6		6		12	
10:45			13	66	15	72	28	138	22:45			3	23	1	10	4	33
11:00			25		18		43		23:00			14		4		18	
11:15			30		27		57		23:15			3		2		5	
11:30			29		22		51		23:30			3		3		6	
11:45			26	110	21	88	47	198	23:45			6	26	2	11	8	37
TOTALS				548		1103		**1651**	**TOTALS**				1372		598		**1970**
SPLIT %				33.2%		66.8%		**45.6%**	**SPLIT %**				69.6%		30.4%		**54.4%**

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,920	1,701	3,621

AM Peak Hour			11:45	08:00	**08:00**	**PM Peak Hour**			15:45	13:45	**15:45**
AM Pk Volume			121	304	**380**	**PM Pk Volume**			304	98	**370**
Pk Hr Factor			0.756	0.905	**0.922**	**Pk Hr Factor**			0.854	0.942	**0.873**
7 - 9 Volume	0	0	140	493	**633**	**4 - 6 Volume**	0	0	460	125	**585**
7 - 9 Peak Hour			07:30	08:00	**08:00**	**4 - 6 Peak Hour**			16:00	16:00	**16:00**
7 - 9 Pk Volume	0	0	77	304	**380**	**4 - 6 Pk Volume**	0	0	277	69	**346**
Pk Hr Factor	0.000	0.000	0.740	0.905	**0.922**	**Pk Hr Factor**	0.000	0.000	0.899	0.863	**0.901**

Prepared by NDS/ATD

VOLUME

Maricopa Hwy Bet. Wheeler Ridge Access Rd & I-5 SB Ramps

Day: Thursday
Date: 11/1/2018

City: Bakersfield
Project #: CA18_2112_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,106	1,753	3,859

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			0		0		0		12:00			30		26		56	
00:15			0		1		1		12:15			25		20		45	
00:30			4		1		5		12:30			41		17		58	
00:45			2	6	1	3	3	9	12:45			23	119	19	82	42	201
01:00			3		3		6		13:00			33		14		47	
01:15			5		2		7		13:15			40		23		63	
01:30			3		0		3		13:30			28		28		56	
01:45			3	14	3	8	6	22	13:45			33	134	19	84	52	218
02:00			1		6		7		14:00			30		29		59	
02:15			0		4		4		14:15			47		24		71	
02:30			5		2		7		14:30			43		19		62	
02:45			3	9	0	12	3	21	14:45			62	182	16	88	78	270
03:00			4		1		5		15:00			62		21		83	
03:15			7		0		7		15:15			57		20		77	
03:30			6		3		9		15:30			77		17		94	
03:45			3	20	2	6	5	26	15:45			103	299	14	72	117	371
04:00			3		2		5		16:00			94		14		108	
04:15			6		2		8		16:15			88		13		101	
04:30			5		13		18		16:30			84		13		97	
04:45			5	19	7	24	12	43	16:45			80	346	13	53	93	399
05:00			1		15		16		17:00			75		8		83	
05:15			10		24		34		17:15			39		9		48	
05:30			9		31		40		17:30			63		12		75	
05:45			6	26	25	95	31	121	17:45			32	209	18	47	50	256
06:00			7		54		61		18:00			30		15		45	
06:15			15		52		67		18:15			24		9		33	
06:30			15		40		55		18:30			35		6		41	
06:45			16	53	49	195	65	248	18:45			19	108	9	39	28	147
07:00			15		47		62		19:00			12		16		28	
07:15			15		39		54		19:15			16		3		19	
07:30			23		48		71		19:30			17		7		24	
07:45			12	65	73	207	85	272	19:45			7	52	2	28	9	80
08:00			13		84		97		20:00			9		8		17	
08:15			13		93		106		20:15			9		7		16	
08:30			22		100		122		20:30			9		7		16	
08:45			17	65	85	362	102	427	20:45			9	36	4	26	13	62
09:00			18		48		66		21:00			6		2		8	
09:15			14		37		51		21:15			11		2		13	
09:30			17		24		41		21:30			8		9		17	
09:45			18	67	19	128	37	195	21:45			7	32	4	17	11	49
10:00			17		15		32		22:00			7		0		7	
10:15			17		22		39		22:15			6		4		10	
10:30			28		20		48		22:30			6		3		9	
10:45			26	88	22	79	48	167	22:45			4	23	1	8	5	31
11:00			21		14		35		23:00			13		2		15	
11:15			31		23		54		23:15			5		0		5	
11:30			28		24		52		23:30			3		5		8	
11:45			27	107	20	81	47	188	23:45			6	27	2	9	8	36
TOTALS				539		1200		1739	TOTALS				1567		553		2120
SPLIT %				31.0%		69.0%		45.1%	SPLIT %				73.9%		26.1%		54.9%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,106	1,753	3,859

AM Peak Hour				11:45	08:00		08:00	PM Peak Hour				15:45	13:30		15:45
AM Pk Volume				123	362		427	PM Pk Volume				369	100		423
Pk Hr Factor				0.750	0.905		0.875	Pk Hr Factor				0.896	0.862		0.904
7 - 9 Volume	0	0		130	569		699	4 - 6 Volume	0	0		555	100		655
7 - 9 Peak Hour				07:00	08:00		08:00	4 - 6 Peak Hour				16:00	16:00		16:00
7 - 9 Pk Volume	0	0		65	362		427	4 - 6 Pk Volume	0	0		346	53		399
Pk Hr Factor	0.000	0.000		0.707	0.905		0.875	Pk Hr Factor	0.000	0.000		0.920	0.946		0.924

Prepared by NDS/ATD

VOLUME

Maricopa Hwy Bet. I-5 NB Ramps & S Sabodan St

Day: Thursday
Date: 11/1/2018

City: Bakersfield
Project #: CA18_2112_005

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,604	1,730	3,334

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			1		0		1		12:00			15		21		36	
00:15			1		3		4		12:15			13		12		25	
00:30			5		2		7		12:30			22		13		35	
00:45			1	8	1	6	2	14	12:45			18	68	13	59	31	127
01:00			1		3		4		13:00			16		11		27	
01:15			4		4		8		13:15			31		16		47	
01:30			1		2		3		13:30			19		21		40	
01:45			3	9	4	13	7	22	13:45			21	87	21	69	42	156
02:00			0		6		6		14:00			23		26		49	
02:15			2		2		4		14:15			40		17		57	
02:30			5		2		7		14:30			35		22		57	
02:45			2	9	2	12	4	21	14:45			46	144	17	82	63	226
03:00			1		0		1		15:00			59		18		77	
03:15			4		2		6		15:15			46		23		69	
03:30			5		2		7		15:30			68		26		94	
03:45			1	11	3	7	4	18	15:45			83	256	21	88	104	344
04:00			3		4		7		16:00			73		13		86	
04:15			2		4		6		16:15			81		19		100	
04:30			2		12		14		16:30			79		17		96	
04:45			1	8	10	30	11	38	16:45			63	296	15	64	78	360
05:00			1		12		13		17:00			69		10		79	
05:15			9		19		28		17:15			43		16		59	
05:30			6		36		42		17:30			52		16		68	
05:45			7	23	33	100	40	123	17:45			26	190	11	53	37	243
06:00			4		47		51		18:00			24		16		40	
06:15			7		50		57		18:15			16		12		28	
06:30			11		38		49		18:30			25		13		38	
06:45			16	38	49	184	65	222	18:45			24	89	11	52	35	141
07:00			12		37		49		19:00			8		11		19	
07:15			11		36		47		19:15			11		9		20	
07:30			20		34		54		19:30			12		11		23	
07:45			8	51	71	178	79	229	19:45			11	42	8	39	19	81
08:00			7		73		80		20:00			6		11		17	
08:15			5		102		107		20:15			9		13		22	
08:30			5		102		107		20:30			9		5		14	
08:45			10	27	64	341	74	368	20:45			6	30	7	36	13	66
09:00			8		48		56		21:00			6		1		7	
09:15			10		31		41		21:15			6		4		10	
09:30			10		22		32		21:30			8		9		17	
09:45			8	36	20	121	28	157	21:45			7	27	4	18	11	45
10:00			14		15		29		22:00			4		1		5	
10:15			11		18		29		22:15			3		8		11	
10:30			12		20		32		22:30			5		3		8	
10:45			20	57	27	80	47	137	22:45			4	16	3	15	7	31
11:00			18		13		31		23:00			5		2		7	
11:15			25		24		49		23:15			2		2		4	
11:30			14		23		37		23:30			2		4		6	
11:45			13	70	15	75	28	145	23:45			3	12	0	8	3	20
TOTALS				347		1147		1494	TOTALS				1257		583		1840
SPLIT %				23.2%		76.8%		44.8%	SPLIT %				68.3%		31.7%		55.2%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,604	1,730	3,334

AM Peak Hour			10:45	07:45	07:45	PM Peak Hour	15:45	15:00	15:45
AM Pk Volume			77	348	373	PM Pk Volume	316	88	386
Pk Hr Factor			0.770	0.853	0.871	Pk Hr Factor	0.952	0.846	0.928
7 - 9 Volume	0	0	78	519	597	4 - 6 Volume	0	0	486	117	603
7 - 9 Peak Hour			07:00	07:45	07:45	4 - 6 Peak Hour			16:00	16:00	16:00
7 - 9 Pk Volume	0	0	51	348	373	4 - 6 Pk Volume	0	0	296	64	360
Pk Hr Factor	0.000	0.000	0.638	0.853	0.871	Pk Hr Factor	0.000	0.000	0.914	0.842	0.900

Prepared by NDS/ATD

VOLUME

Maricopa Hwy Bet. S Sabodan St & SR-99 Ramps

Day: Thursday
Date: 11/1/2018

City: Bakersfield
Project #: CA18_2112_006

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,247	2,133	4,380

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			3		0		3		12:00			19		27		46	
00:15			3		3		6		12:15			20		22		42	
00:30			7		2		9		12:30			28		18		46	
00:45			5	18	1	6	6	24	12:45			30	97	17	84	47	181
01:00			5		5		10		13:00			25		13		38	
01:15			9		6		15		13:15			46		28		74	
01:30			3		3		6		13:30			26		27		53	
01:45			7	24	5	19	12	43	13:45			40	137	35	103	75	240
02:00			1		8		9		14:00			37		34		71	
02:15			2		3		5		14:15			53		24		77	
02:30			7		1		8		14:30			41		33		74	
02:45			4	14	2	14	6	28	14:45			51	182	20	111	71	293
03:00			1		0		1		15:00			79		27		106	
03:15			3		3		6		15:15			68		25		93	
03:30			8		2		10		15:30			98		23		121	
03:45			2	14	6	11	8	25	15:45			92	337	23	98	115	435
04:00			2		4		6		16:00			94		19		113	
04:15			5		2		7		16:15			103		24		127	
04:30			3		22		25		16:30			117		16		133	
04:45			2	12	15	43	17	55	16:45			71	385	20	79	91	464
05:00			1		13		14		17:00			77		4		81	
05:15			13		27		40		17:15			49		19		68	
05:30			8		52		60		17:30			63		20		83	
05:45			6	28	47	139	53	167	17:45			32	221	17	60	49	281
06:00			8		55		63		18:00			36		15		51	
06:15			10		61		71		18:15			22		16		38	
06:30			15		62		77		18:30			36		23		59	
06:45			14	47	77	255	91	302	18:45			38	132	14	68	52	200
07:00			15		48		63		19:00			12		21		33	
07:15			12		50		62		19:15			17		3		20	
07:30			27		47		74		19:30			16		10		26	
07:45			18	72	86	231	104	303	19:45			21	66	5	39	26	105
08:00			9		73		82		20:00			11		14		25	
08:15			9		99		108		20:15			11		14		25	
08:30			14		101		115		20:30			12		6		18	
08:45			13	45	59	332	72	377	20:45			10	44	9	43	19	87
09:00			15		48		63		21:00			14		2		16	
09:15			15		47		62		21:15			10		4		14	
09:30			17		30		47		21:30			18		12		30	
09:45			12	59	25	150	37	209	21:45			11	53	3	21	14	74
10:00			23		16		39		22:00			9		4		13	
10:15			14		27		41		22:15			10		10		20	
10:30			14		10		24		22:30			12		3		15	
10:45			31	82	35	88	66	170	22:45			8	39	5	22	13	61
11:00			21		16		37		23:00			14		1		15	
11:15			39		33		72		23:15			5		3		8	
11:30			27		28		55		23:30			5		4		9	
11:45			20	107	32	109	52	216	23:45			8	32	0	8	8	40
TOTALS				522		1397		1919	TOTALS				1725		736		2461
SPLIT %				27.2%		72.8%		43.8%	SPLIT %				70.1%		29.9%		56.2%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	2,247	2,133	4,380

AM Peak Hour			10:45	07:45	07:45	PM Peak Hour			15:45	13:45	15:45
AM Pk Volume			118	359	409	PM Pk Volume			406	126	488
Pk Hr Factor			0.756	0.889	0.889	Pk Hr Factor			0.868	0.900	0.917
7 - 9 Volume	0	0	117	563	680	4 - 6 Volume	0	0	606	139	745
7 - 9 Peak Hour			07:00	07:45	07:45	4 - 6 Peak Hour			16:00	16:00	16:00
7 - 9 Pk Volume	0	0	72	359	409	4 - 6 Pk Volume	0	0	385	79	464
Pk Hr Factor	0.000	0.000	0.667	0.889	0.889	Pk Hr Factor	0.000	0.000	0.823	0.823	0.872

Prepared by National Data & Surveying Services

Mettler Frontage Rd W & Valpredo Ave/SR-99 SB On & Off Ramps

Peak Hour Turning Movement Count

ID: 18-02120-006
City: Bakersfield

Day: Saturday
Date: 12/15/2018

PEAK HOURS

AM: NONE
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: NONE
NOON: NONE
PM: 04:00 PM - 06:00 PM

Mettler Frontage Rd W — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	3	10	14	0	132	PM

EASTBOUND — Valpredo Ave/SR-99 SB On & Off R

AM	NOON	PM	
0	0	7	
0	0	0	0
0	0	13	0
0	0	0	1
0	0	2	0

WESTBOUND — Valpredo Ave/SR-99 SB On & Off R

PM	NOON	AM	
11	0	0	0.5
2	0	0	0.5
2	0	0	0
0	0	0	0
14	0	0	

NORTHBOUND — Mettler Frontage Rd W

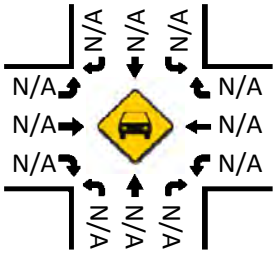
PM	14	0	2	108	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL: 2-Way Stop (EB/WB)

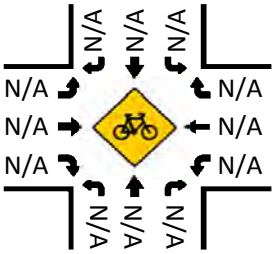
	AM	NOON	PM
TEV	0	0	167
PHF			0.75

Turning movements: EB 0 1 0 0 — WB 0 0 1 0

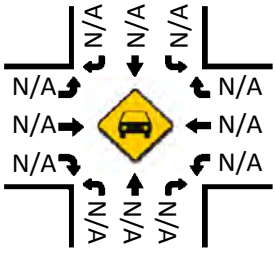
Total Vehicles (AM)



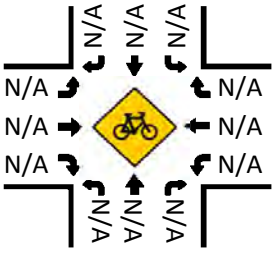
Bikes (AM)



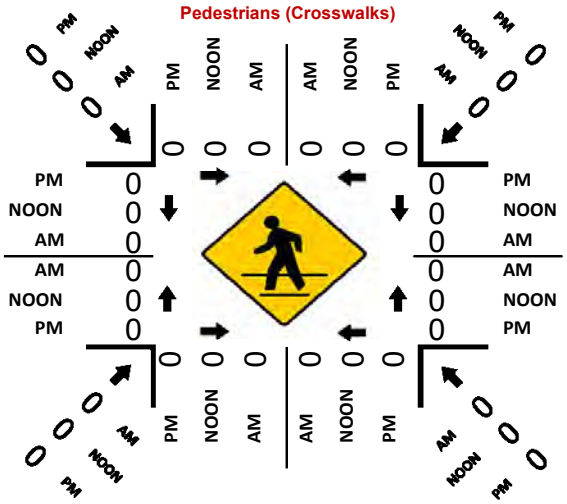
Total Vehicles (Noon)



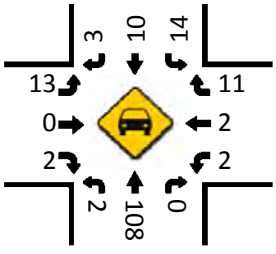
Bikes (NOON)



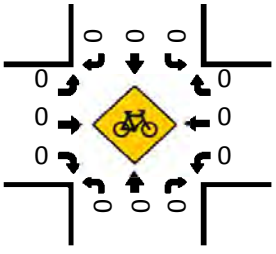
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Wheeler Ridge Access Rd & Maricopa Hwy/CA-166

Peak Hour Turning Movement Count

ID: 18-02120-007
City: Bakersfield

Day: Saturday
Date: 12/15/2018

PEAK HOURS

AM: NONE
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: NONE
NOON: NONE
PM: 04:00 PM - 06:00 PM

CONTROL: 1-Way Stop (NB)

	AM	NOON	PM
TEV	0	0	316
PHF			0.89

Wheeler Ridge Access Rd — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	1	PM

Maricopa Hwy/CA-166 — EASTBOUND

AM	NOON	PM	
0	0	59	
0	0	0	0
0	0	0	0
0	0	231	1
0	0	0	0
AM	NOON	PM	

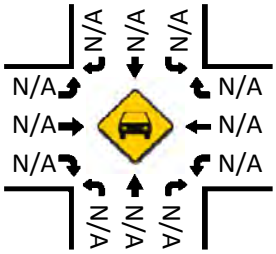
Maricopa Hwy/CA-166 — WESTBOUND

PM	NOON	AM	
0	0	0	0
57	0	0	1
7	0	0	0
0	0	0	0
249	0	0	
PM	NOON	AM	

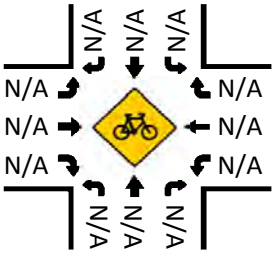
Wheeler Ridge Access Rd — NORTHBOUND

PM	7	0	2	1	18	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

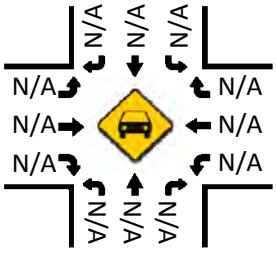
Total Vehicles (AM)



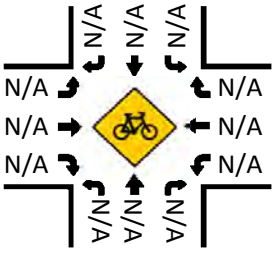
Bikes (AM)



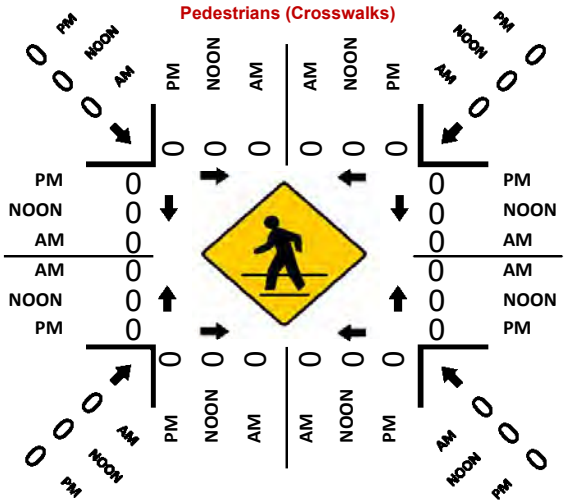
Total Vehicles (Noon)



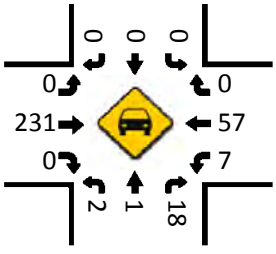
Bikes (NOON)



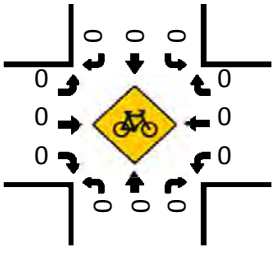
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

I-5 SB Ramps & Maricopa Hwy/CA-166

Peak Hour Turning Movement Count

ID: 18-02120-008
City: Bakersfield

Day: Saturday
Date: 12/15/2018

PEAK HOURS

AM: NONE
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: NONE
NOON: NONE
PM: 04:00 PM - 06:00 PM

I-5 SB Ramps — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	33	1	1	0	0	PM

0.5 0.5 0 0

Maricopa Hwy/CA-166 — EASTBOUND

AM	NOON	PM	
0	0	104	
0	0	0	0
0	0	0	0
0	0	226	1
0	0	73	1
AM	NOON	PM	

CONTROL

1-Way Stop (SB)

	AM	NOON	PM
TEV	0	0	407
PHF			0.83

Maricopa Hwy/CA-166 — WESTBOUND

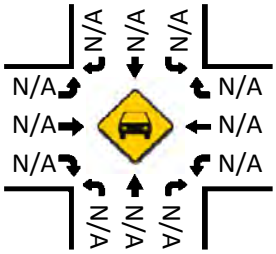
PM	NOON	AM	
0	0	0	0
71	0	0	1
2	0	0	0
0	0	0	0
227	0	0	
PM	NOON	AM	

0 0 0 0

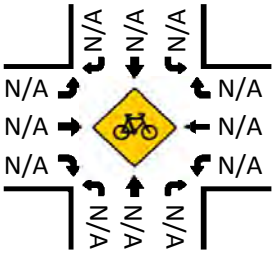
I-5 SB Ramps — NORTHBOUND

PM	76	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

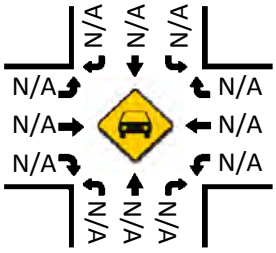
Total Vehicles (AM)



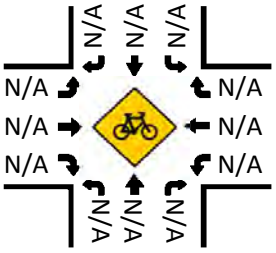
Bikes (AM)



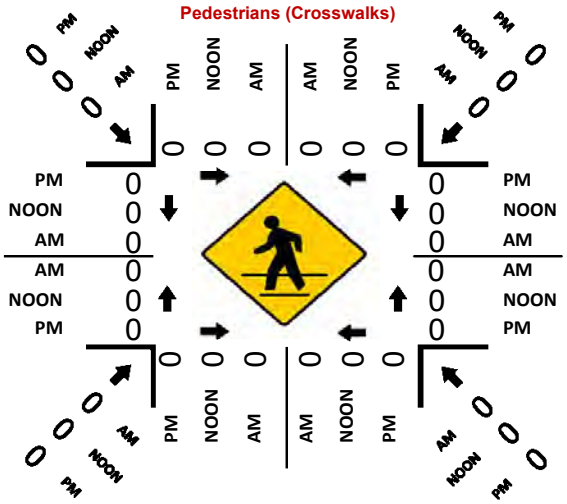
Total Vehicles (Noon)



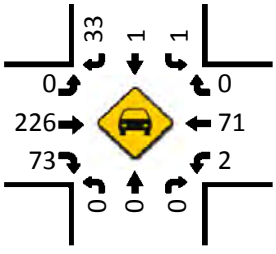
Bikes (NOON)



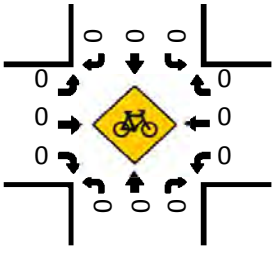
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

I-5 NB Ramps & Maricopa Hwy/CA-166

Peak Hour Turning Movement Count

ID: 18-02120-009
City: Bakersfield

Day: Saturday
Date: 12/15/2018

PEAK HOURS

AM	NONE
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	NONE
NOON	NONE
PM	04:00 PM - 06:00 PM

I-5 NB Ramps — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	0	0	0	35	PM

Maricopa Hwy/CA-166 — EASTBOUND

AM	NOON	PM	
0	0	72	
0	0	0	0
0	0	12	0
0	0	215	1
0	0	0	0
AM	NOON	PM	

Maricopa Hwy/CA-166 — WESTBOUND

PM	NOON	AM	
23	0	0	1
39	0	0	1
0	0	0	0
0	0	0	0
215	0	0	
PM	NOON	AM	

CONTROL
1-Way Stop (NB)

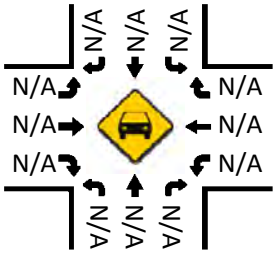
	AM	NOON	PM
TEV	0	0	322
PHF			0.88

I-5 NB Ramps — NORTHBOUND

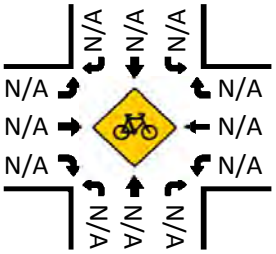
PM	0	0	33	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

0 0 0 0 — 0 0 0.5 0.5

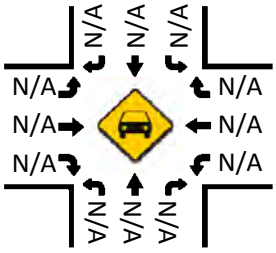
Total Vehicles (AM)



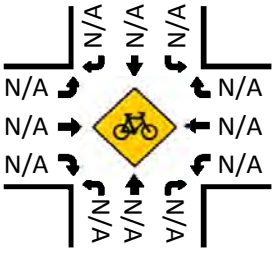
Bikes (AM)



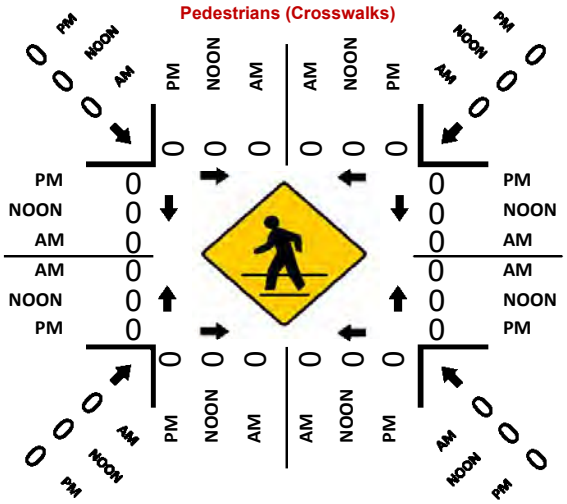
Total Vehicles (Noon)



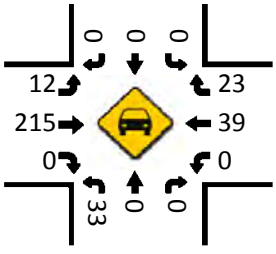
Bikes (NOON)



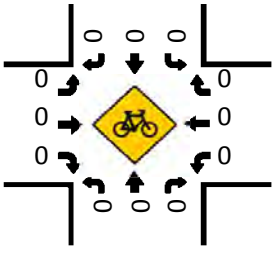
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Stevens Dr & SR-99 SB off-ramp

Peak Hour Turning Movement Count

ID: 18-02120-010
City: Bakersfield

Day: Saturday
Date: 12/15/2018

PEAK HOURS

AM	NONE
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	NONE
NOON	NONE
PM	04:00 PM - 06:00 PM

SOUTHBOUND — Stevens Dr

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	8	46	0	0	145	PM

EASTBOUND — SR-99 SB off-ramp

AM	NOON	PM	
0	0	36	
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
AM	NOON	PM	

WESTBOUND — SR-99 SB off-ramp

PM	NOON	AM	
20	0	0	1
28	0	0	1
4	0	0	0
0	0	0	0
0	0	0	
PM	NOON	AM	

NORTHBOUND — Stevens Dr

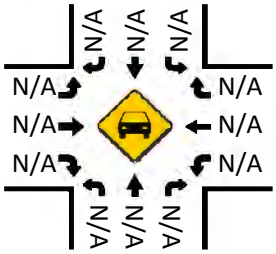
PM	50	0	0	125	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

CONTROL: 1-Way Stop (WB)

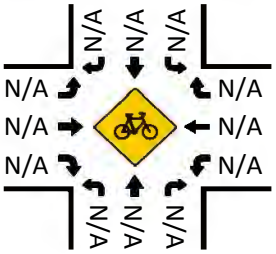
	AM	NOON	PM
TEV	0	0	231
PHF			0.67

0 1 0 0 (NB turning movements)
0 0 1 0 (SB turning movements)

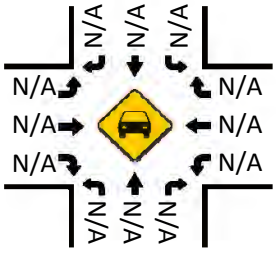
Total Vehicles (AM)



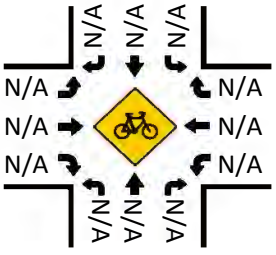
Bikes (AM)



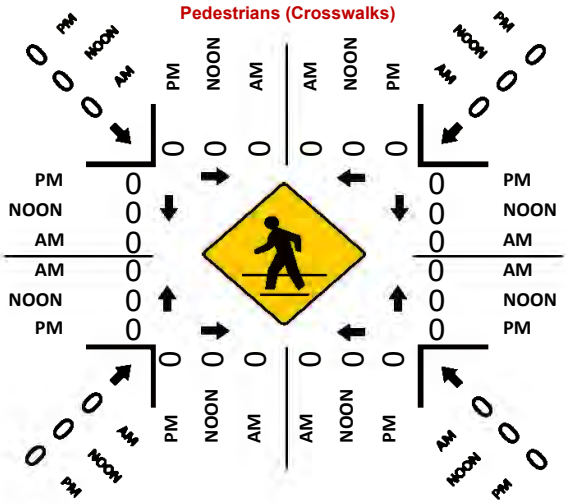
Total Vehicles (NOON)



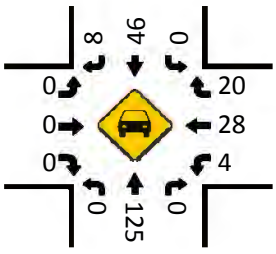
Bikes (NOON)



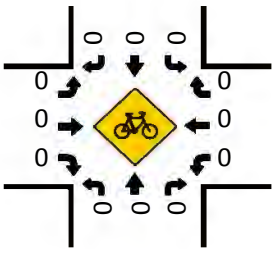
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Stevens Dr & Maricopa Hwy/CA-166

Peak Hour Turning Movement Count

ID: 18-02120-011
City: Bakersfield

Day: Saturday
Date: 12/15/2018

PEAK HOURS

AM: NONE
NOON: NONE
PM: 04:00 PM - 05:00 PM

COUNT PERIODS

AM: NONE
NOON: NONE
PM: 04:00 PM - 06:00 PM

Stevens Dr — SOUTHBOUND

AM	0	0	0	0	0	AM
NOON	0	0	0	0	0	NOON
PM	0	30	20	0	125	PM

Maricopa Hwy/CA-166 — EASTBOUND

AM	NOON	PM	
0	0	32	
0	0	0	0
0	0	109	1
0	0	206	1
0	0	0	0
AM	NOON	PM	

Maricopa Hwy/CA-166 — WESTBOUND

PM	NOON	AM	
16	0	0	0
32	0	0	1
7	0	0	0
0	0	0	0
226	0	0	
PM	NOON	AM	

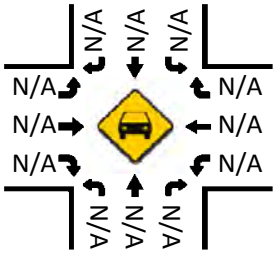
CONTROL: 1-Way Stop (SB)

	AM	NOON	PM
TEV	0	0	420
PHF			0.66

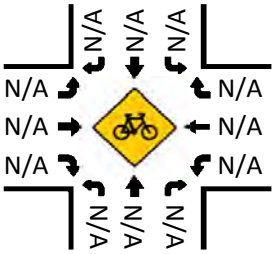
Stevens Dr — NORTHBOUND

PM	37	0	0	0	0	PM
NOON	0	0	0	0	0	NOON
AM	0	0	0	0	0	AM

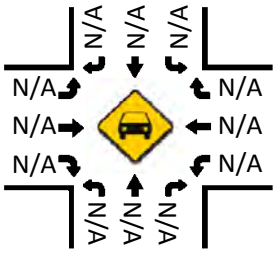
Total Vehicles (AM)



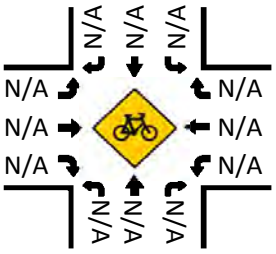
Bikes (AM)



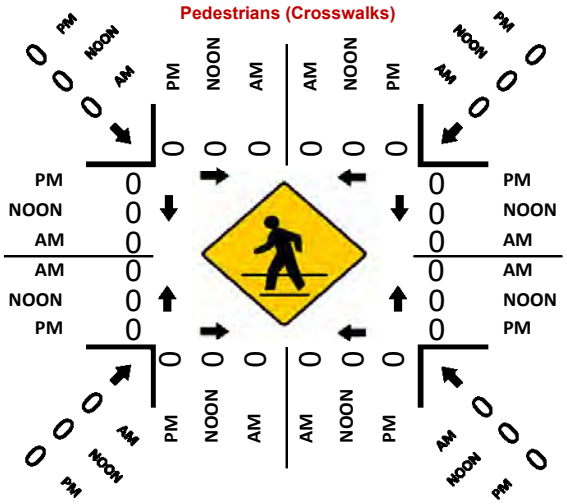
Total Vehicles (Noon)



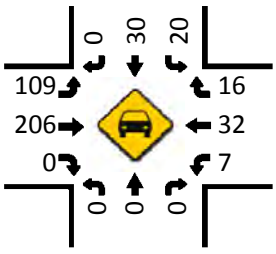
Bikes (NOON)



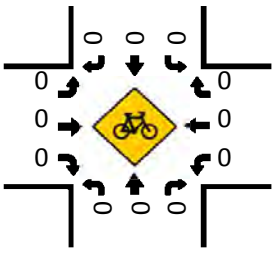
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Maricopa Hwy/CA-166 & SR-99 NB Ramps

Peak Hour Turning Movement Count

ID: 18-02120-012
City: Bakersfield

Day: Saturday
Date: 12/15/2018

PEAK HOURS

AM	NONE
NOON	NONE
PM	04:00 PM - 05:00 PM

COUNT PERIODS

AM	NONE
NOON	NONE
PM	04:00 PM - 06:00 PM

Maricopa Hwy/CA-166 — SOUTHBOUND

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	198	0	28	0	55

SR-99 NB Ramps — EASTBOUND

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	216	0	0

SR-99 NB Ramps — WESTBOUND

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	18	15	0	31

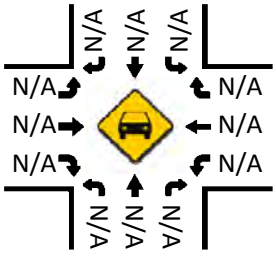
Maricopa Hwy/CA-166 — NORTHBOUND

	Left	Thru	Right	U-Turn	
AM	0	0	0	0	0
NOON	0	0	0	0	0
PM	0	0	40	3	0

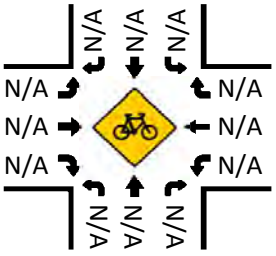
CONTROL: 2-Way Stop (SB/WB)

	AM	NOON	PM
TEV	0	0	302
PHF			0.73

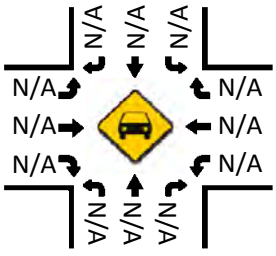
Total Vehicles (AM)



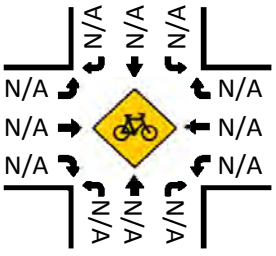
Bikes (AM)



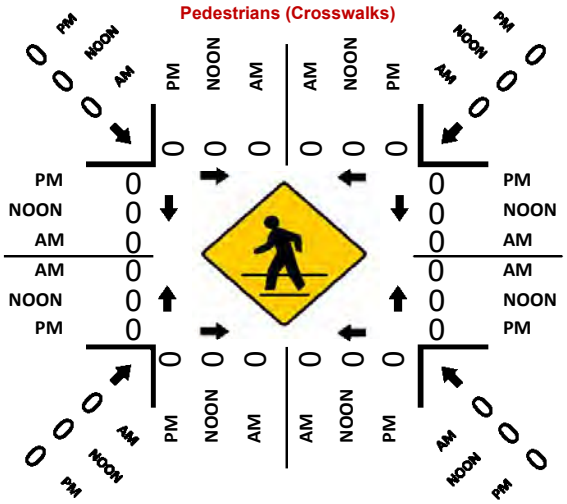
Total Vehicles (Noon)



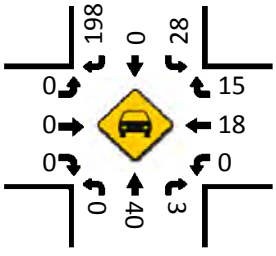
Bikes (NOON)



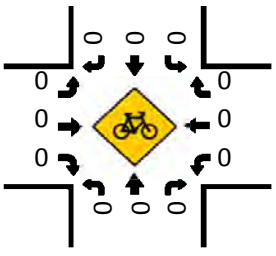
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 16:04
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	29,952 Lane Points
Data Quality	95.5% Observed
Segment Type	VDS
Segment Name	Mainline VDS 601309 - JCT RTE 223 BEAR MTN BLVD 5 NB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Sa
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-06-2018	20754	576	100.00
01-13-2018	16867	576	100.00
01-20-2018	14535	576	96.90
01-27-2018	12209	576	100.00
02-03-2018	12219	576	100.00
02-10-2018	12914	576	97.90
02-17-2018	17542	576	100.00
02-24-2018	14741	576	80.20
03-03-2018	12240	576	100.00
03-10-2018	13739	576	100.00
03-17-2018	13900	576	100.00
03-24-2018	19043	576	100.00
03-31-2018	24139	576	88.90
04-07-2018	21387	576	95.80
04-14-2018	16120	576	96.20
04-21-2018	15023	576	96.90
04-28-2018	15081	576	96.50
05-05-2018	14934	576	99.30
05-12-2018	17602	576	97.60
05-19-2018	16487	576	97.90
05-26-2018	21918	576	96.20
06-02-2018	15163	576	100.00
06-09-2018	16800	576	98.60
06-16-2018	22078	576	99.00
06-23-2018	19248	576	99.00
06-30-2018	21488	576	99.00
07-07-2018	22234	576	99.00
07-14-2018	19357	576	99.00
07-21-2018	20133	576	98.30
07-28-2018	20476	576	99.00
08-04-2018	20851	576	99.00
08-11-2018	19698	576	99.00
08-18-2018	19510	576	99.00
08-25-2018	17587	576	63.50
09-01-2018	23847	576	99.00
09-08-2018	14652	576	99.00
09-15-2018	15269	576	99.00
09-22-2018	17227	576	99.00
09-29-2018	15460	576	99.00
10-06-2018	15505	576	99.00
10-13-2018	14981	576	99.00
10-20-2018	15015	576	99.00
10-27-2018	14481	576	99.00
11-03-2018	13491	576	91.70
11-10-2018	14486	576	0.00
11-17-2018	17837	576	100.00
11-24-2018	39204	576	99.00
12-01-2018	13052	576	98.30
12-08-2018	12964	576	99.00
12-15-2018	16217	576	99.00
12-22-2018	34613	576	99.00
12-29-2018	29836	576	99.00
	18003		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 16:25
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	29,952 Lane Points
Data Quality	60.6% Observed
Segment Type	VDS
Segment Name	Mainline VDS 602309 - CT RTE 223 BEAR MTN BLVD 5 SB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Sa
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-06-2018	20754	576	100.00
01-13-2018	16867	576	100.00
01-20-2018	14562	576	96.90
01-27-2018	12209	576	100.00
02-03-2018	12219	576	100.00
02-10-2018	12909	576	97.90
02-17-2018	17542	576	100.00
02-24-2018	14741	576	80.20
03-03-2018	12240	576	100.00
03-10-2018	13739	576	100.00
03-17-2018	19546	576	50.00
03-24-2018	25895	576	50.00
03-31-2018	27261	576	44.40
04-07-2018	22376	576	47.90
04-14-2018	19804	576	48.10
04-21-2018	19753	576	48.40
04-28-2018	19398	576	48.30
05-05-2018	18856	576	49.70
05-12-2018	21054	576	48.80
05-19-2018	21187	576	49.00
05-26-2018	30140	576	48.10
06-02-2018	20466	576	50.00
06-09-2018	23098	576	49.30
06-16-2018	26549	576	49.50
06-23-2018	23718	576	49.50
06-30-2018	27438	576	49.50
07-07-2018	25083	576	49.50
07-14-2018	20081	576	99.00
07-21-2018	25299	576	49.10
07-28-2018	27025	576	49.50
08-04-2018	26448	576	49.50
08-11-2018	25131	576	49.50
08-18-2018	24284	576	49.50
08-25-2018	20901	576	31.80
09-01-2018	31628	576	87.00
09-08-2018	19191	576	49.50
09-15-2018	16450	576	99.00
09-22-2018	22913	576	49.50
09-29-2018	20004	576	49.50
10-06-2018	18021	576	92.70
10-13-2018	20165	576	49.50
10-20-2018	20381	576	49.50
10-27-2018	20651	576	49.50
11-03-2018	19172	576	45.80
11-10-2018	20937	576	0.00
11-17-2018	28904	576	50.00
11-24-2018	35495	576	49.50
12-01-2018	17433	576	49.10
12-08-2018	14116	576	49.50
12-15-2018	18492	576	49.50
12-22-2018	39016	576	49.50
12-29-2018	29518	576	49.50
	21559		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:20
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	59,904 Lane Points
Data Quality	94.2% Observed
Segment Type	VDS
Segment Name	Mainline VDS 601339 - WHEELER RIDGE RD - I5 NB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Sa
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-06-2018	49377	1152	100.00
01-13-2018	49589	1152	99.00
01-20-2018	41580	1152	100.00
01-27-2018	38128	1152	99.70
02-03-2018	38224	1152	100.00
02-10-2018	39295	1152	100.00
02-17-2018	48191	1152	100.00
02-24-2018	42766	1152	79.50
03-03-2018	35673	1152	100.00
03-10-2018	39813	1152	100.00
03-17-2018	41579	1152	100.00
03-24-2018	49721	1152	99.70
03-31-2018	60842	1152	98.60
04-07-2018	50254	1152	100.00
04-14-2018	45798	1152	99.70
04-21-2018	45075	1152	100.00
04-28-2018	44491	1152	97.90
05-05-2018	43951	1152	100.00
05-12-2018	50860	1152	100.00
05-19-2018	47623	1152	95.10
05-26-2018	46994	1152	0.00
06-02-2018	44655	1152	100.00
06-09-2018	47443	1152	99.00
06-16-2018	56967	1152	99.00
06-23-2018	50449	1152	99.00
06-30-2018	55573	1152	99.00
07-07-2018	53651	1152	99.00
07-14-2018	51708	1152	99.00
07-21-2018	53087	1152	99.00
07-28-2018	53656	1152	99.00
08-04-2018	55285	1152	98.60
08-11-2018	53635	1152	99.00
08-18-2018	51989	1152	99.00
08-25-2018	48473	1152	63.90
09-01-2018	64853	1152	99.00
09-08-2018	42770	1152	99.00
09-15-2018	43738	1152	99.00
09-22-2018	47612	1152	99.00
09-29-2018	44719	1152	99.00
10-06-2018	45321	1152	99.00
10-13-2018	44766	1152	99.00
10-20-2018	46664	1152	99.00
10-27-2018	44789	1152	99.00
11-03-2018	41548	1152	91.70
11-10-2018	44523	1152	0.00
11-17-2018	47759	1152	100.00
11-24-2018	71901	1152	99.00
12-01-2018	37644	1152	98.30
12-08-2018	39047	1152	99.00
12-15-2018	44712	1152	99.00
12-22-2018	73914	1152	99.00
12-29-2018	61833	1152	99.00
	48356		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:28
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	0 Lane Points
Data Quality	0% Observed
Segment Type	VDS
Segment Name	Mainline VDS 602339 - WHEELER RIDGE RD - I5 SB
start date	04/24/2019 00:00:00
end date	04/24/2019 17:28:14
Day of Week	Sa
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
1/6/2018	49,377	1,152	100
1/13/2018	49,582	1,152	99
1/20/2018	41,580	1,152	100
1/27/2018	38,120	1,152	99.7
2/3/2018	38,224	1,152	100
2/10/2018	39,295	1,152	100
2/17/2018	48,191	1,152	100
2/24/2018	42,766	1,152	79.5
3/3/2018	35,673	1,152	100
3/10/2018	39,813	1,152	100
3/17/2018	43,272	1,152	100
3/24/2018	54,440	1,152	99.7
3/31/2018	54,814	1,152	98.6
4/7/2018	47,567	1,152	100
4/14/2018	45,252	1,152	99.7
4/21/2018	45,703	1,152	100
4/28/2018	44,225	1,152	97.9
5/5/2018	42,521	1,152	100
5/12/2018	47,552	1,152	100
5/19/2018	48,679	1,152	95.1
5/26/2018	41,248	1,152	0
6/2/2018	46,051	1,152	100
6/9/2018	49,873	1,152	99
6/16/2018	55,779	1,152	99
6/23/2018	50,717	1,152	99
6/30/2018	56,059	1,152	99
7/7/2018	52,704	1,152	99
7/14/2018	52,341	1,152	99
7/21/2018	53,845	1,152	99
7/28/2018	56,653	1,152	99
8/4/2018	56,803	1,152	98.6
8/11/2018	54,003	1,152	99
8/18/2018	52,407	1,152	99
8/25/2018	49,442	1,152	63.9
9/1/2018	62,455	1,152	99
9/8/2018	42,268	1,152	99
9/15/2018	45,285	1,152	99
9/22/2018	49,325	1,152	99
9/29/2018	44,145	1,152	99
10/6/2018	45,041	1,152	99
10/13/2018	45,803	1,152	99
10/20/2018	47,625	1,152	99
10/27/2018	46,965	1,152	99
11/3/2018	42,628	1,152	91.7
11/10/2018	45,873	1,152	0
11/17/2018	55,496	1,152	100
11/24/2018	70,259	1,152	99
12/1/2018	37,442	1,152	98.3
12/8/2018	39,417	1,152	99
12/15/2018	47,962	1,152	99
12/22/2018	80,719	1,152	99
12/29/2018	63,570	1,152	99
	48,786		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:39
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	44,928 Lane Points
Data Quality	94.5% Observed
Segment Type	VDS
Segment Name	Mainline VDS 601931 - RTE 99 JSO RTE 166 OC NB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Sa
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-06-2018	27087	864	100.00
01-13-2018	25872	864	100.00
01-20-2018	22070	864	100.00
01-27-2018	24609	864	100.00
02-03-2018	24896	864	100.00
02-10-2018	25315	864	100.00
02-17-2018	31076	864	8.70
02-24-2018	26377	864	80.20
03-03-2018	21992	864	100.00
03-10-2018	24623	864	100.00
03-17-2018	26441	864	100.00
03-24-2018	29019	864	100.00
03-31-2018	35644	864	99.30
04-07-2018	27215	864	100.00
04-14-2018	28511	864	100.00
04-21-2018	28872	864	100.00
04-28-2018	28368	864	100.00
05-05-2018	27956	864	100.00
05-12-2018	31993	864	100.00
05-19-2018	29560	864	100.00
05-26-2018	35423	864	100.00
06-02-2018	28450	864	100.00
06-09-2018	29442	864	99.00
06-16-2018	33327	864	99.00
06-23-2018	29831	864	99.00
06-30-2018	32143	864	99.00
07-07-2018	30624	864	99.00
07-14-2018	31554	864	99.00
07-21-2018	32497	864	99.00
07-28-2018	32742	864	99.00
08-04-2018	33571	864	99.00
08-11-2018	32444	864	99.00
08-18-2018	30767	864	99.00
08-25-2018	29438	864	63.90
09-01-2018	38846	864	99.00
09-08-2018	26848	864	99.00
09-15-2018	26893	864	99.00
09-22-2018	28749	864	99.00
09-29-2018	27802	864	99.00
10-06-2018	28065	864	99.00
10-13-2018	28065	864	99.00
10-20-2018	30024	864	99.00
10-27-2018	29310	864	99.00
11-03-2018	26792	864	91.70
11-10-2018	28549	864	0.00
11-17-2018	28502	864	100.00
11-24-2018	30234	864	99.00
12-01-2018	23918	864	98.30
12-08-2018	24711	864	99.00
12-15-2018	27091	864	99.00
12-22-2018	37170	864	99.00
12-29-2018	30120	864	99.00
	29066		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 17:51
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	44,928 Lane Points
Data Quality	94.5% Observed
Segment Type	VDS
Segment Name	Mainline VDS 602931 - RTE 99 JSO RTE 166 SB
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Sa
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-06-2018	27087	864	100.00
01-13-2018	25872	864	100.00
01-20-2018	22070	864	100.00
01-27-2018	24609	864	100.00
02-03-2018	24896	864	100.00
02-10-2018	25315	864	100.00
02-17-2018	27385	864	8.70
02-24-2018	26377	864	80.20
03-03-2018	21992	864	100.00
03-10-2018	24623	864	100.00
03-17-2018	24803	864	100.00
03-24-2018	29288	864	100.00
03-31-2018	27549	864	99.30
04-07-2018	25700	864	100.00
04-14-2018	26304	864	100.00
04-21-2018	26933	864	100.00
04-28-2018	26268	864	100.00
05-05-2018	25132	864	100.00
05-12-2018	27543	864	100.00
05-19-2018	28327	864	100.00
05-26-2018	29447	864	100.00
06-02-2018	26719	864	100.00
06-09-2018	27719	864	99.00
06-16-2018	29461	864	99.00
06-23-2018	27535	864	99.00
06-30-2018	28912	864	99.00
07-07-2018	28168	864	99.00
07-14-2018	29396	864	99.00
07-21-2018	29781	864	99.00
07-28-2018	30716	864	99.00
08-04-2018	31132	864	99.00
08-11-2018	29703	864	99.00
08-18-2018	28659	864	99.00
08-25-2018	27339	864	63.90
09-01-2018	30075	864	99.00
09-08-2018	24102	864	99.00
09-15-2018	26518	864	99.00
09-22-2018	27067	864	99.00
09-29-2018	25079	864	99.00
10-06-2018	25874	864	99.00
10-13-2018	26771	864	99.00
10-20-2018	28132	864	99.00
10-27-2018	27451	864	99.00
11-03-2018	24799	864	91.70
11-10-2018	26939	864	0.00
11-17-2018	26794	864	100.00
11-24-2018	34414	864	99.00
12-01-2018	21256	864	98.30
12-08-2018	22839	864	99.00
12-15-2018	25683	864	99.00
12-22-2018	31851	864	99.00
12-29-2018	27944	864	99.00
	27045		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 18:02
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	44,928 Lane Points
Data Quality	94.1% Observed
Segment Type	VDS
Segment Name	Mainline VDS 601376 - 99/I5 Interchange
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Sa
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-06-2018	26383	864	99.70
01-13-2018	25575	864	99.70
01-20-2018	21999	864	100.00
01-27-2018	23860	864	100.00
02-03-2018	24286	864	100.00
02-10-2018	24408	864	100.00
02-17-2018	28697	864	100.00
02-24-2018	26237	864	80.20
03-03-2018	22060	864	100.00
03-10-2018	24361	864	99.30
03-17-2018	25710	864	99.70
03-24-2018	28619	864	100.00
03-31-2018	35066	864	99.00
04-07-2018	27081	864	92.70
04-14-2018	27648	864	99.70
04-21-2018	28356	864	99.30
04-28-2018	27639	864	100.00
05-05-2018	27328	864	100.00
05-12-2018	31047	864	100.00
05-19-2018	28856	864	99.30
05-26-2018	34714	864	100.00
06-02-2018	27685	864	100.00
06-09-2018	29021	864	99.00
06-16-2018	32957	864	99.00
06-23-2018	29485	864	98.30
06-30-2018	31819	864	98.30
07-07-2018	29505	864	99.00
07-14-2018	30615	864	99.00
07-21-2018	31184	864	99.00
07-28-2018	31120	864	99.00
08-04-2018	32265	864	99.00
08-11-2018	31718	864	99.00
08-18-2018	30251	864	98.60
08-25-2018	28840	864	63.90
09-01-2018	38490	864	98.60
09-08-2018	26437	864	99.00
09-15-2018	26491	864	98.60
09-22-2018	28413	864	98.30
09-29-2018	29970	864	0.00
10-06-2018	27646	864	99.00
10-13-2018	27671	864	99.00
10-20-2018	29514	864	99.00
10-27-2018	28609	864	99.00
11-03-2018	25905	864	91.70
11-10-2018	27942	864	0.00
11-17-2018	27797	864	100.00
11-24-2018	29806	864	99.00
12-01-2018	22802	864	98.30
12-08-2018	23970	864	99.00
12-15-2018	26378	864	98.60
12-22-2018	36725	864	99.00
12-29-2018	29299	864	99.00
	28467		

Report Description

Report	Aggregates>Time Series
Report link	*.ca.gov/?report*
Report generated	04/24/2019 18:08
PeMS version	caltrans_pems-18.0.0

Report Parameters

Parameter	Value
Quantity	Flow
Data	44,928 Lane Points
Data Quality	94.1% Observed
Segment Type	VDS
Segment Name	Mainline VDS 602376 - 99/I5 Interchange
start date	01/01/2018 00:00:00
end date	12/31/2018 23:59:59
Day of Week	Sa
Granularity	day

Day	Flow (Veh/Day)	# Lane Points	% Observed
01-06-2018	25826	864	99.70
01-13-2018	24096	864	99.70
01-20-2018	20835	864	100.00
01-27-2018	23958	864	100.00
02-03-2018	23769	864	100.00
02-10-2018	25511	864	100.00
02-17-2018	28831	864	100.00
02-24-2018	25474	864	80.20
03-03-2018	21409	864	100.00
03-10-2018	23250	864	99.30
03-17-2018	25690	864	99.70
03-24-2018	30317	864	100.00
03-31-2018	28207	864	99.00
04-07-2018	26285	864	92.70
04-14-2018	26923	864	99.70
04-21-2018	27718	864	99.30
04-28-2018	26786	864	100.00
05-05-2018	25807	864	100.00
05-12-2018	28310	864	100.00
05-19-2018	29058	864	99.30
05-26-2018	30378	864	100.00
06-02-2018	27437	864	100.00
06-09-2018	28358	864	99.00
06-16-2018	30322	864	99.00
06-23-2018	28377	864	98.30
06-30-2018	29711	864	98.30
07-07-2018	29188	864	99.00
07-14-2018	30481	864	99.00
07-21-2018	30618	864	99.00
07-28-2018	31516	864	99.00
08-04-2018	32091	864	99.00
08-11-2018	30774	864	99.00
08-18-2018	29404	864	98.60
08-25-2018	28096	864	63.90
09-01-2018	30993	864	98.60
09-08-2018	24952	864	99.00
09-15-2018	27031	864	98.60
09-22-2018	27962	864	98.30
09-29-2018	26164	864	0.00
10-06-2018	26616	864	99.00
10-13-2018	27470	864	99.00
10-20-2018	29189	864	99.00
10-27-2018	28099	864	99.00
11-03-2018	25340	864	91.70
11-10-2018	27596	864	0.00
11-17-2018	27407	864	100.00
11-24-2018	35331	864	99.00
12-01-2018	21909	864	98.30
12-08-2018	23476	864	99.00
12-15-2018	26694	864	98.60
12-22-2018	32931	864	99.00
12-29-2018	28795	864	99.00
	27553		

Prepared by NDS/ATD

VOLUME

Mettler Frontage Rd W Bet. Copus Rd & Valpredo Ave

Day: Saturday
Date: 12/15/2018

City: Mettler
Project #: CA18_2121_007

DAILY TOTALS	NB	SB	EB	WB	Total
	823	334	0	0	1,157

AM Period	NB		SB		EB		WB		TOTAL	
00:00	1		0						1	
00:15	1		1						2	
00:30	0		0						0	
00:45	2	4	0	1					2	5
01:00	1		0						1	
01:15	13		0						13	
01:30	3		0						3	
01:45	2	19	0						2	19
02:00	0		0						0	
02:15	1		0						1	
02:30	0		0						0	
02:45	0	1	0						0	1
03:00	1		1						2	
03:15	0		0						0	
03:30	1		0						1	
03:45	3	5	1	2					4	7
04:00	1		0						1	
04:15	5		0						5	
04:30	1		0						1	
04:45	0	7	3	3					3	10
05:00	2		4						6	
05:15	6		9						15	
05:30	3		10						13	
05:45	5	16	13	36					18	52
06:00	5		24						29	
06:15	6		26						32	
06:30	3		14						17	
06:45	6	20	9	73					15	93
07:00	4		6						10	
07:15	5		2						7	
07:30	6		4						10	
07:45	5	20	6	18					11	38
08:00	7		14						21	
08:15	7		10						17	
08:30	6		13						19	
08:45	5	25	13	50					18	75
09:00	7		10						17	
09:15	8		7						15	
09:30	5		6						11	
09:45	9	29	4	27					13	56
10:00	7		7						14	
10:15	6		12						18	
10:30	13		5						18	
10:45	18	44	1	25					19	69
11:00	11		1						12	
11:15	7		9						16	
11:30	2		8						10	
11:45	16	36	1	19					17	55
TOTALS		226		254						480
SPLIT %		47.1%		52.9%						41.5%

PM Period	NB		SB		EB		WB		TOTAL	
12:00	14		2						16	
12:15	12		3						15	
12:30	9		0						9	
12:45	2	37	4	9					6	46
13:00	19		3						22	
13:15	17		2						19	
13:30	18		5						23	
13:45	15	69	2	12					17	81
14:00	20		6						26	
14:15	11		2						13	
14:30	26		2						28	
14:45	39	96	1	11					40	107
15:00	32		5						37	
15:15	36		1						37	
15:30	43		3						46	
15:45	45	156	7	16					52	172
16:00	46		2						48	
16:15	36		4						40	
16:30	29		3						32	
16:45	19	130	4	13					23	143
17:00	28		4						32	
17:15	14		3						17	
17:30	16		5						21	
17:45	6	64	2	14					8	78
18:00	10		0						10	
18:15	5		0						5	
18:30	1		0						1	
18:45	2	18	0						2	18
19:00	4		0						4	
19:15	7		0						7	
19:30	1		0						1	
19:45	1	13	0						1	13
20:00	3		2						5	
20:15	1		0						1	
20:30	1		0						1	
20:45	1	6	0	2					1	8
21:00	3		0						3	
21:15	1		0						1	
21:30	1		0						1	
21:45	0	5	0						0	5
22:00	0		0						0	
22:15	1		0						1	
22:30	0		1						1	
22:45	1	2	1	2					2	4
23:00	0		0						0	
23:15	0		0						0	
23:30	0		0						0	
23:45	1	1	1	1					2	2
TOTALS		597		80						677
SPLIT %		88.2%		11.8%						58.5%

DAILY TOTALS	NB	SB	EB	WB	Total
	823	334	0	0	1,157

AM Peak Hour	11:45	05:45			05:45	PM Peak Hour	15:15	15:00			15:30
AM Pk Volume	51	77			96	PM Pk Volume	170	16			186
Pk Hr Factor	0.797	0.740			0.750	Pk Hr Factor	0.924	0.571			0.894
7 - 9 Volume	45	68	0	0	113	4 - 6 Volume	194	27	0	0	221
7 - 9 Peak Hour	07:30	08:00			08:00	4 - 6 Peak Hour	16:00	16:45			16:00
7 - 9 Pk Volume	25	50	0	0	75	4 - 6 Pk Volume	130	16	0	0	143
Pk Hr Factor	0.893	0.893	0.000	0.000	0.893	Pk Hr Factor	0.707	0.800	0.000	0.000	0.745

Prepared by NDS/ATD

VOLUME

Mettler Frontage Rd W Bet. Valpredo Ave & Maricopa Hwy

Day: Saturday
Date: 12/15/2018

City: Mettler
Project #: CA18_2121_008

DAILY TOTALS	NB	SB	EB	WB	Total
	645	716	0	0	1,361

AM Period	NB		SB		EB		WB		TOTAL	
00:00	1		2						3	
00:15	0		0						0	
00:30	0		0						0	
00:45	3	4	1	3					4	7
01:00	0		0						0	
01:15	1		5						6	
01:30	1		0						1	
01:45	1	3	1	6					2	9
02:00	0		1						1	
02:15	1		1						2	
02:30	0		0						0	
02:45	0	1	1	3					1	4
03:00	1		5						6	
03:15	1		0						1	
03:30	0		0						0	
03:45	1	3	0	5					1	8
04:00	3		1						4	
04:15	1		0						1	
04:30	1		1						2	
04:45	1	6	2	4					3	10
05:00	7		8						15	
05:15	2		12						14	
05:30	4		11						15	
05:45	1	14	21	52					22	66
06:00	8		35						43	
06:15	7		80						87	
06:30	3		70						73	
06:45	9	27	14	199					23	226
07:00	4		12						16	
07:15	3		7						10	
07:30	5		8						13	
07:45	7	19	21	48					28	67
08:00	11		19						30	
08:15	8		26						34	
08:30	7		28						35	
08:45	9	35	25	98					34	133
09:00	12		23						35	
09:15	2		16						18	
09:30	7		18						25	
09:45	6	27	8	65					14	92
10:00	5		11						16	
10:15	5		9						14	
10:30	9		7						16	
10:45	7	26	4	31					11	57
11:00	11		3						14	
11:15	3		12						15	
11:30	9		12						21	
11:45	4	27	8	35					12	62
TOTALS		192		549						**741**
SPLIT %		25.9%		74.1%						**54.4%**

PM Period	NB		SB		EB		WB		TOTAL	
12:00	8		4						12	
12:15	9		2						11	
12:30	3		6						9	
12:45	7	27	4	16					11	43
13:00	11		5						16	
13:15	15		4						19	
13:30	11		7						18	
13:45	14	51	13	29					27	80
14:00	15		9						24	
14:15	15		3						18	
14:30	18		5						23	
14:45	26	74	3	20					29	94
15:00	26		8						34	
15:15	29		8						37	
15:30	31		4						35	
15:45	20	106	8	28					28	134
16:00	40		3						43	
16:15	23		4						27	
16:30	24		4						28	
16:45	24	111	4	15					28	126
17:00	14		2						16	
17:15	13		3						16	
17:30	10		8						18	
17:45	7	44	5	18					12	62
18:00	5		3						8	
18:15	1		2						3	
18:30	1		1						2	
18:45	2	9	3	9					5	18
19:00	3		1						4	
19:15	5		1						6	
19:30	2		0						2	
19:45	3	13	2	4					5	17
20:00	1		5						6	
20:15	0		3						3	
20:30	4		0						4	
20:45	1	6	3	11					4	17
21:00	3		0						3	
21:15	2		1						3	
21:30	2		1						3	
21:45	3	10	2	4					5	14
22:00	0		1						1	
22:15	1		3						4	
22:30	0		2						2	
22:45	1	2	1	7					2	9
23:00	0		3						3	
23:15	0		0						0	
23:30	0		1						1	
23:45	0		2	6					2	6
TOTALS		453		167						**620**
SPLIT %		73.1%		26.9%						**45.6%**

DAILY TOTALS	NB	SB	EB	WB	Total
	645	716	0	0	1,361

AM Peak Hour	08:15	05:45			**06:00**	**PM Peak Hour**	15:15	13:15			**15:15**
AM Pk Volume	36	206			**226**	**PM Pk Volume**	120	33			**143**
Pk Hr Factor	0.750	0.644			**0.649**	**Pk Hr Factor**	0.750	0.635			**0.831**
7 - 9 Volume	54	146	0	0	**200**	**4 - 6 Volume**	155	33	0	0	**188**
7 - 9 Peak Hour	08:00	08:00			**08:00**	**4 - 6 Peak Hour**	16:00	17:00			**16:00**
7 - 9 Pk Volume	35	98	0	0	**133**	**4 - 6 Pk Volume**	111	18	0	0	**126**
Pk Hr Factor	0.795	0.875	0.000	0.000	**0.950**	**Pk Hr Factor**	0.694	0.563	0.000	0.000	**0.733**

Prepared by NDS/ATD

VOLUME

Valpredo Ave Bet. I-5 Ramps & SR-99 Ramps

Day: Saturday
Date: 12/15/2018

City: Mettler
Project #: CA18_2121_002

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	111	108	219

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			0		0		0		12:00			5		2		7	
00:15			0		0		0		12:15			0		2		2	
00:30			0		0		0		12:30			0		3		3	
00:45			0		0		0		12:45			3	8	1	8	4	16
01:00			0		0		0		13:00			1		1		2	
01:15			0		0		0		13:15			2		0		2	
01:30			0		0		0		13:30			1		2		3	
01:45			0		0		0		13:45			1	5	2	5	3	10
02:00			0		0		0		14:00			0		4		4	
02:15			0		1		1		14:15			1		3		4	
02:30			0		0		0		14:30			10		1		11	
02:45			0		0	1	0	1	14:45			3	14	0	8	3	22
03:00			0		0		0		15:00			3		2		5	
03:15			0		0		0		15:15			4		0		4	
03:30			0		0		0		15:30			9		1		10	
03:45			0		0		0		15:45			6	22	0	3	6	25
04:00			0		0		0		16:00			3		1		4	
04:15			0		0		0		16:15			5		0		5	
04:30			0		0		0		16:30			3		3		6	
04:45			0		0		0		16:45			3	14	1	5	4	19
05:00			1		0		1		17:00			3		1		4	
05:15			0		1		1		17:15			1		3		4	
05:30			0		0		0		17:30			2		4		6	
05:45			2	3	1	2	3	5	17:45			0	6	0	8	0	14
06:00			1		10		11		18:00			1		0		1	
06:15			2		9		11		18:15			1		0		1	
06:30			0		9		9		18:30			1		0		1	
06:45			1	4	7	35	8	39	18:45			1	4	1	1	2	5
07:00			3		0		3		19:00			0		0		0	
07:15			1		0		1		19:15			3		0		3	
07:30			0		2		2		19:30			0		0		0	
07:45			1	5	0	2	1	7	19:45			0	3	0		0	3
08:00			1		1		2		20:00			0		0		0	
08:15			1		5		6		20:15			0		0		0	
08:30			1		3		4		20:30			0		2		2	
08:45			1	4	2	11	3	15	20:45			0		1	3	1	3
09:00			2		4		6		21:00			0		0		0	
09:15			2		0		2		21:15			0		1		1	
09:30			4		1		5		21:30			0		0		0	
09:45			2	10	1	6	3	16	21:45			1	1	0	1	1	2
10:00			1		0		1		22:00			0		0		0	
10:15			0		1		1		22:15			0		0		0	
10:30			1		1		2		22:30			0		0		0	
10:45			0	2	3	5	3	7	22:45			0		0		0	
11:00			0		1		1		23:00			0		0		0	
11:15			2		1		3		23:15			0		0		0	
11:30			0		2		2		23:30			0		0		0	
11:45			4	6	0	4	4	10	23:45			0		0		0	
TOTALS				34		66		100	TOTALS				77		42		119
SPLIT %				34.0%		66.0%		45.7%	SPLIT %				64.7%		35.3%		54.3%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	111	108	219

AM Peak Hour			11:15	06:00	06:00	PM Peak Hour			15:30	13:30	15:00
AM Pk Volume			11	35	39	PM Pk Volume			23	11	25
Pk Hr Factor			0.550	0.875	0.886	Pk Hr Factor			0.639	0.688	0.625
7 - 9 Volume	0	0	9	13	22	4 - 6 Volume	0	0	20	13	33
7 - 9 Peak Hour			07:00	08:00	08:00	4 - 6 Peak Hour			16:00	16:45	16:00
7 - 9 Pk Volume	0	0	5	11	15	4 - 6 Pk Volume	0	0	14	9	19
Pk Hr Factor	0.000	0.000	0.417	0.550	0.625	Pk Hr Factor	0.000	0.000	0.700	0.563	0.792

Prepared by NDS/ATD

VOLUME

Maricopa Hwy W/O Wheeler Ridge Access Rd

Day: Saturday
Date: 12/15/2018

City: Mettler
Project #: CA18_2121_003

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,680	1,250	2,930

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			6		1		7		12:00			24		19		43	
00:15			5		0		5		12:15			37		22		59	
00:30			4		5		9		12:30			13		13		26	
00:45			4	19	1	7	5	26	12:45			37	111	11	65	48	176
01:00			5		0		5		13:00			18		12		30	
01:15			2		0		2		13:15			30		11		41	
01:30			2		3		5		13:30			34		14		48	
01:45			2	11	3	6	5	17	13:45			33	115	11	48	44	163
02:00			0		3		3		14:00			30		13		43	
02:15			0		5		5		14:15			30		8		38	
02:30			3		3		6		14:30			50		25		75	
02:45			2	5	1	12	3	17	14:45			50	160	11	57	61	217
03:00			1		5		6		15:00			61		19		80	
03:15			1		1		2		15:15			44		18		62	
03:30			3		3		6		15:30			50		14		64	
03:45			0	5	5	14	5	19	15:45			69	224	12	63	81	287
04:00			3		2		5		16:00			66		9		75	
04:15			1		2		3		16:15			48		17		65	
04:30			5		5		10		16:30			69		19		88	
04:45			6	15	5	14	11	29	16:45			59	242	14	59	73	301
05:00			3		13		16		17:00			44		26		70	
05:15			2		19		21		17:15			39		8		47	
05:30			9		19		28		17:30			35		10		45	
05:45			6	20	23	74	29	94	17:45			27	145	14	58	41	203
06:00			12		28		40		18:00			22		11		33	
06:15			7		41		48		18:15			15		9		24	
06:30			11		43		54		18:30			9		6		15	
06:45			10	40	29	141	39	181	18:45			13	59	4	30	17	89
07:00			14		16		30		19:00			12		2		14	
07:15			10		22		32		19:15			8		3		11	
07:30			17		31		48		19:30			10		6		16	
07:45			17	58	37	106	54	164	19:45			10	40	3	14	13	54
08:00			11		40		51		20:00			6		12		18	
08:15			18		58		76		20:15			8		3		11	
08:30			17		67		84		20:30			8		10		18	
08:45			26	72	44	209	70	281	20:45			19	41	2	27	21	68
09:00			17		28		45		21:00			3		6		9	
09:15			26		37		63		21:15			12		8		20	
09:30			14		25		39		21:30			7		0		7	
09:45			20	77	19	109	39	186	21:45			10	32	2	16	12	48
10:00			15		12		27		22:00			7		4		11	
10:15			16		12		28		22:15			5		1		6	
10:30			22		7		29		22:30			1		5		6	
10:45			20	73	9	40	29	113	22:45			4	17	2	12	6	29
11:00			12		19		31		23:00			5		0		5	
11:15			20		12		32		23:15			2		1		3	
11:30			25		16		41		23:30			6		0		6	
11:45			24	81	16	63	40	144	23:45			5	18	5	6	10	24
TOTALS				476		795		1271	TOTALS				1204		455		1659
SPLIT %				37.5%		62.5%		43.4%	SPLIT %				72.6%		27.4%		56.6%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,680	1,250	2,930

AM Peak Hour			11:30	08:00	08:00	PM Peak Hour	15:45	16:15	15:45
AM Pk Volume			110	209	281	PM Pk Volume	252	76	309
Pk Hr Factor			0.743	0.780	0.836	Pk Hr Factor	0.913	0.731	0.878
7 - 9 Volume	0	0	130	315	445	4 - 6 Volume	0	0	387	117	504
7 - 9 Peak Hour			08:00	08:00	08:00	4 - 6 Peak Hour			16:00	16:15	16:00
7 - 9 Pk Volume	0	0	72	209	281	4 - 6 Pk Volume	0	0	242	76	301
Pk Hr Factor	0.000	0.000	0.692	0.780	0.836	Pk Hr Factor	0.000	0.000	0.877	0.731	0.855

Prepared by NDS/ATD

VOLUME

Maricopa Hwy Bet. Wheeler Ridge Access Rd & I-5 SB Ramps

Day: Saturday
Date: 12/15/2018

City: Mettler
Project #: CA18_2121_004

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,782	1,280	3,062

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			8		1		9		12:00			27		17		44	
00:15			6		1		7		12:15			36		23		59	
00:30			3		4		7		12:30			17		15		32	
00:45			4	21	1	7	5	28	12:45			37	117	14	69	51	186
01:00			5		0		5		13:00			26		11		37	
01:15			3		0		3		13:15			27		10		37	
01:30			2		3		5		13:30			42		17		59	
01:45			2	12	3	6	5	18	13:45			38	133	9	47	47	180
02:00			0		3		3		14:00			32		15		47	
02:15			0		4		4		14:15			30		10		40	
02:30			3		3		6		14:30			49		22		71	
02:45			2	5	1	11	3	16	14:45			57	168	13	60	70	228
03:00			1		5		6		15:00			61		16		77	
03:15			1		1		2		15:15			58		15		73	
03:30			3		3		6		15:30			65		13		78	
03:45			0	5	5	14	5	19	15:45			72	256	14	58	86	314
04:00			3		3		6		16:00			73		11		84	
04:15			1		2		3		16:15			48		20		68	
04:30			5		5		10		16:30			72		17		89	
04:45			5	14	5	15	10	29	16:45			63	256	12	60	75	316
05:00			3		11		14		17:00			53		23		76	
05:15			3		21		24		17:15			41		11		52	
05:30			6		22		28		17:30			38		13		51	
05:45			7	19	22	76	29	95	17:45			26	158	13	60	39	218
06:00			13		30		43		18:00			25		9		34	
06:15			8		38		46		18:15			16		11		27	
06:30			10		46		56		18:30			10		9		19	
06:45			12	43	26	140	38	183	18:45			15	66	3	32	18	98
07:00			13		19		32		19:00			14		3		17	
07:15			10		25		35		19:15			8		2		10	
07:30			16		33		49		19:30			10		5		15	
07:45			17	56	40	117	57	173	19:45			10	42	6	16	16	58
08:00			12		38		50		20:00			5		14		19	
08:15			16		61		77		20:15			8		5		13	
08:30			15		65		80		20:30			8		12		20	
08:45			28	71	41	205	69	276	20:45			16	37	3	34	19	71
09:00			16		31		47		21:00			7		5		12	
09:15			25		34		59		21:15			12		7		19	
09:30			13		22		35		21:30			7		0		7	
09:45			18	72	17	104	35	176	21:45			7	33	2	14	9	47
10:00			18		15		33		22:00			7		4		11	
10:15			16		13		29		22:15			6		1		7	
10:30			24		10		34		22:30			1		5		6	
10:45			20	78	10	48	30	126	22:45			3	17	2	12	5	29
11:00			14		21		35		23:00			6		0		6	
11:15			21		15		36		23:15			2		1		3	
11:30			23		16		39		23:30			6		0		6	
11:45			27	85	18	70	45	155	23:45			4	18	4	5	8	23
TOTALS				481		813		1294	TOTALS				1301		467		1768
SPLIT %				37.2%		62.8%		42.3%	SPLIT %				73.6%		26.4%		57.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,782	1,280	3,062

AM Peak Hour			11:30	08:00	08:00	PM Peak Hour	15:15	16:15	15:45
AM Pk Volume			113	205	276	PM Pk Volume	268	72	327
Pk Hr Factor			0.785	0.788	0.863	Pk Hr Factor	0.918	0.783	0.919
7 - 9 Volume	0	0	127	322	449	4 - 6 Volume	414	120	534
7 - 9 Peak Hour			08:00	08:00	08:00	4 - 6 Peak Hour	16:00	16:15	16:00
7 - 9 Pk Volume	0	0	71	205	276	4 - 6 Pk Volume	256	72	316
Pk Hr Factor	0.000	0.000	0.634	0.788	0.863	Pk Hr Factor	0.877	0.783	0.888

Prepared by NDS/ATD

VOLUME

Maricopa Hwy Bet. I-5 NB Ramps & S Sabodan St

Day: Saturday
Date: 12/15/2018

City: Mettler
Project #: CA18_2121_005

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,423	1,617	3,040

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			3		0		3		12:00			17		20		37	
00:15			4		6		10		12:15			19		24		43	
00:30			4		4		8		12:30			19		18		37	
00:45			1	12	3	13	4	25	12:45			26	81	20	82	46	163
01:00			6		6		12		13:00			16		15		31	
01:15			2		5		7		13:15			21		12		33	
01:30			0		4		4		13:30			34		16		50	
01:45			1	9	5	20	6	29	13:45			24	95	12	55	36	150
02:00			1		5		6		14:00			29		20		49	
02:15			1		3		4		14:15			22		17		39	
02:30			2		1		3		14:30			35		26		61	
02:45			0	4	6	15	6	19	14:45			45	131	20	83	65	214
03:00			0		7		7		15:00			49		20		69	
03:15			0		2		2		15:15			53		21		74	
03:30			1		3		4		15:30			55		25		80	
03:45			2	3	2	14	4	17	15:45			49	206	13	79	62	285
04:00			4		0		4		16:00			70		19		89	
04:15			1		4		5		16:15			41		27		68	
04:30			2		6		8		16:30			59		13		72	
04:45			8	15	4	14	12	29	16:45			59	229	16	75	75	304
05:00			3		17		20		17:00			55		24		79	
05:15			2		27		29		17:15			39		12		51	
05:30			6		25		31		17:30			30		12		42	
05:45			5	16	27	96	32	112	17:45			22	146	22	70	44	216
06:00			11		32		43		18:00			23		15		38	
06:15			10		57		67		18:15			12		12		24	
06:30			10		68		78		18:30			5		12		17	
06:45			16	47	35	192	51	239	18:45			6	46	5	44	11	90
07:00			9		14		23		19:00			14		5		19	
07:15			11		27		38		19:15			8		4		12	
07:30			9		42		51		19:30			12		9		21	
07:45			13	42	45	128	58	170	19:45			5	39	6	24	11	63
08:00			6		56		62		20:00			6		8		14	
08:15			13		73		86		20:15			10		7		17	
08:30			9		78		87		20:30			7		13		20	
08:45			16	44	65	272	81	316	20:45			8	31	10	38	18	69
09:00			18		38		56		21:00			9		12		21	
09:15			22		44		66		21:15			13		5		18	
09:30			8		30		38		21:30			6		1		7	
09:45			11	59	14	126	25	185	21:45			13	41	4	22	17	63
10:00			8		16		24		22:00			8		3		11	
10:15			11		10		21		22:15			6		4		10	
10:30			15		12		27		22:30			0		5		5	
10:45			13	47	11	49	24	96	22:45			4	18	4	16	8	34
11:00			12		21		33		23:00			3		3		6	
11:15			9		15		24		23:15			2		1		3	
11:30			15		25		40		23:30			5		5		10	
11:45			12	48	19	80	31	128	23:45			4	14	1	10	5	24
TOTALS				346		1019		1365	TOTALS				1077		598		1675
SPLIT %				25.3%		74.7%		44.9%	SPLIT %				64.3%		35.7%		55.1%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,423	1,617	3,040

AM Peak Hour				11:45	08:00	08:00	PM Peak Hour				16:00	14:30	15:15
AM Pk Volume				67	272	316	PM Pk Volume				229	87	305
Pk Hr Factor				0.882	0.872	0.908	Pk Hr Factor				0.818	0.837	0.857
7 - 9 Volume	0	0		86	400	486	4 - 6 Volume	0	0		375	145	520
7 - 9 Peak Hour				08:00	08:00	08:00	4 - 6 Peak Hour				16:00	16:15	16:00
7 - 9 Pk Volume	0	0		44	272	316	4 - 6 Pk Volume	0	0		229	80	304
Pk Hr Factor	0.000	0.000		0.688	0.872	0.908	Pk Hr Factor	0.000	0.000		0.818	0.741	0.854

Prepared by NDS/ATD

VOLUME

Maricopa Hwy Bet. S Sabodan St & SR-99 Ramps

Day: Saturday
Date: 12/15/2018

City: Mettler
Project #: CA18_2121_006

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,802	2,014	3,816

AM Period	NB	SB	EB		WB		TOTAL		PM Period	NB	SB	EB		WB		TOTAL	
00:00			3		0		3		12:00			20		20		40	
00:15			5		5		10		12:15			24		28		52	
00:30			2		5		7		12:30			26		23		49	
00:45			4	14	5	15	9	29	12:45			27	97	19	90	46	187
01:00			8		4		12		13:00			19		18		37	
01:15			2		6		8		13:15			26		17		43	
01:30			0		5		5		13:30			39		14		53	
01:45			1	11	5	20	6	31	13:45			27	111	14	63	41	174
02:00			1		6		7		14:00			29		20		49	
02:15			1		5		6		14:15			57		20		77	
02:30			2		1		3		14:30			51		26		77	
02:45			0	4	5	17	5	21	14:45			50	187	22	88	72	275
03:00			0		8		8		15:00			55		22		77	
03:15			0		4		4		15:15			75		22		97	
03:30			1		1		2		15:30			134		22		156	
03:45			3	4	3	16	6	20	15:45			60	324	15	81	75	405
04:00			3		0		3		16:00			124		19		143	
04:15			0		4		4		16:15			56		26		82	
04:30			5		10		15		16:30			65		12		77	
04:45			8	16	5	19	13	35	16:45			56	301	15	72	71	373
05:00			2		20		22		17:00			53		24		77	
05:15			4		38		42		17:15			35		13		48	
05:30			2		38		40		17:30			30		13		43	
05:45			8	16	61	157	69	173	17:45			19	137	25	75	44	212
06:00			18		66		84		18:00			25		14		39	
06:15			10		149		159		18:15			13		12		25	
06:30			11		135		146		18:30			6		12		18	
06:45			13	52	56	406	69	458	18:45			9	53	8	46	17	99
07:00			12		17		29		19:00			13		4		17	
07:15			12		30		42		19:15			12		5		17	
07:30			9		43		52		19:30			11		9		20	
07:45			13	46	50	140	63	186	19:45			7	43	7	25	14	68
08:00			9		59		68		20:00			6		8		14	
08:15			17		76		93		20:15			13		7		20	
08:30			14		84		98		20:30			5		18		23	
08:45			21	61	68	287	89	348	20:45			11	35	9	42	20	77
09:00			22		48		70		21:00			10		13		23	
09:15			23		48		71		21:15			14		7		21	
09:30			15		31		46		21:30			8		2		10	
09:45			14	74	20	147	34	221	21:45			15	47	3	25	18	72
10:00			9		20		29		22:00			8		4		12	
10:15			15		11		26		22:15			7		4		11	
10:30			14		16		30		22:30			2		5		7	
10:45			20	58	18	65	38	123	22:45			4	21	5	18	9	39
11:00			18		19		37		23:00			6		6		12	
11:15			14		15		29		23:15			2		1		3	
11:30			26		30		56		23:30			2		5		7	
11:45			15	73	23	87	38	160	23:45			7	17	1	13	8	30
TOTALS				429		1376		1805	TOTALS				1373		638		2011
SPLIT %				23.8%		76.2%		47.3%	SPLIT %				68.3%		31.7%		52.7%

DAILY TOTALS	NB	SB	EB	WB	Total
	0	0	1,802	2,014	3,816

AM Peak Hour			11:30	05:45	05:45	PM Peak Hour	15:15	14:30	15:15
AM Pk Volume			85	411	458	PM Pk Volume	393	92	471
Pk Hr Factor			0.817	0.690	0.720	Pk Hr Factor	0.733	0.885	0.755
7 - 9 Volume	0	0	107	427	534	4 - 6 Volume	0	0	438	147	585
7 - 9 Peak Hour			08:00	08:00	08:00	4 - 6 Peak Hour			16:00	16:15	16:00
7 - 9 Pk Volume	0	0	61	287	348	4 - 6 Pk Volume	0	0	301	77	373
Pk Hr Factor	0.000	0.000	0.726	0.854	0.888	Pk Hr Factor	0.000	0.000	0.607	0.740	0.652

KERN COUNTY STANDARDS FOR TRAFFIC ENGINEERING

Kern County
Chapter II. Traffic Studies

Sec. 902-1 Responsibility for Traffic Studies

Traffic studies may be required by the County in order to adequately assess the impacts of a development proposal on the existing and/or planned major street system. These impacts would typically be addressed in the "Traffic Circulation" section of an Environmental Impact Report (EIR). If a full EIR is not required, a Negative Declaration, or an expanded initial study addressing traffic impacts, may be required. The primary responsibility for assessing the traffic impacts associated with a proposed development shall be the developer's, with the County serving in a review capacity.

The following development proposals will require regional traffic studies prepared, in a format acceptable to the Kern County Roads Department, unless the study is waived.

902-1.01 Any Project proposed within the Kern County General Plan, where a Transportation Impact Fee Program has not been implemented and the increase in project trip generation during any peak hour is expected to exceed 50 vehicles.

902-1.02 Any Project proposed within the Rosamond-Willow Springs Specific Plan where the increase in project trip generation during any peak hour is expected to exceed 50 vehicles.

902-1.03 Any General/Specific Plan Amendment application, which is expected to intensify land use over that previously allowed in the General/Specific Plan whereby the increase in trip generation during any peak hour is expected to exceed 50 vehicles.

Where proposed projects, as noted above, are not expected to result in an increase in trip generation it is exempt from a regional traffic impact study. To be eligible, a traffic analysis shall be submitted and approved which computes trip generation with existing and proposed land uses. Said analysis shall show that increase in peak hour trip generation does not exceed 50 trips.

902-1.04 Special traffic studies may be required where special circumstances dictate the need for a traffic study (such as issues of safe access concerns, significant public opposition, request for deviation from standards, large commercial/ industrial centers, etc.).

902-1.05 Where access points are not defined at the time the traffic study is prepared, additional traffic work may be required when the access points are determined.

902-1.06 Transportation consultants are required to discuss projects with the Development Review Division prior to starting the study.

902-1.07 The traffic study shall be prepared, stamped and signed by a licensed Traffic Engineer or Civil Engineer experienced in preparing traffic studies.

Sec. 902-2 Traffic Study Format

In order to provide consistency and to facilitate staff review of traffic studies, the Caltrans “Guide for The Preparation of Traffic Impact Studies” shall be followed in the preparation of traffic studies.

(http://www.dot.ca.gov/hq/tpp/offices/ocp/igr_ceqa_files/tisguide.pdf)

Facilities to be studied shall be any City, State or County facility (mainline, interchange, structure, intersection or any project on the Transportation Impact Fee (TIF) list) when the peak hour trip generation onto said facility exceeds 50 trips. For those facilities currently experiencing level-of-service (LOS) "C" or less, the following "sliding scale" of "added peak project trips" shall be applied as the procedure to determine whether the facility should be included:

EXISTING LOS	ADDED PEAK PROJECT TRIPS
"C"	50
"D"	40
"E"	20
"F"	10

902-2.01 Project Trip Generation and Design Hour Volumes must be calculated using the data contained within the Institute of Transportation Engineer's (ITE) Trip Generation Manual, latest edition, or more appropriate local data as approved by the Traffic Engineer. (Formula Averaging is NOT acceptable for the calculation of Peak Hour trip generation rates as published in the ITE Trip Generation Manual, latest edition.)

902-2.02 Capacity Analysis must be determined by the methods contained within the Highway Capacity Manual (HCM), latest edition.

902-2.03 Traffic Signal requirements will be determined by the warrants contained in the California Manual on Uniform Traffic Control Devices (California MUTCD), latest edition.

902-2.04 Proportionate Shares along State highways shall be calculated using the Caltrans formula. All other County Proportionate Shares are calculated with the following formula:

(Project Traffic/Future Forecasted Traffic) x 100

CALTRANS TRAFFIC IMPACT STUDY (TIA) GUIDELINES

GUIDE FOR THE PREPARATION

OF

TRAFFIC IMPACT STUDIES

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

December 2002

PREFACE

The California Department of Transportation (Caltrans) has developed this "Guide for the Preparation of Traffic Impact Studies" in response to a survey of cities and counties in California. The purpose of that survey was to improve the Caltrans local development review process (also known as the Intergovernmental Review/California Environmental Quality Act or IGR/CEQA process). The survey indicated that approximately 30 percent of the respondents were not aware of what Caltrans required in a traffic impact study (TIS).

In the early 1990s, the Caltrans District 6 office located in Fresno identified a need to provide better quality and consistency in the analysis of traffic impacts generated by local development and land use change proposals that effect State highway facilities. At that time, District 6 brought together both public and private sector expertise to develop a traffic impact study guide. The District 6 guide has proven to be successful at promoting consistency and uniformity in the identification and analysis of traffic impacts generated by local development and land use changes.

The guide developed in Fresno was adapted for statewide use by a team of Headquarters and district staff. The guide will provide consistent guidance for Caltrans staff who review local development and land use change proposals as well as inform local agencies of the information needed for Caltrans to analyze the traffic impacts to State highway facilities. The guide will also benefit local agencies and the development community by providing more expeditious review of local development proposals.

Even though sound planning and engineering practices were used to adapt the Fresno TIS guide, it is anticipated that changes will occur over time as new technologies and more efficient practices become available. To facilitate these changes, Caltrans encourages all those who use this guide to contact their nearest district office (i.e., IGR/CEQA Coordinator) to coordinate any changes with the development team.

ACKNOWLEDGEMENTS

The District 6 traffic impact study guide provided the impetus and a starting point for developing the statewide guide. Special thanks is given to Marc Birnbaum for recognizing the need for a TIS guide and for his valued experience and vast knowledge of land use planning to significantly enhance the effort to adapt the District 6 guide for statewide use. Randy Treece from District 6 provided many hours of coordination, research and development of the original guide and should be commended for his diligent efforts. Sharri Bender Ehlert of District 6 provided much of the technical expertise in the adaptation of the District 6 guide and her efforts are greatly appreciated.

A special thanks is also given to all those Cities, Counties, Regional Agencies, Congestion Management Agencies, Consultants, and Caltrans Employees who reviewed the guide and provided input during the development of this Guide for the Preparation of Traffic Impact Studies.

TABLE OF CONTENTS

Contents		Page Number
PREFACE and ACKNOWLEDGEMENTS		ii
I.	INTRODUCTION	1
II.	WHEN A TRAFFIC IMPACT STUDY IS NEEDED	1
A.	Trip Generation Thresholds	2
B.	Exceptions	
C.	Updating An Existing Traffic Impact Study	2
III.	SCOPE OF TRAFFIC IMPACT STUDY	2
A.	Boundaries of the Traffic Impact Study	2
B.	Traffic Analysis Scenarios	2
IV.	TRAFFIC DATA	4
A.	Trip Generation	4
B.	Traffic Counts	4
C.	Peak Hours	4
D.	Travel Forecasting (Transportation Modeling)	5
V.	TRAFFIC IMPACT ANALYSIS METHODOLOGIES	5
A.	Freeway Sections	5
B.	Weaving Areas	5
C.	Ramps and Ramp Junctions	5
D.	Multi-lane Rural and Urban Highways	5
E.	Two-lane Highways	5
F.	Signalized Intersections	5
G.	Unsignalized Intersections	5
H.	Transit Capacity	5
I.	Pedestrians	5
J.	Bicycles	5
K.	Caltrans Criteria/Warrants	5
L.	Channelization	5
VI.	MITIGATION MEASURES	6

Appendix "A" Minimum Contents of Traffic Impact Study
Appendix "B" Methodology for Calculating Equitable Mitigation Measures
Appendix "C" Measures of Effectiveness by Facility Type

I. INTRODUCTION

Caltrans desires to provide a safe and efficient State transportation system for the citizens of California pursuant to various Sections of the California Streets and Highway Code. This is done in partnership with local and regional agencies through procedures established by the California Environmental Quality Act (CEQA) and other land use planning processes. The intent of this guide is to provide a starting point and a consistent basis in which Caltrans evaluates traffic impacts to State highway facilities. The applicability of this guide for local streets and roads (non-State highways) is at the discretion of the effected jurisdiction.

Caltrans reviews federal, State, and local agency development projects[1], and land use change proposals for their potential impact to State highway facilities. The primary objectives of this guide is to provide:

- guidance in determining if and when a traffic impact study (TIS) is needed,
- consistency and uniformity in the identification of traffic impacts generated by local land use proposals,
- consistency and equity in the identification of measures to mitigate the traffic impacts generated by land use proposals,
- lead agency[2] officials with the information necessary to make informed decisions regarding the existing and proposed transportation infrastructure (see Appendix A, Minimum Contents of a TIS)
- TIS requirements early in the planning phase of a project (i.e., initial study, notice of preparation, or earlier) to eliminate potential delays later,
- a quality TIS by agreeing to the assumptions, data requirements, study scenarios, and analysis methodologies prior to beginning the TIS, and
- early coordination during the planning phases of a project to reduce the time and cost of preparing a TIS.

II. WHEN A TRAFFIC IMPACT STUDY IS NEEDED

The level of service[3] (LOS) for operating State highway facilities is based upon measures of effectiveness (MOEs). These MOEs (see Appendix "C-2") describe the measures best suited for analyzing State highway facilities (i.e., freeway segments, signalized intersections, on- or off-ramps, etc.). Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" (see Appendix "C-3") on State highway 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 the appropriate target LOS, the existing MOE should be maintained.

---

[1] "Project" refers to activities directly undertaken by government, financed by government, or requiring a permit or other approval from government as defined in Section 21065 of the Public Resources Code and Section 15378 of the California Code of Regulations.

[2] "Lead Agency" refers to the public agency that has the principal responsibility for carrying out or approving a project. Defined in Section 21165 of the Public Resources Code, the "California Environmental Quality Act, and Section 15367 of the California Code of Regulations.

[3] "Level of service" as defined in the latest edition of the Highway Capacity Manual, Transportation Research Board, National Research Council.

A. Trip Generation Thresholds

The following criterion is a starting point in determining when a TIS is needed. When a project:

1. Generates over 100 peak hour trips assigned to a State highway facility
2. Generates 50 to 100 peak hour trips assigned to a State highway facility – and, affected State highway facilities are experiencing noticeable delay; approaching unstable traffic flow conditions (LOS "C" or "D").
3. Generates 1 to 49 peak hour trips assigned to a State highway facility – the following are examples that may require a full TIS or some lesser analysis[4]:
    a. Affected State highway facilities experiencing significant delay; unstable or forced traffic flow conditions (LOS "E" or "F").
    b. The potential risk for a traffic incident is significantly increased (i.e., congestion related collisions, non-standard sight distance considerations, increase in traffic conflict points, etc.).
    c. Change in local circulation networks that impact a State highway facility (i.e., direct access to State highway facility, a non-standard highway geometric design, etc.).

Note: A traffic study may be as simple as providing a traffic count to as complex as a microscopic simulation. The appropriate level of study is determined by the particulars of a project, the prevailing highway conditions, and the forecasted traffic.

B. Exceptions

Exceptions require consultation between the lead agency, Caltrans, and those preparing the TIS. When a project's traffic impact to a State highway facility can clearly be anticipated without a study and all the parties involved (lead agency, developer, and the Caltrans district office) are able to negotiate appropriate mitigation, a TIS may not be necessary.

C. Updating An Existing Traffic Impact Study

A TIS requires updating when the amount or character of traffic is significantly different from an earlier study. Generally a TIS requires updating every two years. A TIS may require updating sooner in rapidly developing areas and not as often in slower developing areas. In these cases, consultation with Caltrans is strongly recommended.

III. SCOPE OF TRAFFIC IMPACT STUDY

Consultation between the lead agency, Caltrans, and those preparing the TIS is recommended before commencing work on the study to establish the appropriate scope. At a minimum, the TIS should include the following:

A. Boundaries of the Traffic Impact Study

All State highway facilities impacted in accordance with the criteria in Section II should be studied. Traffic impacts to local streets and roads can impact intersections with State highway facilities. In these cases, the TIS should include an analysis of adjacent local facilities, upstream and downstream, of the intersection (i.e., driveways, intersections, and interchanges) with the State highway.

[4] A "lesser analysis" may include obtaining traffic counts, preparing signal warrants, or a focused TIS, etc.

B. Traffic Analysis Scenarios

Caltrans is interested in the effects of general plan updates and amendments as well as the effects of specific project entitlements (i.e., site plans, conditional use permits, sub-divisions, rezoning, etc.) that have the potential to impact a State highway facility. The complexity or magnitude of the impacts of a project will normally dictate the scenarios necessary to analyze the project. Consultation between the lead agency, Caltrans, and those preparing the TIS is recommended to determine the appropriate scenarios for the analysis. The following scenarios should be addressed in the TIS when appropriate:

1. When only a general plan amendment or update is being sought, the following scenarios are required:
   a) Existing Conditions - Current year traffic volumes and peak hour LOS analysis of effected State highway facilities.
   b) Proposed Project Only with Select Zone[5] Analysis - Trip generation and assignment for build-out of general plan.
   c) General Plan Build-out Only - Trip assignment and peak hour LOS analysis. Include current land uses and other pending general plan amendments.
   d) General Plan Build-out Plus Proposed Project - Trip assignment and peak hour LOS analysis. Include proposed project and other pending general plan amendments.

2. When a general plan amendment is not proposed and a proposed project is seeking specific entitlements (i.e., site plans, conditional use permits, sub-division, rezoning, etc.), the following scenarios must be analyzed in the TIS:
   a) Existing Conditions - Current year traffic volumes and peak hour LOS analysis of effected State highway facilities.
   b) Proposed Project Only - Trip generation, distribution, and assignment in the year the project is anticipated to complete construction.
   c) Cumulative Conditions (Existing Conditions Plus Other Approved and Pending Projects Without Proposed Project) - Trip assignment and peak hour LOS analysis in the year the project is anticipated to complete construction.
   d) Cumulative Conditions Plus Proposed Project (Existing Conditions Plus Other Approved and Pending Projects Plus Proposed Project) - Trip assignment and peak hour LOS analysis in the year the project is anticipated to complete construction.
   e) Cumulative Conditions Plus Proposed Phases (Interim Years) - Trip assignment and peak hour LOS analysis in the years the project phases are anticipated to complete construction.
3. In cases where the circulation element of the general plan is not consistent with the land use element or the general plan is outdated and not representative of current or future forecasted conditions, all scenarios from Sections III. B. 1. and 2. should be utilized with the exception of duplicating of item 2.a.

[5] "Select zone" analysis represents a project only traffic model run, where the project's trips are distributed and assigned along a loaded highway network. This procedure isolates the specific impact on the State highway network.

IV. TRAFFIC DATA

Prior to any fieldwork, consultation between the lead agency, Caltrans, and those preparing the TIS is recommended to reach consensus on the data and assumptions necessary for the study. The following elements are a starting point in that consideration.

A. Trip Generation

The latest edition of the Institute of Transportation Engineers' (ITE) TRIP GENERATION report should be used for trip generation forecasts. Local trip generation rates are also acceptable if appropriate validation is provided to support them.

1. Trip Generation Rates – When the land use has a limited number of studies to support the trip generation rates or when the Coefficient of Determination (R^2) is below 0.75, consultation between the lead agency, Caltrans and those preparing the TIS is recommended.
2. Pass-by Trips[6] – Pass-by trips are only considered for retail oriented development. Reductions greater than 15% requires consultation and acceptance by Caltrans. The justification for exceeding a 15% reduction should be discussed in the TIS.
3. Captured Trips[7] – Captured trip reductions greater than 5% requires consultation and acceptance by Caltrans. The justification for exceeding a 5% reduction should be discussed in the TIS.
4. Transportation Demand Management (TDM) – Consultation between the lead agency and Caltrans is essential before applying trip reduction for TDM strategies.

NOTE: Reasonable reductions to trip generation rates are considered when adjacent State highway volumes are sufficient (at least 5000 ADT) to support reductions for the land use.

B. Traffic Counts

Prior to field traffic counts, consultation between the lead agency, Caltrans and those preparing the TIS is recommended to determine the level of detail (e.g., location, signal timing, travel speeds, turning movements, etc.) required at each traffic count site. All State highway facilities within the boundaries of the TIS should be considered. Common rules for counting vehicular traffic include but are not limited to:

1. Vehicle counts should be conducted on Tuesdays, Wednesdays, or Thursdays during weeks not containing a holiday and conducted in favorable weather conditions.
2. Vehicle counts should be conducted during the appropriate peak hours (see peak hour discussion below).
3. Seasonal and weekend variations in traffic should also be considered where appropriate (i.e., recreational routes, tourist attractions, harvest season, etc.).

C. Peak Hours

To eliminate unnecessary analysis, consultation between the lead agency, Caltrans and those preparing the TIS is recommended during the early planning stages of a project. In general, the TIS should include a morning (a.m.) and an evening (p.m.) peak hour analyses. Other peak hours (e.g., 11:30 a.m. to 1:30 p.m., weekend, holidays, etc.) may also be required to determine the significance of the traffic impacts generated by a project.

[6] "Pass-by" trips are made as intermediate stops between an origin and a primary trip destination (i.e., home to work, home to shopping, etc.).
[7] "Captured Trips" are trips that do not enter or leave the driveways of a project's boundary within a mixed-use development.

D. Travel Forecasting (Transportation Modeling)

The local or regional traffic model should reflect the most current land use and planned improvements (i.e., where programming or funding is secured). When a general plan build-out model is not available, the closest forecast model year to build-out should be used. If a traffic model is not available, historical growth rates and current trends can be used to project future traffic volumes. The TIS should clearly describe any changes made in the model to accommodate the analysis of a proposed project.

V. TRAFFIC IMPACT ANALYSIS METHODOLOGIES

Typically, the traffic analysis methodologies for the facility types indicated below are used by Caltrans and will be accepted without prior consultation. When a State highway has saturated flows, the use of a micro-simulation model is encouraged for the analysis (please note however, the micro-simulation model must be calibrated and validated for reliable results). Other analysis methods may be accepted, however, consultation between the lead agency, Caltrans and those preparing the TIS is recommended to agree on the data necessary for the analysis.

A. Freeway Segments – Highway Capacity Manual (HCM)*, operational analysis
B. Weaving Areas – Caltrans Highway Design Manual (HDM)
C. Ramps and Ramp Junctions – HCM*, operational analysis or Caltrans HDM, Caltrans Ramp Metering Guidelines (most recent edition)
D. Multi-Lane Highways – HCM*, operational analysis
E. Two-lane Highways – HCM*, operational analysis
F. Signalized Intersections[8] – HCM*, Highway Capacity Software**, operational analysis, TRAFFIX™**, Synchro**, see footnote 8
G. Unsignalized Intersections – HCM*, operational analysis, Caltrans Traffic Manual for signal warrants if a signal is being considered
H. Transit – HCM*, operational analysis
I. Pedestrians – HCM*
J. Bicycles – HCM*
K. Caltrans Criteria/Warrants – Caltrans Traffic Manual (stop signs, traffic signals, freeway lighting, conventional highway lighting, school crossings)
L. Channelization – Caltrans guidelines for Reconstruction of Intersections, August 1985, Ichiro Fukutome

*The most current edition of the Highway Capacity Manual, Transportation Research Board, National Research Council, should be used.

****NOTE**: Caltrans does not officially advocate the use of any special software. However, consistency with the HCM is advocated in most but not all cases. The Caltrans local development review units utilize the software mentioned above. If different software or analytical techniques are used for the TIS then consultation between the lead agency, Caltrans and those preparing the TIS is recommended. Results that are significantly different than those produced with the analytical techniques above should be challenged.

[8] The procedures in the Highway Capacity Manual "do not explicitly address operations of closely spaced signalized intersections. Under such conditions, several unique characteristics must be considered, including spill-back potential from the downstream intersection to the upstream intersection, effects of downstream queues on upstream saturation flow rate, and unusual platoon dispersion or compression between intersections. An example of such closely spaced operations is signalized ramp terminals at urban interchanges. Queue interactions between closely spaced intersections may seriously distort the procedures in" the HCM.

VI. MITIGATION MEASURES

The TIS should provide the nexus [Nollan v. California Coastal Commission, 1987, 483 U.S. 825 (108 S.Ct. 314)] between a project and the traffic impacts to State highway facilities. The TIS should also establish the rough proportionality [Dolan v. City of Tigard, 1994, 512 U.S. 374 (114 S. Ct. 2309)] between the mitigation measures and the traffic impacts. One method for establishing the rough proportionality or a project proponent's equitable responsibility for a project's impacts is provided in Appendix "B." Consultation between the lead agency, Caltrans and those preparing the TIS is recommended to reach consensus on the mitigation measures and who will be responsible.

Mitigation measures must be included in the traffic impact analysis. This determines if a project's impacts can be eliminated or reduced to a level of insignificance. Eliminating or reducing impacts to a level of insignificance is the standard pursuant to CEQA and the National Environmental Policy Act (NEPA). The lead agency is responsible for administering the CEQA review process and has the principal authority for approving a local development proposal or land use change. Caltrans, as a responsible agency, is responsible for reviewing the TIS for errors and omissions that pertain to State highway facilities. However, the authority vested in the lead agency under CEQA does not take precedence over other authorities in law.

If the mitigation measures require work in the State highway right-of-way an encroachment permit from Caltrans will be required. This work will also be subject to Caltrans standards and specifications. Consultation between the lead agency, Caltrans and those preparing the TIS early in the planning process is strongly recommended to expedite the review of local development proposals and to reduce conflicts and misunderstandings in both the local agency CEQA review process as well as the Caltrans encroachment permit process.

APPENDIX “A”

MINIMUM CONTENTS

OF A

TRAFFIC IMPACT STUDY

MINIMUM CONTENTS OF TRAFFIC IMPACT STUDY REPORT

I. EXECUTIVE SUMMARY

II. TABLE OF CONTENTS

A. List of Figures (Maps)
B. List of Tables

III. INTRODUCTION

A. Description of the proposed project
B. Location of project
C. Site plan including all access to State highways (site plan, map)
D. Circulation network including all access to State highways (vicinity map)
E. Land use and zoning
F. Phasing plan including proposed dates of project (phase) completion
G. Project sponsor and contact person(s)
H. References to other traffic impact studies

IV. TRAFFIC ANALYSIS

A. Clearly stated assumptions
B. Existing and projected traffic volumes (including turning movements), facility geometry (including storage lengths), and traffic controls (including signal phasing and multi-signal progression where appropriate) (figure)
C. Project trip generation including references (table)
D. Project generated trip distribution and assignment (figure)
E. LOS and warrant analyses - existing conditions, cumulative conditions, and full build of general plan conditions with and without project

V. CONCLUSIONS AND RECOMMENDATIONS

A. LOS and appropriate MOE quantities of impacted facilities with and without mitigation measures
B. Mitigation phasing plan including dates of proposed mitigation measures
C. Define responsibilities for implementing mitigation measures
D. Cost estimates for mitigation measures and financing plan

VI. APPENDICES

A. Description of traffic data and how data was collected
B. Description of methodologies and assumptions used in analyses
C. Worksheets used in analyses (i.e., signal warrant, LOS, traffic count information, etc.)

APPENDIX “B”

METHODOLOGY FOR

CALCULATING EQUITABLE

MITIGATION MEASURES

METHOD FOR CALCULATING EQUITABLE MITIGATION MEASURES

The methodology below is neither intended as, nor does it establish, a legal standard for determining equitable responsibility and cost of a project's traffic impact, the intent is to provide:

1. A starting point for early discussions to address traffic mitigation equitably.
2. A means for calculating the equitable share for mitigating traffic impacts.
3. A means for establishing rough proportionality [Dolan v. City of Tigard, 1994, 512 U.S. 374 (114 S. Ct. 2309)].

The formulas should be used when:

- A project has impacts that do not immediately warrant mitigation, but their cumulative effects are significant and will require mitigating in the future.
- A project has an immediate impact and the lead agency has assumed responsibility for addressing operational improvements

NOTE: This formula is not intended for circumstances where a project proponent will be receiving a substantial benefit from the identified mitigation measures. In these cases, (e.g., mid-block access and signalization to a shopping center) the project should take full responsibility to toward providing the necessary infrastructure.

EQUITABLE SHARE RESPONSIBILITY: **Equation C-1**

NOTE: $T_E < T_B$, see explanation for T_B below.

$$P = \frac{T}{T_B - T_E}$$

Where:

P = The equitable share for the proposed project's traffic impact.

T = The vehicle trips generated by the project during the peak hour of adjacent State highway facility in vehicles per hour, vph.

T_B = The forecasted traffic volume on an impacted State highway facility at the time of general plan build-out (e.g., 20 year model or the furthest future model date feasible), vph.

T_E = The traffic volume existing on the impacted State highway facility plus other approved projects that will generate traffic that has yet to be constructed/opened, vph.

EQUITABLE COST: **Equation C-2**

$$C = P\ (C_T)$$

Where:

C = The equitable cost of traffic mitigation for the proposed project, ($). (Rounded to nearest one thousand dollars)

P = The equitable share for the project being considered.

C_T = The total cost estimate for improvements necessary to mitigate the forecasted traffic demand on the impacted State highway facility in question at general plan build-out, ($).

NOTES

1. Once the equitable share responsibility and equitable cost has been established on a per trip basis, these values can be utilized for all projects on that State highway facility until the forecasted general plan build-out model is revised.
2. Truck traffic should be converted to passenger car equivalents before utilizing these equations (see the Highway Capacity Manual for converting to passenger car equivalents).

3. If the per trip cost is not used for all subsequent projects, then the equation below will be necessary to determine the costs for individual project impact and will require some additional accounting.

Equation C-2.A

$$C = P\left(C_T - C_C\right)$$

Where:

C = Same as equation C-2.

P = Same as equation C-2.

C_T = Same as equation C-2.

C_C = The combined dollar contributions paid and committed prior to current project's contribution. This is necessary to provide the appropriate cost proportionality. Example: For the first project to impact the State highway facility in question since the total cost (C_T) estimate for improvements necessary to mitigate the forecasted traffic demand, C_C would be equal to zero. For the second project however, C would equal $P_2(C_T - C_1)$ and for the third project to come along C would equal $P_3[C_T - (C_1 + C_2)]$ and so on until build-out or the general plan build-out was recalculated.

APPENDIX “C”

MEASURES OF EFFECTIVENESS

BY

FACILITY TYPE

MEASURES OF EFFECTIVENESS BY FACILITY TYPE

TYPE OF FACILITY	MEASURE OF EFFECTIVENESS (MOE)
Basic Freeway Segments	Density (pc/mi/ln)
Ramps	Density (pc/mi/ln)
Ramp Terminals	Delay (sec/veh)
Multi-Lane Highways	Density (pc/mi/ln)
Two-Lane Highways	Percent-Time-Following Average Travel Speed (mi/hr)
Signalized Intersections	Control Delay per Vehicle (sec/veh)
Unsignalized Intersections	Average Control Delay per Vehicle (sec/veh)
Urban Streets	Average Travel Speed (mi/hr)

Measures of effectiveness for level of service definitions located in the most recent version of the Highway Capacity Manual, Transportation Research Board, National Research Council.

Transition between LOS "C" and LOS "D" Criteria

(Reference Highway Capacity Manual)

BASIC FREEWAY SEGMENTS @ 65 mi/hr

LOS	Maximum Density (pc/mi/ln)	Minimum Speed (mph)	Maximum v/c	Maximum Service Flow Rate (pc/hr/ln)
A	11	65.0	0.30	710
B	18	65.0	0.50	1170
C	26	64.6	0.71	1680
D	35	59.7	0.89	2090
E	45	52.2	1.00	2350

SIGNALIZED INTERSECTIONS and RAMP TERMINALS

LOS	Control Delay per Vehicle (sec/veh)
A	**≤ 10**
B	**> 10 - 20**
C	**> 20 - 35**
D	**> 35 - 55**
E	**> 55 - 80**
F	**> 80**

MULTI-LANE HIGHWAYS @ 55 mi/hr

LOS	Maximum Density (pc/mi/ln)	Minimum Speed (mph)	Maximum v/c	Maximum Service Flow Rate (pc/hr/ln)
A	11	55.0	0.29	600
B	18	55.0	0.47	990
C	26	54.9	0.68	1430
D	35	52.9	0.88	1850
E	41	51.2	1.00	2100

Dotted line represents the transition between LOS "C" and LOS "D"

TWO-LANE HIGHWAYS

LOS	Percent Time-Spent-Following	Average Travel Speed (mi/hr)
A	≤ 35	> 55
B	> 35 - 50	> 50 - 55
C	> 50 - 65	> 45 - 50
D	> 65 - 80	> 40 - 45
E	> 80	≤ 40

URBAN STREETS

Urban Street Class	I	II	III	IV
Range of FFS	55 to 45 mi/hr	45 to 35 mi/hr	35 to 30 mi/hr	35 to 25 mi/hr
Typical FFS	50 mi/hr	40 mi/hr	35 mi/hr	30 mi/hr
LOS	Average Travel Speed (mi/hr)			
A	> 42	> 35	> 30	> 25
B	> 34 - 42	> 28 - 35	> 24 - 30	> 19 - 25
C	> 27 - 34	> 22 - 28	> 18 - 24	> 13 - 19
D	> 21 - 27	> 17 - 22	> 14 - 18	> 9 - 13
E	> 16 - 21	> 13 - 17	> 10 - 14	> 7 - 9
F	≤ 16	≤ 13	≤ 10	≤ 7

Dotted line represents the transition between LOS "C" and LOS "D"

GRAY DAVIS
Governor

MARIA CONTRERAS-SWEET
Secretary
Business, Transportation and Housing Agency

JEFF MORALES
Director
California Department of Transportation

RANDELL H. IWASAKI
Deputy Director
Maintenance and Operations

BRIAN J. SMITH
Deputy Director
Planning and Modal Programs

JOHN A. (Jack) BODA
Chief
Division of Traffic Operations

JOAN SOLLENBERGER
Chief
Division of Transportation Planning

Additional copies of these guidelines can be copied from the internet at,
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/

CITY OF SAN DIEGO GUIDELINES FOR TRAFFIC IMPACT STUDIES, AND

TRAFFIC IMPACT STUDY MANUAL

JULY
1998

City of San Diego

TRAFFIC IMPACT STUDY MANUAL

FINAL

JULY 1998

This information, document, or portions thereof, will be made available in alternative formats

TABLE OF CONTENTS

PREFACE

1. INTRODUCTION

Need and Purpose 1
Review Process 1
Objectives 1
Who Should Prepare Traffic Impact Studies? 1
Who Should Review Traffic Impact Studies? 2
Standard Review Times 2
Ethics and Objectivity 2

2. INITIATING TRAFFIC IMPACT STUDIES

Warrants for Studies 3
Extent of Study 3
Study Area 5
Staff Consultations 6
Screen Check Procedures 7

3. CONTENT AND FRAMEWORK

Selection of Horizon Years 9
Project Phasing 9
Peak Traffic Hours 9
Background Study Area Data 10
Field Reconnaissance and Data Collection 10

4. NON-SITE TRAFFIC

Build-up Method Using Specific Developments 11
Community Plan, Regional or Subregional Modeled Volumes 11
Trends or Growth Rates 11
Cumulative Analysis Due to Precedence Setting 11

5. SITE TRAFFIC GENERATION

General Procedure 12
Special or Unusual Generators 12
Driveway Rates Versus Cumulative rates 13
Adjustments for Developments Near Transit Stations 13
Adjustments for Mixed-Use Developments 14

6. SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT

Trip Distribution 15
Trip Assignment 15
Pass-by Trips 16
Congestion Management Program Procedures 16

7. ANALYSIS
Total Traffic Estimate 17
Identification of Impacts and Deficiencies 17
Acceptable Level of Service....17
Levels of Significance 17
Signalized Intersection Analysis....17
Signal Warrant Analysis 18
Unsignalized Intersection Analysis....20
Arterial Analysis....20
Freeway Interchange Analysis 20

8. SITE ACCESS AND OFF-SITE IMPROVEMENTS
Recommendations 21
Project Phasing 21
Intersection Lane Configurations....21

9. ON-SITE PLANNING AND PARKING
Access Points....22
Vehicular Queuing Storage 23
Internal Vehicular Circulation 23
Service and Delivery Vehicles....23
Emergency Vehicle Access....24
Parking....24
Pedestrian, Transit and Bicycle Considerations 24

LIST OF FIGURES

Figure 1 – Traffic Impact Study Requirement Flow Chart 4

LIST OF TABLES

Table 1 – Allowable Increase in V/C 6
Table 2 – Roadway Classifications, Levels of Service and Average Daily Traffic 8
Table 3 – Recommended Trip Reductions at Transit Stations 13
Table 4 – Recommended Trip Reductions for Mixed-Use Developments....14
Table 5 – Significant Transportation Impact Measure 18
Table 6 – Inputs and Assumptions for Signalized Intersection Analysis....19

LIST OF APPENDICES

Appendix 1 – Screen Check....25
Appendix 2 – Ramp Meter Analysis 28
Appendix 3 – Parking Requirements....30
Appendix 4 – Intersection Lane Configurations....38

PREFACE

This manual was prepared and updated by the City's Transportation Development Section of the Land Development Review Division of the Development Services Center. Procedures addressed in this manual include:

- Procedure for determining the type of traffic impact study needed: computerized or non-computerized

- Requirements for performing traffic impact studies

The manual was originally prepared to replace Department Instructions formulated in 1987 regarding traffic impact study procedures. These instructions had become obsolete in many areas and had been replaced by unwritten practices that reflected changing legislation, updated analysis techniques and new staff with varying perspectives. This led to a sense of confusion among consultants. A meeting was held in November 1992 to solicit feedback from traffic consultants on City procedures and reviews. The lack of predictability was a universal complaint. It had become common for study preparers to throw together an incomplete draft study simply to determine staff requirements for their particular study. The City embarked on an organization-wide effort to improve the development review process. As part of this effort, Transportation Development Section staff began to rewrite the above mentioned Department Instructions. All area traffic consultants were invited to serve on a task force to provide input and direction to staff on the traffic impact study process. It was decided that the Department Instructions would be replaced with a Traffic Impact Study Manual that would be more user friendly and easily updated to reflect new methodologies and practices. The original Traffic Impact Study Manual was produced in August 1993.

Equally important to the clearly defined process is an aggressive commitment from the reviewers (the Transportation Development Section) to embrace a partnership with the landowner/developer and the preparer (traffic consultant) to produce a high quality document that adequately serves the needs of all parties. This will also enable the review process to be completed in an expeditious manner.

This 1998 update reflects revisions to the City's land development code and improvements in capacity analysis techniques and increases consistency with the City's overall California Environmental Quality Act (CEQA) review process.

1. INTRODUCTION

This manual describes the key elements required for preparing and reviewing traffic impact studies for new and expanding land developments in San Diego. Not all analysis described in this report will have application to each particular study. Applicable analysis will be determined by the Transportation Development Section staff, in consultation with the traffic study preparer. These procedures indicated in this text are not intended to cover every conceivable situation. New procedures and analysis techniques may be needed to evaluate unique situations.

Need and Purpose

The primary purpose of this manual is to provide guidance to consultants on how to prepare traffic impact studies in San Diego. It is intended to ensure consistency among consultants, predictability to the preparer, consistency among reviewers and conformance with all applicable City and state regulations. Every attempt was made to ensure consistency with national practices prescribed in TRAFFIC ACCESS AND IMPACT STUDIES FOR SITE DEVELOPMENT, Institute of Transportation Engineers, 1991 and current local practices. This manual generally memorializes current practices. Traffic Impact Studies are intended to identify the transportation impacts of proposed development projects and to determine the need for any improvements to the adjacent and nearby road system to maintain a satisfactory level of service, safety and the appropriate access provisions for a proposed development.

Review Process

Objectives

Ideally, the review process should be iterative and should begin when the development's planning is initiated, not after a development has been planned and a traffic study completed. This will ensure that City guidelines and requirements are met while allowing the landowner/developer's goals to be accomplished. It is recommended that the developer, study preparer and staff reviewer meet at the earliest possible point in the study process.

Who Should Prepare Traffic Impact Studies?

Traffic impact studies shall be prepared under the supervision of a qualified and experienced Traffic Engineer who has specific training and experience in traffic related to preparing traffic studies for existing or proposed developments. The ability to forecast and analyze traffic needs for both developments and roadway systems is essential. All traffic impact studies shall be stamped by a California Registered Traffic Engineer.

Who Should Review Traffic Impact Studies?

Traffic impact study reviews should be conducted or directed by properly trained transportation engineers, under supervision of a California Registered Traffic Engineer. In some cases, staff from other jurisdictions (cities, county, SANDAG, Caltrans or MTDB) should be included in the review process. Reviewers should have an understanding of the development process and an understanding of City transportation policies and practices. Reviewers should be competent and confident to be able to apply sound engineering judgement in the scoping and review of traffic impact studies. Reviewers should be open minded to be able to seek solutions to landowner/developer desires while ensuring that City standards and objectives are met.

Standard Review Times

The following standards have been set to ensure that traffic impact studies are reviewed quickly. The City's goal is to complete 90 percent of all studies at or before the review times shown.

Standard City Review Times

TYPE OF STUDY	**REVIEW TIME** (Working Days)
Traffic Study Screen Check	5 days
Small Traffic Studies	
a. First Submittal	15 days
b. Second and Third Submittals	10 days
Large Traffic Studies	
a. First and Second Submittals	20 days
b. Third Submittals	15 days
Complex Traffic Studies	
a. First Submittal	30 days
b. Second Submittal	20 days
c. Third Submittal	15 days

Ethics and Objectivity

Although study preparers and reviewers will sometimes have different objectives and perspectives, all parties involved in the process should adhere to established engineering ethics and conduct all analysis and review objectively and professionally.

2. INITIATING TRAFFIC IMPACT STUDIES

Warrants for a Traffic Impact Study

The need for a traffic impact study is based on estimated daily trip generation and conformance with the community plan land use and transportation element. This determination is usually made by the Transportation Development Section staff during the project scoping stages. **Figure 1** should be used to determine if a traffic impact study is needed and to determine the type of study required. In general, traffic impact studies may be required for developments that do not conform to the community plan and generate more than 500 daily trip ends. The threshold is 1,000 daily trip ends if a project conforms to the community plan. See page 4, **Figure 1** Flow Chart.

Extent of the Study

While the need for a traffic impact study is usually determined by City staff, the extent of a study should be shared by the preparer and reviewer of the study. **Figure 1** provides some guidance on the type of study, manual versus computerized. Computerized forecasts or select zone assignments are usually required for developments that generate more than 2,400 daily trip ends, per Congestion Management Program requirements. However, many projects and area specific details cannot be adequately addressed with a generalized flow chart. The following study details should be worked out between the preparer and the reviewer in a presubmittal conference:

- Which components of a full traffic impact study are needed to address issues associated with the site, proposed development, and the nearby transportation system?

- How will trip generation be determined? If rates other than City standard rates are proposed, staff concurrence must be obtained. Will pass-by reductions be applied?

- How large will the study area be?

- How should adjacent developments be considered in the study?

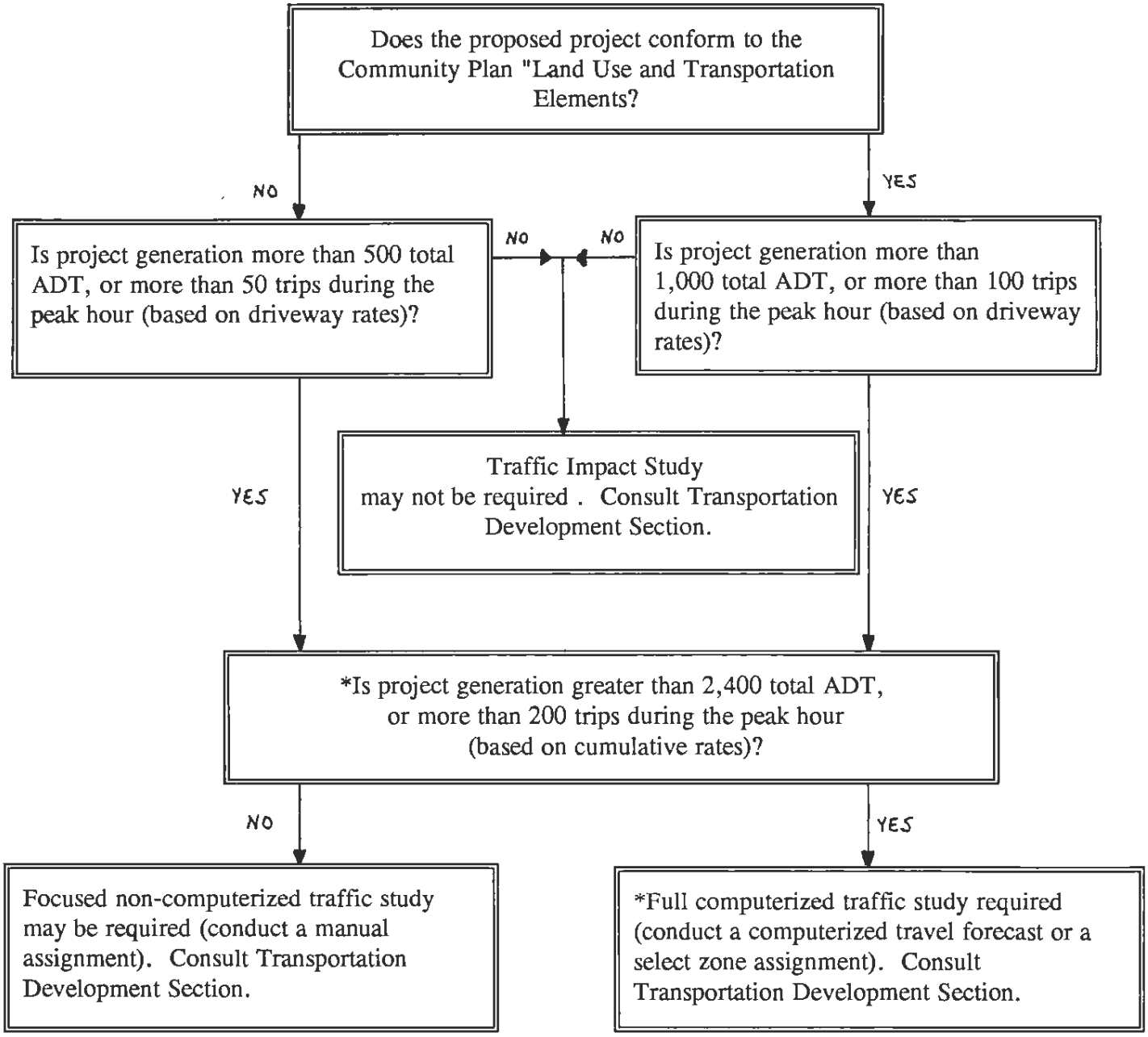
- How should future traffic volumes be determined? Should an adopted community plan forecast be used, should a regional or subregional forecast be used, should growth factors apply, or should a new modeling effort be undertaken?

Figure 1 - Traffic Impact Study Requirement Flow Chart

FIGURE 1

October 1997

TRAFFIC IMPACT STUDY
REQUIREMENT FLOW CHART



*To conform with the 1991 Congestion Management Program Enhanced California Environmental Quality Act (CEQA) review process for traffic analysis.

- How should planned or programmed transportation improvements be accounted for?

- Should the various stages of multi-planned developments be analyzed individually? If so, what horizon years should be used?

- Which trip distribution and assignment methods should be used?

- Which roadway sections and which intersections should be analyzed?

- Which capacity analysis technique should be used?

- Are other analyses needed, such as accident analyses, sight distance analyses, weaving analyses, gap analyses and queuing analyses?

In situations where Caltrans or another agency will review the study, staff from these agencies should be included in the presubmittal conference. This will foster improved coordination and reduce the potential for revisions to the study.

Study Area

The contents and extent of a traffic impact study depend on the location and size of the proposed development and the conditions prevailing the surrounding area. Larger developments proposed in congested areas obviously require a more extensive traffic impact study. Smaller sites may require only minimal analysis. An inappropriately large analysis area will unnecessarily increase costs and time to the developer, the study preparer and the reviewer. In addition, large volumes of meaningless analysis can obscure the real issues that need to be addressed. At a minimum, any traffic impact study must address site access and adjacent intersections, plus the first major signalized intersection in each direction from the site. Beyond this minimum requirement, all known congested or potentially congested locations that may be impacted by the proposed development should be studied. The following methodology based on Average Daily Traffic (ADT), project trip distribution and generalized daily roadway capacity has been prepared to offer some predictability to consultants bidding for jobs and to determine an initial study area to discuss with City staff. Knowledge of the area and judgement may cause the study area to be either expanded or contracted.

Procedure for Determining Initial Study Area

1. Calculate project trip generation based on driveway trip rates and standard City trip generation rates.

2. Determine an approximate project trip distribution and assign the project's ADT to the surrounding street system.

3. Obtain existing configurations and future street classifications for all facilities likely to have site traffic assigned to them.

4. Obtain existing and future ADT for the above mentioned streets.

5. Use the following levels of significance to determine if the project will add enough traffic to street segments for short-term and future conditions to warrant studying this location.

TABLE 1

LEVEL OF SERVICE WITH SITE TRAFFIC	ALLOWABLE INCREASE IN V/C* RATIO WITH SITE TRAFFIC ADDED
A	0.10
B	0.06
C	0.04
D	0.02
E	0.02
F	0.02

* Capacity at level of service E (see **Table 2**) should be used for calculating the volume to capacity ratio.

6. Using **Table 2**, determine the short-term and future level-of-service with and without site traffic, for each link.

In addition, the 1993 Guidelines for Congestion Management Program (CMP) Transportation Impact Reports (TIR) states the following for the study area:

The geographic area examined in the TIR must include the following as a minimum:

- All Regionally Significant Arterial system segments and intersections, including freeway on/off ramp intersections, where the proposed project will add 50 or more peak hour trips in either direction to adjacent street traffic.

- Mainline freeway locations where the project will add 150 or more peak hour trips in either direction.

Staff Consultation

It is critical that the study preparer discuss the project with the reviewing agency's staff engineer at an early stage in the planning process. An understanding as to the level of detail and the assumptions required for the analysis can be determined at this time. While a presubmittal conference is highly encouraged, it will not be a requirement for submitting work to the City. For straightforward studies prepared by consultants familiar with City procedures, a phone call followed by a fax verifying key assumptions may suffice.

Screen Check Procedures

As part of the first draft of a traffic impact study, the preparer must ensure that all required elements have been included. This procedure was implemented to reduce the number of submittals and to encourage earlier dialogue between the reviewer and preparer. The reviewer will check the study for completeness and return all incomplete submittals within five working days of receipt. **Appendix 1** contains the screen check list which the preparer must complete and submit along with the first draft of every traffic impact study. The screen check list should also be used during presubmittal conferences to determine which elements are not required for the proposed study.

Traffic studies shall not be resubmitted until all staff comments have been incorporated. Consultants are encouraged to contact the reviewer to seek clarification, if needed, on comments made to the traffic study. All comments and conditions are subject to appeal or modification.

TABLE 2
Roadway Classifications, Levels of Service (LOS)
and Average Daily Traffic (ADT)

			LEVEL OF SERVICE				
STREET CLASSIFICATION	LANES	CROSS SECTIONS	A	B	C	D	E
Freeway	8 lanes		60,000	84,000	120,000	140,000	150,000
Freeway	6 lanes		45,000	63,000	90,000	110,000	120,000
Freeway	4 lanes		30,000	42,000	60,000	70,000	80,000
Expressway	6 lanes	102/122	30,000	42,000	60,000	70,000	80,000
Primary Arterial	6 lanes	102/122	25,000	35,000	50,000	55,000	60,000
Major Arterial	6 lanes	102/122	20,000	28,000	40,000	45,000	50,000
Major Arterial	4 lanes	78/98	15,000	21,000	30,000	35,000	40,000
Collector	4 lanes	72/92	10,000	14,000	20,000	25,000	30,000
Collector (no center lane) continuous left-turn lane)	4 lanes 2 lanes	64/84 50/70	5,000	7,000	10,000	13,000	15,000
Collector (no fronting property)	2 lanes	40/60	4,000	5,500	7,500	9,000	10,000
Collector (commercial-industrial fronting)	2 lanes	50/70	2,500	3,500	5,000	6,500	8,000
Collector (multifamily)	2 lanes	40/60	2,500	3,500	5,000	6,500	8,000
Sub-Collector (single-family)	2 lanes	36/56	—	—	2,200	—	—

LEGEND:

XXX/XXX = Curb to curb width (feet)/right-of-way width (feet): based on the City of San Diego Street Design. Manual

XX/XXX= Approximate recommended ADT based on the City of San Diego Street Design Manual.

NOTES:

1. The volumes and the average daily level of service listed above are only intended as a general planning guideline.

2. Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors.

3. CONTENT AND FRAMEWORK

This chapter discusses the selection of horizon years, time periods to be analyzed and study data needs.

Selection of Horizon Years

The following scenarios should be evaluated in each traffic impact study:

- Existing Conditions
- Existing Conditions with Approved Projects (when applicable)
- Existing Conditions with Approved Projects and Site Traffic
- Buildout Community Plan Conditions
- Buildout Community Plan with Additional Site Traffic
  (if project deviates from the Community Plan)
- Cumulative Analysis Due to Precedence Setting
  (if a land use change will likely encourage other property owners to seek similar land use changes)

Project Phasing

If the project is a large multi-phased development in which several stages of development activity are planned, a number of horizon years may be needed to coincide with each major stage of development or increment of area transportation system improvements. Smaller developments may need to phase themselves to transportation improvements that others are providing, yet are crucial to their accessibility.

Peak Traffic Hours

In general, the traditional morning and afternoon peak hour of the street system should be evaluated in each impact study. The peaking of the adjacent street system can usually be determined by reviewing traffic count data. The time periods that provide the highest cumulative directional traffic demands should be used to assess the impact of site traffic on the adjacent street system and to define the roadway configurations and traffic control measure changes needed in the study area.

In rare cases, weekend and other typically off-peak traffic periods should be studied. These situations may occur with large retail uses, recreational uses, stadiums and theme parks.

Background Study Area Data

All pertinent transportation system and land development information, both short- and long-range, prepared in the last five years or considered to be current by the Transportation Development Section should be reviewed. Any development that has been approved but not yet occupied should be considered for use as background traffic. Average daily traffic counts and peak hour turning movements can frequently be obtained through the City's Traffic Safety Information and Research Section in the Traffic Engineering Division.

The count data used in traffic impact studies should be no more than two years old. If recent traffic data is not available from the City, current counts must be made by the consultant.

Field Reconnaissance and Data Collection

The assembly of available data should be accompanied by a detailed reconnaissance of the project site, area roadways and the surrounding vicinity. Current data should also be collected as necessary to supplement that information already available. These data frequently include some or all of the following:

- Peak period turning movement counts
- Machine counts
- Primary traffic control devices
- Signal timing and phasing
- Roadway configurations, geometric features and intersection lane configurations
- Parking regulations and usage
- Driveways serving sites across from or adjacent to the site
- Transit stops
- Adjacent land uses

4. NON-SITE TRAFFIC

Estimates of non-site traffic are required to complete an analysis of horizon year conditions. These estimates characterize the base conditions (without site traffic). There are a number of methods for developing non-site traffic; the appropriate method depends largely on the availability of data.

Build-up Method Using Specific Developments

This method is used when other projects in the area have been approved, but are not yet occupied. This concept consists of projecting peak hour traffic to be generated by approved developments in the study area, and assigning it to the projected street system. This method is used for the "Existing Conditions with Approved Projects" scenario. A list of "other" projects can be obtained from the City's Transportation Development Section.

Community Plan, Regional or Subregional Modeled Volumes

The adopted community plan should be used for 20-year or buildout area wide conditions, when reliable information exists. Often times, this information is out-dated and its use would render unreasonable results. In these cases, regional or subregional models conducted by SANDAG should be reviewed for appropriateness.

When justified, and particularly in the case of very large developments or new community plans, a transportation model should be run, with and without the new development to show the net impacts on all parts of the area's transportation system.

Trends or Growth Rates

Trends or growth rates should be used only in situations where a transportation model does not exist, no new major transportation facilities are planned for the area, and the area's growth rate has been stable. Average daily traffic volumes from the past five to ten years should be used to develop these growth rates. If other major new developments are expected in the area, a combination of the growth rate and build-up method should be considered.

Cumulative Analysis Due to Precedence Setting

Often times, a land use change on one property may have the effect of encouraging other property owners to ask for the same zoning or intensification, particularly if the change has an appreciable impact on property values.

The Transportation Development Section in consultation with other City staff, decides if a cumulative analysis should be conducted and which properties should be included in the analysis. The Transportation Development Section in consultation with the traffic consultant will decide the appropriate methodology for developing these non-site traffic volumes.

5. SITE TRAFFIC GENERATION

One of the most critical elements of the traffic impact study is estimating the amount of traffic to be generated by a proposed development. This is usually done by using trip generation rates or equations.

Rates are commonly expressed in trips per unit of development. Equations provide a direct estimate of trips based upon development units being multiplied in a mathematical relationship. Trips are defined as a single or one-directional travel movement with either an origin or destination of the trip inside the study site. The outcome of the entire traffic impact study can depend solely on the question of appropriate trip generation estimates. Trip generation estimates must be determined carefully and must be defensible using a combination of available data and professional judgement.

General Procedure

The following basic steps should be followed in determining the appropriate trip generation estimates:

- Check the City of San Diego's Trip Generation Manual for trip generation rates of similar land use types. If rates other than those included in this manual are proposed, the consultant should obtain concurrence from the study reviewer prior to submitting a study.

- If City data does not exist, check for appropriate SANDAG data or national data, typically contained in SANDAG's “Traffic Generators” publication or the ITE Trip Generation Manual or ITE Journal articles.

- If local or sufficient national data do not exist, conduct trip generation studies at sites with characteristics similar to those of the proposed development.

- Determine any adjustments that may be applied to trip rates to account for specific characteristics of the development in question (high transit usage or true mixed-used developments).

- Select the most appropriate and defensible trip generation rate or equations and document the basis for selection if the rates vary from standard City rates.

Special or Unusual Generators

Some unique land uses have never been studied for trip generation characteristics. In these cases, it may be necessary to conduct a trip generation study on a similar use to

determine the appropriate trip generation rate for that use. In some instances, it may be acceptable to assume a trip rate, based on comparisons to other uses. In either case, the Transportation Development Section should be consulted.

Driveway Volumes Versus Traffic Added to the Adjacent Streets

It is usually assumed that all trips entering and exiting a new development are new trips that were not made to or through the area prior to the development being completed. However, a portion of these trips may be "captured" from trips already being made to other existing developments on the adjacent street system. Any commercial real estate agent will confirm that the three most important factors in a successful retail business are location, location and location. This phenomenon has been verified by limited studies of commercial sites. The City's Trip Generation Manual has recommended a percentage reduction in driveway trip generation rates for numerous retail uses. These recommendations are based on local and national trip generation studies, as well as SANDAGS's Travel Behavior Study conducted in 1985. The pass-by reduction includes true pass-by trips that were on an adjacent street and a portion of the linked trips that were diverted off a nearby route. The report must clearly indicate the new trips and the pass-by trips for the site. All site access points should be evaluated using the higher driveway rates, whereas far off intersections will be evaluated using the reductions for pass-by trips. The next chapter provides guidance on how to distribute and assign pass-by trips.

Refer to the City's "Trip Generation Manual" for driveway and cumulative trip rates for various land uses.

Adjustments for Developments Near Transit Stations

Most trip generation data are from suburban locations where little or no public transportation exists. Since San Diego has an expanding mass transit system, with opportunities for land use/transit interaction, adjustments to the standard trip generation rates may be necessary. The following trip rate reductions are allowable for development planned within a walking distance of 1,500 feet from a transit station:

TABLE 3
Recommended Trip Reductions at Transit Stations

LAND USE TYPE	DAILY	A.M. PEAK	P.M. PEAK
Residential	5%	9%	6%
Industrial	5%	6.5%	5.5%
Commercial Office	3%	5.5%	2%
Commercial Retail	N/A	N/A	N/A

Adjustments for Mixed-Use Developments

Most of the trip generation rate data available have been developed from measurements at isolated single-use developments. When uses are combined, simply adding the single-use estimates together can result in a total trip generation estimate that is too great for the site. The following trip generation rate reductions are allowable for mixed-use projects:

TABLE 4
Recommended Trip Reductions for Mixed-Use Developments
Which Include Commercial Retail

LAND USE TYPE	DAILY	A.M. PEAK	P.M. PEAK
Residential	10%	8%	10%
Industrial	4%	5%	5%
Commercial Office	3%	5%	4%
Commercial Retail	*	*	*

Source: Kris Berg - Kimley Horn

NOTES:

* The commercial retail reduction equals the sum of the total mixed-use reduction in residential, industrial and commercial office.

\- These reductions apply to commercial retail of a minimum of 100,000 square feet which is predominantly neighborhood-oriented.

6. SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT

Traffic expected to be generated by a development project must be distributed and assigned to the roadway system so that the impacts of the proposed project on roadway links and intersections within the study area can be analyzed. The trip distribution step produces estimates of trip origins and destinations. The assignment step produces estimates of the amount of site traffic that will use each access route between origins and destinations.

Trip Distribution

One way to determine a trip distribution for a site is to use data from a computerized travel forecast model. SANDAG, the regional planning agency for San Diego County, maintains a regional travel forecast computer model to project future traffic volumes. The City also prepares "community plan" level forecast models. The City models usually provide a more detailed street system than does SANDAG's latest regional model. Raw modeled results should never be directly applied. A thorough review for reasonableness should first be undertaken.

Frequently, computerized travel forecast model data are not available or may not be up to date. In these cases, manual estimates based on traffic volumes, experience, judgement, and knowledge of the area are appropriate. Previous traffic impact studies conducted for other projects in the area should also be considered in estimating trip distributions.

Regardless of the trip distribution methodology used, it is crucial that the traffic consultant and the reviewer of the study agree on the proper distribution prior to the preparation of detailed analysis to avoid having to rework the analysis.

Trip Assignment

Trip assignment should be made considering logical routings, available capacities, left turns at critical intersections, and projected (and perceived) minimum travel times. Multiple paths should often be assigned between origins and destinations to achieve realistic estimates, rather than assigning all trips to the route with the shortest travel time.

The assignment should reflect the horizon year(s) and should consider land use and road improvements at that time. Assignments may vary between morning and afternoon peaks. The assignment should be carried out through external site access points and, in larger projects, the internal roadways.

Assignments may be performed manually or by a computer model. For large sites, with large study areas, it may be advantageous to use a computer model to assign site traffic. This allows some matching of trip origins and destinations within the study area, rather than assigning all site trips externally.

Pass-by Trips

As mentioned in the previous chapter, trip generation analysis yields the number of vehicle trips that a site is expected to generate at its driveways, and retail sites don't add as much traffic to the community street system since a portion of their trips are simply diverted from vehicle trips already on the roadway system. If a reduction for pass-by trips is to be applied, the cumulative trip generation rates identified in the City's Trip Generation Manual should be used as follows:

- For the peak hour being analyzed, determine the percentage of pass-by trips. Split the total trip generation into new trips and pass-by trips.

- In addition to estimating normal trip distribution (for new trips), also estimate the distribution for pass-by trips (giving strong consideration to the commuting work trip).

- Perform two separate trip assignments, based on the two trip distributions. Pass-by assignment percentages should not automatically be applied to two-way traffic since an outbound pass-by trip may use a different route than an inbound pass-by trip. Also, the pass-by procedure implies subtracting trips from some existing movements and assigning to other movements. Care must be taken not to subtract a relatively large movement from a low volume facility. For this reason, the pass-by reduction on any given facility shall be no more than ten percent of the volume on that facility. It would be unreasonable to assume that more than one out of ten drivers would divert to a site on a daily basis.

- Combine the results of the "new trips" and "pass-by" assignments.

Congestion Management Program Procedures

The Congestion Management Program (CMP) requires that a regional travel forecast model be used to assign site traffic to the CMP roadway system. This applies to all developments generating more than 2,400 daily trips or 200 pm peak hour trips. For these developments, it is necessary to perform a select zone traffic assignment for site traffic to identify the project's impact on the CMP roadway system.

7. ANALYSIS

This chapter describes the analytical techniques used to derive the study findings, conclusions, and recommendations. This recognizes current methodologies. However, other techniques may be considered once they are developed or unique problems are encountered. This chapter attempts to provide guidance on the proper analysis technique to be applied; it does not attempt to document any particular analysis technique or preclude the use of any technique not specifically mentioned. Analysis techniques should be discussed by the preparer and reviewer of the traffic impact study prior to beginning the study.

Total Traffic Estimate

For each analysis period being studied, a projected total traffic volume must be estimated for each segment of roadway system being analyzed.

Identification of Impacts and Deficiencies

Acceptable Level of Service

The standard used to evaluate traffic operating conditions of the transportation system is referred to as level of service. This is a qualitative assessment of the quantative effect of factors such as speed, volume of traffic, geometric features, traffic interruptions, delays and freedom to maneuver. The acceptable level of service standard for roadways and intersections in San Diego is level of service D. However, for undeveloped locations, the goal is to achieve a level of service C.

Levels of Significance

To determine if a project contributes enough traffic to a transportation facility to consider mitigation measures, a level of significance threshold is used. **Table 5** identifies the levels of significance for several analysis techniques at varying levels of service. If the project causes a change greater than the level shown, the developer is considered to be responsible for all or part of the improvements required to mitigate the site traffic to the level previously held on the facility prior to the project's traffic impacts.

Signalized Intersection Analysis

The measure of effectiveness for signalized intersections is average stopped delay per vehicle. The current Highway Capacity Manual's signalized intersection operational methodology is the basis for determining intersection delay. The Highway Capacity Software (HCS), based on the HCM methodology, is acceptable except in cases of extreme congestion, where alternative software must be used to obtain average

seconds of delay. Alternative acceptable software includes TRAFFIX, SIGNAL 94 and NCAP. These methodologies require numerous inputs and assumptions. To ensure consistency among consultants (and City staff), the City has developed input guidelines shown in **Table 6**. These guidelines are not intended to be absolute, but any proposed deviations should first be discussed with City staff.

TABLE 5
Significant Transportation Impact Measure

LEVEL OF SERVICE WITH PROJECT	ALLOWABLE INCREASE/DECREASE DUE TO PROJECT IMPACTS*		
	INTERSECTIONS	ROADWAY SECTIONS	
	DELAY (SEC)	V/C	SPEED (MPH)
A	N/A	0.10	5
B	6	0.06	3
C	4	0.04	2
D**	2	0.02	1
E**	2	0.02	1
F**	2	0.02	1

NOTES:

* If a proposed project's impact exceed the values shown in the table, then the impacts are deemed "significant." The project applicant shall identify "feasible mitigations" to bring the facility back to the level previously held by the facility prior to the project's traffic impacts.

** The acceptable level of service standard for roadways and intersections in San Diego is level of service D. However, for undeveloped locations, the goal is to achieve a level of service C.

KEY: DELAY = Average stopped delay per vehicle measured in seconds
V/C = Volume to Capacity Ratio [capacity at level of service E should be used (Use Table 1.)]
SPEED = Arterial speed measured in miles per hour
N/A = Not Applicable

Signal Warrant Analysis

If new intersections are being created by a development or if a development adds traffic to existing unsignalized intersections, traffic signal warrant analyses must be performed. The Caltrans Traffic Manual should be consulted for procedures on conducting signal warrant analysis. Typically, the warrant based on Estimated Average Daily Traffic is used. For selected locations, the School Crossing Traffic Signal Warrant should be considered.

TABLE 6
Inputs and Assumptions for Intersection Capacity Analysis
Using the Highway Capacity Manual (HCM) Method

- Arrival Type = 3-5
- Cycle Length © = 60-120 seconds (or observed at existing locations)
- Ideal Saturation Flow Rate for HCM software = 1,900 pcphpl
- Minimum Green for each phase = 5-10 seconds
- Yellow Interval:

85% Approach Speed (mph)	*Yellow Interval (seconds)
35 or less	3.0
40	3.5
45	4.0
50	4.5
55	5.0
60	5.5

*Add 1 second for an all-red interval at all intersections.

- Minimum Heavy Vehicles = 2-4%
- Peak Hour Factor (PHF) = 0.80-0.95
- Minimum Pedestrians = 10/hour/approach

The following factors are used to convert daily volumes to peak hour volumes:

- Directional Factor (D) = 0.55-0.75
- Design Hour Factor (K) = 0.07-0.11
- Peak Hour Peak Direction = 0.05-0.08

NOTES:

1. Arrival Type 4 or 5 should be used for intersection approaches which are part of a coordinated arterial system.
2. Ideal Saturation Flow rate inputs may be higher than 1,900 pcphpl for individual movements at intersections with very high traffic volume. The use of higher saturation flow rate must be identified.
3. Level of Service F is not acceptable for intersection approaches except for side streets on an interconnected arterial system.
4. The 85% speeds can be obtained from the City's Traffic Engineering Division, Traffic Safety Information and Research Section.

When a new signal is proposed on a major arterial where a coordinated signal progression system exists or may exist, the impacts of adding a new signal on progression should be thoroughly analyzed, The software recommended for this analysis is PASSER II, Synchro or TRANSYT-7F.

Unsignalized Intersection Analysis

The measure of effectiveness for unsignalized intersections is average total delay per vehicle. Total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. This methodology is described in Chapter 10 of the current Highway Capacity Manual. This methodology should be used for unsignalized intersections, yield and T-intersections.

Arterial Analysis

All arterials within the study area should be evaluated using the Daily Level of Service matrix shown in **Table 2** (shown in Chapter 2 of this manual). The results of this analysis may not accurately reflect actual peak hour operation of the street, but is intended as a guide to help determine arterial classification and sizing.

The Congestion Management Program arterials must be analyzed in greater detail. These arterials must be evaluated using the peak hour analysis contained in Chapter 11 of the current Highway Capacity Manual. This methodology uses the results of signalized intersection analyses, the arterial classification and free flow speed to calculate an average travel speed. The average travel speed is used to determine the arterial level of service. The HCS computer software may be used to determine arterial level of service.

Freeway Interchange Analysis

Since all freeways are on the Congestion Management Program system, their interchanges must be evaluated using CMP analysis techniques. All signalized intersections of freeway ramps with arterials should be evaluated using the Highway Capacity Manual signalized intersection operational method. For diamond interchanges, the timing and phasing of the two signals must be coordinated to ensure queue clearances. The software package recommended for this analysis is Passer III-90.

If ramp metering is to occur, the effects of metering should be analyzed. Inputs to this analysis are peak hour demands, flow rates, and ramp geometrics. The flow rates and ramp configurations are usually available from Caltrans. Outputs are excess demand, delay and queue length. This methodology is explained in **Appendix 2**.

8. SITE ACCESS AND OFF-SITE IMPROVEMENTS

Recommendations

During the final phase of the study, all analyses are reviewed and reassessed to best respond to the actual transportation needs of the project and the adjacent area. It is important that recommendations be made at each of the scenarios identified in Chapter 3, so that the responsibility for the improvements can be clearly established. All necessary improvements should be displayed on a study area map. A table shall be prepared identifying which improvements are needed, when they are needed and who is responsible for the improvements.

Project Phasing

In situations where an improvement is the responsibility of someone else or a joint responsibility, it may be necessary for the proposed development to be phased or for the developer to front the entire cost of an improvement(s). At the developer's option, a reimbursement district can be established. Where multiple improvements are needed, it may be advantageous to phase a development and associated improvements over time, to avoid large up front mitigation expenses. Appropriate analyses are required to permit projects to be phased.

Intersection Lane Configurations

Diagrams of typical intersection lane configurations are shown in **Appendix 4**. There are a number of lane configurations that can be used depending on the intersecting streets. Additional left-turn lanes, dual left-turn lanes and separate right-turn lanes will be based on the intersection turn volumes and level-of-service.

9. ON-SITE PLANNING AND PARKING

An integral part of an overall traffic impact study relates to basic site planning principles. Internal design will have a direct bearing on the adequacy of site access points.

Access Points

Access points should be designed with the same perspective as public streets. Site access points should be located and designed in accordance with the San Diego Regional Standard Drawings and the following guidelines:

- Driveways should align with opposing streets and driveways, if no raised center median exists on the cross street.

- If not aligned, adequate spacing should be maintained from adjacent street and driveway intersections. Distance between driveways and adjacent street intersections should be sufficient to minimize driveway blockage by queues from adjacent intersections.

- If the driveway is proposed to be signalized, it should be located to facilitate traffic progression past the site. A signal progression analysis may be required in such a situation. Curb return type access is allowed for signalized driveways.

- Access driveways should intercept traffic approaching the site as efficiently as possible; adequate inbound and outbound capacity should be provided.

- Adequate driveway capacity should be provided. The number of driveways should be compatible with site access capacity needs and should minimize adverse impacts on adjacent roads. A capacity analysis, gap check or lane adequacy check should be conducted for each driveway. Joint access should be considered where several adjacent properties have relatively short frontages or where low-volume driveways would otherwise result.

- Two-way driveways should intersect adjacent roadways at 90-degree angles, wherever possible.

- The capacity of on-site intersections should be sufficient to prevent traffic entering the site from backing up on the adjacent street.

- Traffic safety aspects of all proposed site access facilities should be reviewed to ensure adequate sight distance and other applicable factors.

- Deceleration and acceleration lanes may be required on the City street at the access driveway.

Vehicular Queuing Storage

Provision for appropriate vehicular exit queuing should be made at all access drives for a development. For small developments, parking areas and access points should be designed so drivers waiting to exit can align their vehicles perpendicular to the off-site roadway system. For large developments, queuing areas should be sufficient so that vehicles stored at exits do not block internal circulation and so that drivers enter a signalized intersection at minimum headways to achieve maximum flow rates. The queue storage just inside a parking facility should be sufficient to allow vehicles to enter the parking facility and come to a complete stop without blocking or hampering internal circulation and without causing traffic to back up on the off-site roadway.

Drive-through developments such as banks, car washes and fast food restaurants, should be provided with adequate capacity to accommodate normal peak queues.

Internal Vehicular Circulation

Internal circulation roadways should permit access between all areas in a manner which is safe, has adequate capacity, and is clearly understandable to the driver.

Service and Delivery Vehicles

Service and delivery vehicles require separate criteria for movement to and from site:

- Vehicle turning paths should be sufficient to accommodate the largest vehicles anticipated to travel on the site.

- Access points anticipated to be used by service vehicles should have turning paths sufficient to allow service to enter and exit the site without encroaching upon opposing lanes or curbed areas.

- There should be sufficient separation between external and internal circulation roads so large vehicles can be queued on entry or exit without blocking access to parking spaces or internal roadway circulation systems.

- Service vehicle routes should be as direct as possible.

- The number of loading berths provided should be sufficient to accommodate anticipated service and delivery activity.

Emergency Vehicle Access

- Entrance curb to curb widths must be 20 feet minimum.
- An emergency vehicle only access shall be restricted with a chain, gate or bollard, and properly signed to the satisfaction of the Fire Department.
- Extra aisle widths may be required adjacent to fire hydrants.
- “No Parking - Fire Lane” signs may be required on-site.

Parking

Adequate parking should be provided to meet site generated demands. On-site parking should be provided in accordance with the Transportation Development Section's recommended parking ratios shown in **Appendix 3**. Minimum parking requirements may vary where superseded by the San Diego Municipal Code. Parking should be dispersed throughout the site for convenience to destinations. The Municipal Code addresses parking lot design considerations.

Shared parking is a valid approach to the determination of total parking needs of any mixed use development. Close building proximity and efficient internal circulation systems and access drives are necessary for shared parking to be successful. **Appendix 3** also contains procedures for reducing parking requirements for mixed-use developments.

For major developments, bicycle parking should be provided at a ratio of two spaces per 100 auto parking spaces.

The location of bicycle parking and carpool or vanpool parking should be in close proximity to the building entrances.

Pedestrian, Transit and Bicycle Considerations

The overall site plans should also consider public transportation, pedestrians, and bicyclists. Appropriate public transportation facilities and shuttle bus staging areas should be accommodated adjacent to service drives and entrance areas, at key locations along circulation drives or at major pedestrian focal points along the roadway system. Pedestrian connections between these facilities, public sidewalks and the site buildings should be integrated in the overall design of the project. Proper design of pedestrian facilities can reduce the use of motor vehicles for trips within a development and between nearby developments.

APPENDIX 1

SCREEN CHECK

CITY OF SAN DIEGO
TRANSPORTATION DEVELOPMENT SECTION
TRAFFIC IMPACT STUDY
SCREEN CHECK

To be completed by City Staff:
Date Received _____
Reviewer _____
Date Screen Check ____

To be completed by consultant (including page #):
Name of Traffic Study _____
Consultant _____
Date Submitted _____

Indicate Page # in report:			Satisfactory YES	NO	NOT REQUIRED
pg. ___	1.	Table of contents, list of figures and list of tables.	☐	☐	
pg. ___	2.	Executive summary.	☐	☐	
pg. ___	3.	Map of the proposed project location	☐	☐	
	4.	General project description and background information:			
pg. ___		a. Proposed project description (acres, dwelling units....)	☐	☐	
pg. ___		b. Total trip generation of proposed project.	☐	☐	
pg. ___		c. Community plan assumption for the proposed site.	☐	☐	
pg. ___		d. Discuss how project affects the Congestion Management program.	☐	☐	
pg. ___	5.	Parking, transit and on-site circulation discussions are included.	☐	☐	
pg. ___	6.	Map of the Transportation Impact Study Area and specific intersections studied in the traffic report.	☐	☐	
pg. ___	7.	Existing Transportation Conditions:			
		a. Figure identifying roadway conditions including raised medians, median openings, separate left and right turn lanes, roadway and intersection dimensions, bike lanes, parking, number of travel lanes, posted speed, intersection controls, turn restrictions and intersection lane configurations.	☐	☐	
		b. Figure indicating the daily (ADT) and peak hour volumes.	☐	☐	
		c. Figure or table showing level of service (LOS) for intersections during peak hours and roadway sections within the study area (analysis sheets included in the appendix).	☐	☐	
	8.	Project Trip Generation:			
pg. ___		Table showing the calculated project generated daily (ADT) and the peak hour volumes.	☐	☐	
pg. ___	9.	Project Trip Distribution using the current TRANPLAN Computer Traffic Model (provide a computer plot) or manual assignment if previously approved. (Identify which method was used.)	☐	☐	
	10.	Project Traffic Assignment:			
pg. ___		a. Figure indicating the daily (ADT) and peak hour volumes.	☐	☐	
pg. ___		b. Figure showing pass-by-trip adjustments, if cumulative trip rates are used.	☐	☐	☐
	11.	Existing + Other Pending Projects:			
pg. ___		a. Figure indicating the daily (ADT) and peak hour volumes.	☐	☐	
pg. ___		b. Figure or table showing the projected LOS for intersections during peak hours and roadway sections within the study area (analysis sheets included in the appendix).	☐	☐	
pg. ___		c. Traffic signal warrant analysis for appropriate locations (signal warrants included in the appendix).	☐	☐	

		Satisfactory YES	NO	NOT REQUIRED
	12. Existing + Other Pending Projects + Project (short term cumulative):			
pg. ____	a. Figure or table showing the projected LOS for intersections during peak hours and roadway sections with the project (analysis sheets included in the appendix).	☐	☐	
pg. ____	b. Figure showing other projects that were included in the study, and the assignment of their site traffic.	☐	☐	
pg. ____	c. Traffic signal warrant analysis for appropriate locations (signal warrants in the appendix).	☐	☐	
	13. Build-out Transportation Conditions (if project conforms to the community plan):			
pg. ____	a. Build-out ADT and street classification that reflect the community plan.	☐	☐	☐
pg. ____	b. Figure or table showing the build-out LOS for intersections during peak hours and roadway sections with the project (analysis sheets included in the appendix).	☐	☐	☐
pg. ____	c. Traffic signal warrant analysis at appropriate locations (signal warrants included in the appendix).	☐	☐	☐
	14. Build-out Transportation Conditions (if project does not conform to the community plan).			
pg. ____	a. Build-out ADT and street classification as shown in the community plan.	☐	☐	☐
pg. ____	b. Build-out ADT and street classification for two scenarios: with the proposed project and with the land use assumed in the community plan.	☐	☐	☐
pg. ____	c. Figure or table showing the build-out LOS for intersections during peak hours and roadway sections for two scenarios: with the proposed project and with the land use assumed in the community plan (analysis sheets included in the appendix).	☐	☐	☐
pg. ____	d. Traffic signal warrant analysis at appropriate locations with the land use assumed in the community plan (signal warrants included in the appendix).	☐	☐	☐
pg. ____	15. A summary table showing the comparison of Existing, Existing + Other Pending Projects, Existing + Other Pending Projects + Proposed Project, and Buildout, LOS on roadway sections and intersections during peak hours.	☐	☐	
	16. Transportation Mitigation Measures.			
pg. ____	a. Table identifying the mitigations required that are the responsibility of the developer and others. A phasing plan is required if mitigations are proposed in phases.	☐	☐	
pg. ____	b. Figure showing all proposed mitigations that include: intersection lane configurations, lane widths, raised medians, median openings, roadway and intersection dimensions, right-of-way, offset, etc.	☐	☐	
pg. ____	17. The traffic study is signed by a California Registered Traffic Engineer.	☐	☐	
pg. ____	18. The Highway Capacity Manual Operational Method or other approved method is used at appropriate locations within the study area.	☐	☐	
pg. ____	19. Analysis complies with Congestion Management requirements.	☐	☐	☐
pg. ____	20. Appropriate freeway analysis is included.	☐	☐	☐
pg. ____	21. Appropriate freeway ramp metering analysis is included.	☐	☐	☐

THE TRAFFIC STUDY SCREEN CHECK FOR THE SUBJECT PROJECT IS:

_____ Approved

_____ Not approved because the following items are missing:

_____

_____

_____

_____

_____

APPENDIX 2

RAMP METER ANALYSIS

APPENDIX 2. RAMP METERING ANALYSIS

Ramp metering analysis should be performed for each horizon year scenario in which ramp metering is expected. The following table shows relevant information that should be included in the ramp meter analysis (calculations are shown in the footnotes):

LOCATION	DEMAND[1] (veh/hr)	METER RATE[2] (veh/hr)	EXCESS DEMAND[3] (veh/hr)	AVERAGE DELAY[4] (veh/hr)	AVERAGE QUEUE[5] (feet)
I-5/Carmel Mountain Road (SB/AM Peak)	985	788	197	15.0[6]	4,925
I-5/Carmel Mountain Road (SB/PM Peak)	510	1,000	0	0	0

Notes:

[1] DEMAND is the peak hour demand expected to use the on-ramp.

[2] METER RATE is the peak hour capacity expected to be processed through the ramp meter. This value is usually available from Caltrans.

[3] EXCESS DEMAND = (DEMAND) – (METER RATE) or zero, whichever is greater

[4] AVERAGE DELAY = $\frac{\text{EXCESS DEMAND}}{\text{METER RATE}}$ * 60 minutes/hour

[5] AVERAGE QUEUE = (EXCESS DEMAND) * 25 feet/vehicle

[6] Ramp meter delays above 15 minutes are not acceptable.

APPENDIX 3

PARKING REQUIREMENTS

Transportation Development Section
Parking Rates Used for Discretionary Review

LAND USE	RATE
RESIDENTIAL USES	
Single-family Residential	2 per dwelling
Multifamily Residential	
Resident Portion	
Studio	1.00 per dwelling unit
One bedroom	1.25 per dwelling unit
Two bedroom	1.50 per dwelling unit
Three or more bedrooms	1.75 per dwelling unit
Supplemental Portion	
General	Add 30% of resident portion*
Beach or Campus impact area	Add 50% of resident portion*
Transit Reductions*	
Transit Corridor	0.10 of supplemental
Nodal Corridor/Transfer Node	0.20 of supplemental
Transit Node	0.30 of supplemental
Transit Hub	0.60 of supplemental
Density Reductions*	
42-72 units per acre	0.10 of supplemental
73-142 units per acre	0.20 of supplemental
143 or more units per acre	0.30 of supplemental
Commercial Use Reductions*	
4% to 8.9% gross floor area	0.10 of supplemental
9% to 12.9% gross floor area	0.20 of supplemental
13% or more gross floor area	0.30 of supplemental
Common Area Portion	In planned urbanizing areas only, 20% of resident and supplemental spaces must be located in a common area

(see next page for additional land uses)

NOTES:

- These parking rates are subject to change.

* If a PDO exists, parking requirements may vary from the above rates.

OTHER LAND USES

Hotel	1 per guest room
Restaurant	
Free-standing building	1 per 60 gross sq. ft.
Combined in project	1 per 80 gross sq. ft.
Banquet Room	1 per 80 gross sq. ft.
Retail	1 per 200 gross sq. ft.
Medical Office	1 per 250 gross sq. ft.
Commercial Office	1 per 300 gross sq. ft.
Scientific Research and Development	1 per 400 gross sq. ft.
Library	
With high meeting room use	1 per 175 gross sq. ft.
Without high meeting room use	1 per 200 gross sq. ft.
Daycare Center	
Staff	1 per each adult (1 per 6 students)
Loading/unloading area	Add 1 per 12 students
Hospital	
With transit	1.75 per bed
Without transit	2 per bed
Convalescent Hospital	1 per 3 beds
Theatre	
1-3 screens	1 per 3 seats
4 or more screens	1 per 3.3 seats
Church	1 per 3 seats
Health Club	1 per 200 gross sq. ft.
Marina	1 per 3 boat slips
General Aviation Airport	
Parking in hangars/tiedowns	9 per 100 hangars/tiedowns
No parking in hangars/tiedowns	27 per 100 hangars/tiedowns
Industrial	1 per 400 gross sq. ft.
Warehousing	
Storage area	1 per 1,000 gross sq. ft.
Office area	1 per 300 gross sq. ft.

NOTES:

- These parking rates are subject to change.
- If a PDO exists, parking requirements may vary from the above rates.

§ 142.0540 Cont'd Footnote to Table 142-05G

(1) The City Engineer will determine whether a *lot* has adequate *alley* access according to accepted engineering practices.

(b) Exceeding Maximum Permitted Parking. Development proposals may exceed the maximum permitted automobile parking requirement shown in Tables 142-05D, 142-05E, and 142-05F with the approval of a Neighborhood Development Permit, subject to the following:

(1) The *applicant* must show that the proposed parking spaces are required to meet anticipated parking demand, will not encourage additional automobile trips, and will not result in adverse site design impacts; and

(2) The number of automobile parking spaces provided shall not be greater than 125 percent of the maximum that would otherwise be permitted.

(c) Varying From Minimum Parking Requirements. Development proposals may, at the applicant's option, vary from the minimum parking requirements of this division with the approval of a Transportation Demand Management (TDM) Plan and Site Development Permit decided in accordance with Process Three, subject to the following requirements.

(1) The TDM Plan shall be designed to reduce peak period automobile use with such techniques as carpooling, vanpooling, transit, bicycling, walking, telecommuting, compressed work weeks, or flextime.

(2) To compensate for a reduction in parking, the TDM Plan shall specify only those measures that would not otherwise be required by this division.

(3) In no case shall the number of automobile parking spaces provided be less than 85 percent of the minimum that would otherwise be required.

(4) The *applicant* shall show that the TDM Plan adequately mitigates the proposed reductions in automobile parking.

(5) The owner shall set aside land for a parking facility or allow for future construction or expansion of a structured parking facility that is sufficient to provide additional parking spaces equal in number to the number reduced.

(6) In the event of noncompliance with the TDM Plan, the City Manager shall require the owner to construct additional parking spaces equal in number to the spaces originally reduced.

§ 142.0545 Shared Parking Requirements

(a) Approval Criteria. In all zones except single unit residential zones, *shared parking* may be approved through a Building Permit subject to the following requirements.

(1) *Shared parking* requests shall be for two or more different land uses located adjacent or near to one another, subject to the standards in this section.

(2) All *shared parking* facilities shall be located within a 600-foot horizontal distance of the uses served.

§ 142.0545 Cont'd

(3) Parties involved in the shared use of a parking facility shall provide an agreement for the shared use in a form that is acceptable to the City Attorney.

(4) *Shared parking* facilities shall provide *signs* on the *premises* indicating the availability of the facility for patrons of the participating uses.

(5) Modifications to the *structure* in which the uses are located or changes in tenant occupancy require review by the City Manager for compliance with this section.

(b) Shared Parking Formula. *Shared parking* is based upon the variations in the number of parking spaces needed (parking demand) over the course of the day for each of the proposed uses. The hour in which the highest number of parking spaces is needed (peak parking demand) for the proposed *development*, based upon the standards in this section, determines the minimum number of required *off-street parking spaces* for the proposed *development*.

(1) The *shared parking* formula is as follows:

A, B, C	=	proposed uses to share parking spaces
PA	=	parking demand in the peak hour for Use A
PB	=	parking demand in the peak hour for Use B
PC	=	parking demand in the peak hour for Use C
HA%	=	the percentage of peak parking demand for Use A in Hour H
HB%	=	the percentage of peak parking demand for Use B in Hour H
HC%	=	the percentage of peak parking demand for Use C in Hour H
P(A, B, C)	=	peak parking demand for Uses A, B and C combined

Formula:

P(A, B, C) = (PA x HA%) + (PB x HB%) + (PC x HC%),
where H = that hour of the day (H) that maximizes P(A, B, C)

(2) Table 142-05G contains the peak parking demand for selected uses, expressed as a ratio of parking spaces to *floor* area.

(3) Table 142-05H contains the percentage of peak parking demand that selected uses generate for each hour of the day (hourly accumulation curve), in some cases separated into weekdays and Saturdays. The period during which a use is expected to generate its peak parking demand is indicated as 100 percent, and the period during which no parking demand is expected is indicated with "-".

(4) The parking demand that a use generates in a particular hour of the day is determined by multiplying the peak parking demand for the use by the percentage of peak parking demand the use generates in that hour.

(5) The parking demand of the proposed *development* in a particular hour of the day is determined by adding together the parking demand for each use in that hour.

§ 142.0545 Cont'd

(6) The minimum number of required *off-street parking spaces* for the proposed *development* is the highest hourly parking demand.

(7) Uses for which standards are not provided in Tables 142-05H and 142-05I may nevertheless provide *shared parking* with the approval of a Neighborhood Development Permit, provided that the *applicant* shows evidence that the standards used for the proposed *development* result in an accurate representation of the peak parking demand.

(c) Single Use Parking Ratios. *Shared parking* is subject to the parking ratios in Table 142-05H.

Table 142-05H
Parking Ratios for Shared Parking

Use	Peak Parking Demand (Ratio of spaces per 1,000 square feet of floor area unless otherwise noted. Floor area includes gross floor area plus below grade *floor* area and excludes floor area devoted to parking)	Transit Area[1]
Office (except medical office)		
Weekday	3.3	2.8
Saturday	0.5	0.5
Medical office		
Weekday	4.0	3.4
Saturday	0.5	0.5
Retail sales	5.0	4.3
Eating & drinking establishment	15.0	12.8
Cinema 1-3 screens 4 or more screens	1 space per 3 seats 1 space per 3.3 seats	1 space per 3 seats 1 space per 3.3 seats
Visitor accommodations	1 space per *guest room*	1 space per *guest room*
Conference room	10.0	10.0
Multiple dwelling units	(see Section 142.0525)	

Footnote for Table 142-05H

(1) *Transit Area*. The *transit area* peak parking demand applies in the *Transit Area* Overlay Zone (see Chapter 13, Article 2, Division 10).

(d) Hourly Accumulation Rates. Table 142-05I contains, for each hour of the day shown in the left column, the percentage of peak demand for each of the uses, separated in some cases into weekdays and Saturdays.

§ 142.0545
Cont'd

Table 142-05I
Representative Hourly Accumulation by Percentage of Peak Hour

Hour of Day	Office (Except Medical Office)		Medical Office		Retail Sales		Eating & Drinking establishment.		Cinema	
	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday	Weekday	Saturday
6 a.m.	5%	-	5%	-	-	-	15%	20%	-	-
7 a.m.	15	30%	20	20%	10%	5%	55%	35%	-	-
8 a.m.	55	50	65	40	30	30	80	55	-	-
9 a.m	90	80	90	80	50	50	65	70	-	-
10 a.m.	100	90	100	95	70	75	25	30	5%	-
11 a.m.	100	100	100	100	80	90	65	40	5	-
Noon	90	100	80	100	100	95	100	60	30	30%
1 p.m.	85	85	65	95	95	100	80	65	70	70
2 p.m.	90	75	80	85	85	100	55	60	70	70
3 p.m.	90	70	80	95	80	90	35	60	70	70
4 p.m.	85	65	80	50	75	85	30	50	70	70
5 p.m.	55	40	50	45	80	75	45	65	70	70
6 p.m.	25	35	15	45	80	65	65	85	80	80
7 p.m.	15	25	10	40	75	60	55	100	100	90
8 p.m.	5	20	5	5	60	55	55	100	100	100
9 p.m.	5	-	5	-	45	45	45	85	100	100
10 p.m.	5	-	5	-	30	35	35	75	100	100
11p.m.	-	-	-	-	15	15	15	30	80	80
Midnight	-	-	-	-	-	-	5	25	70	70

Hour of Day	Visitor Accommodations					
	Guest Room		Eating & Drinking Establishment		Conference Room	Exhibit Hall and Convention Facility
	Weekday	Saturday	Weekday	Saturday	Daily	Daily
6 a.m.	100%	90%	15%	20%	-	-
7 a.m.	95	80	55	35	--	-
8 a.m.	85	75	80	55	50%	50%
9 a.m	85	70	65	70	100	100
10 a.m.	80	60	25	30	100	100
11 a.m.	75	55	65	40	100	100
Noon	70	50	100	60	100	100
1 p.m.	70	50	80	65	100	100
2 p.m.	70	50	55	60	100	100

§ 142.0545 Cont'd

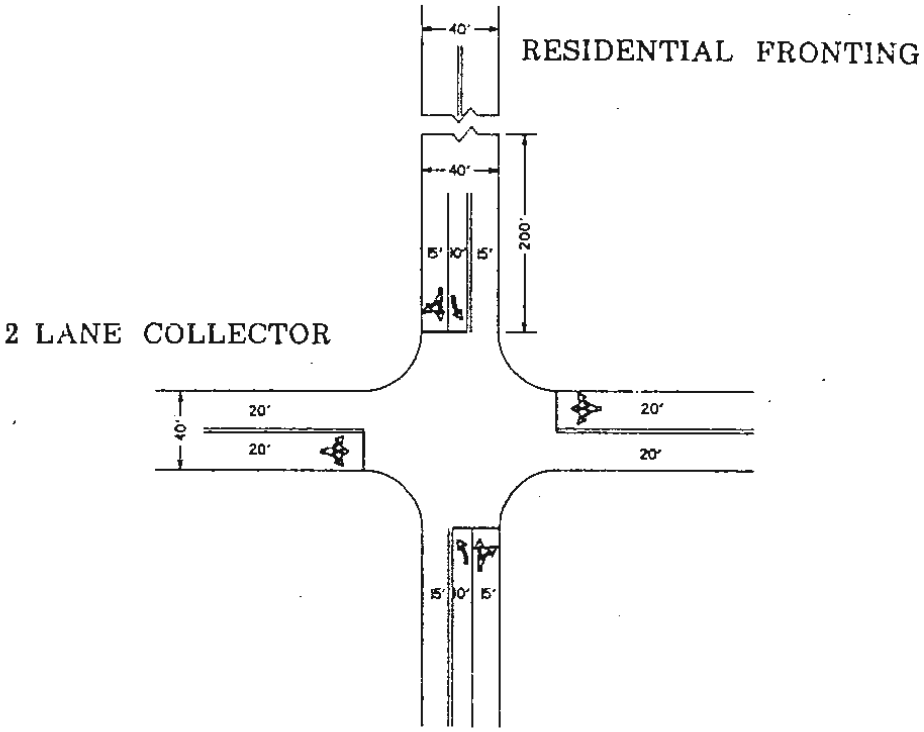
Hour of Day	Visitor Accommodations					
	Guest Room		Eating & Drinking Establishment		Conference Room	Exhibit Hall and Convention Facility
3 p.m.	60	50	40	60	100	100
4 p.m.	65	50	30	50	100	100
5 p.m.	60	60	45	65	100	100
6 p.m.	65	65	65	85	100	100
7 p.m.	75	70	55	100	100	100
8 p.m.	85	70	55	100	100	100
9 p.m.	90	75	45	85	100	100
10p.m.	90	85	35	75	50	50
11p.m.	100	95	15	30	-	-
Midnight	100	100	10	25	-	-

Hour of Day	Residential	
	Weekday	Saturday
6 a.m.	100%	100%
7 a.m.	80	100
8 a.m.	60	95
9 a.m	50	85
10 a.m.	40	80
11 a.m.	40	75
Noon	40	70
1 p.m.	35	65
2 p.m.	40	65
3 p.m.	45	65
4 p.m.	45	65
5 p.m.	50	65
6 p.m.	65	70
7 p.m.	70	75
8 p.m.	75	80
9 p.m.	85	80
10 p.m.	90	85
11 p.m.	95	90
Midnight	100	95

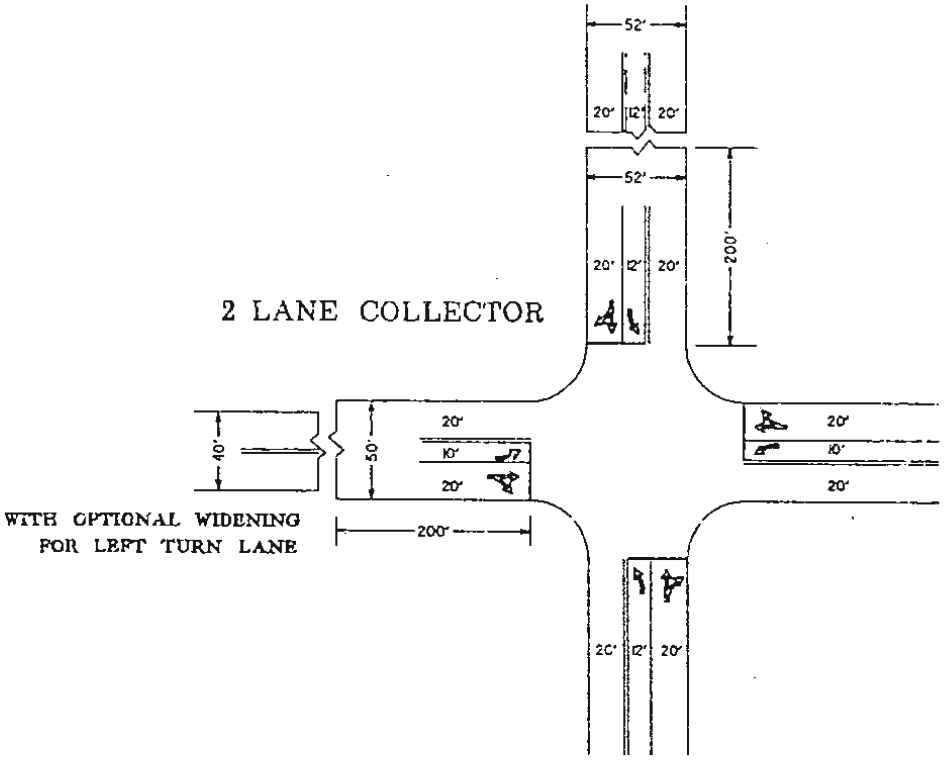
APPENDIX 4

INTERSECTION LANE CONFIGURATIONS

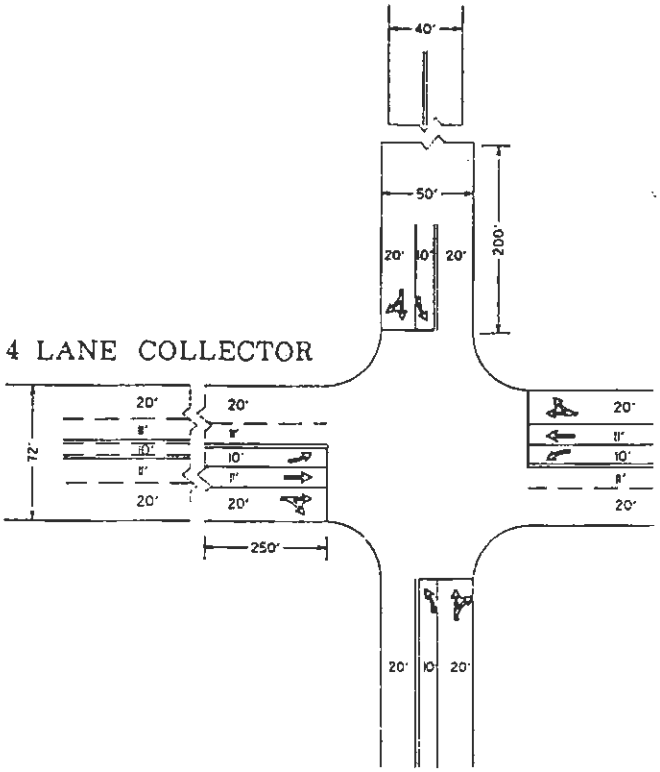
2 LANE COLLECTOR



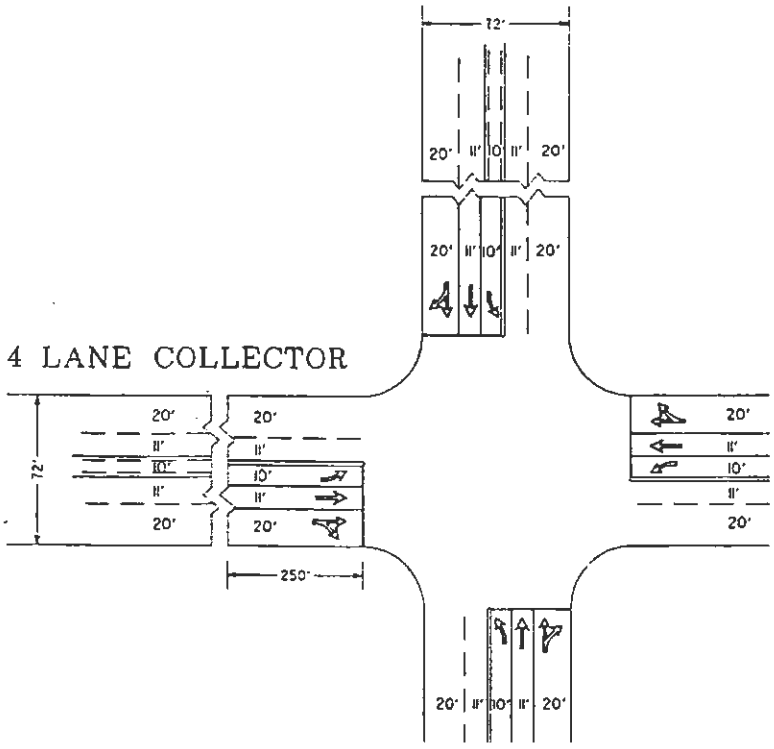
2 LANE COLLECTOR
WITH CONTINOUS TWO-WAY
LEFT-TURN LANE



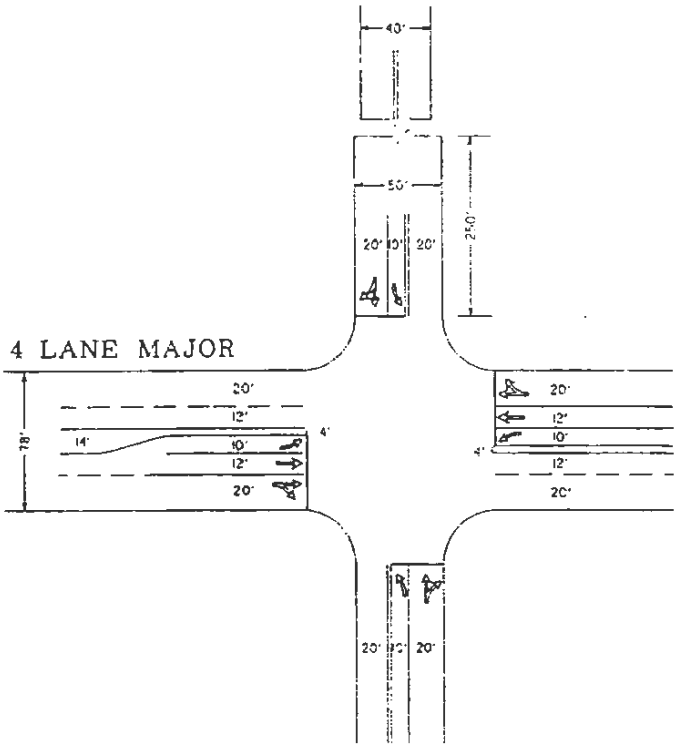
2 LANE COLLECTOR



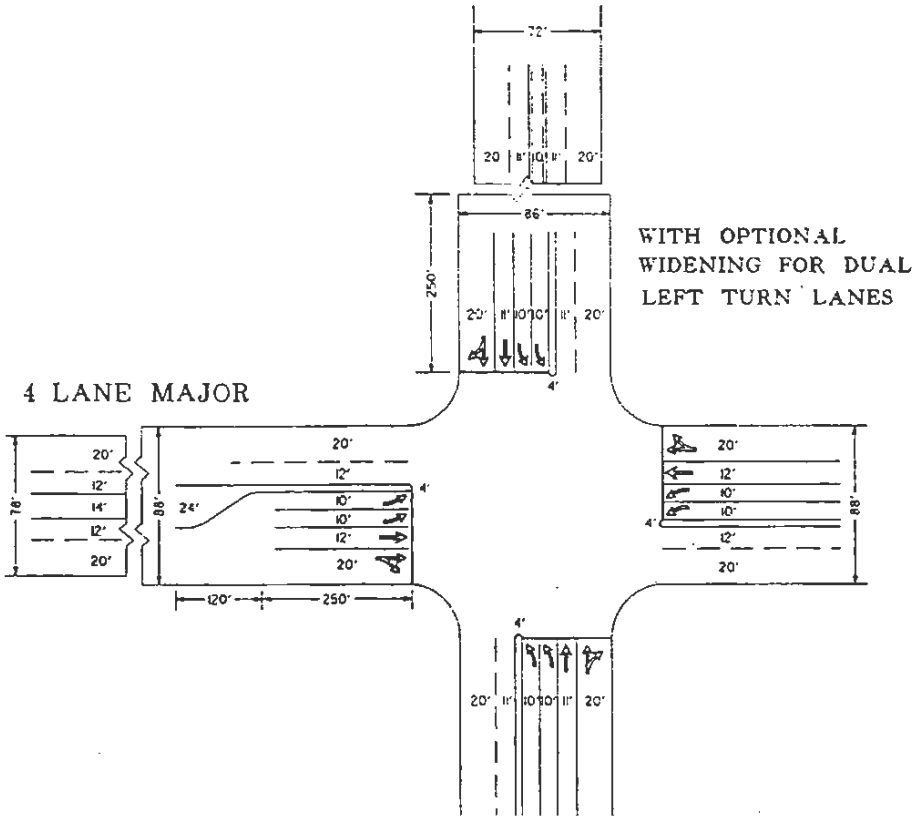
4 LANE COLLECTOR



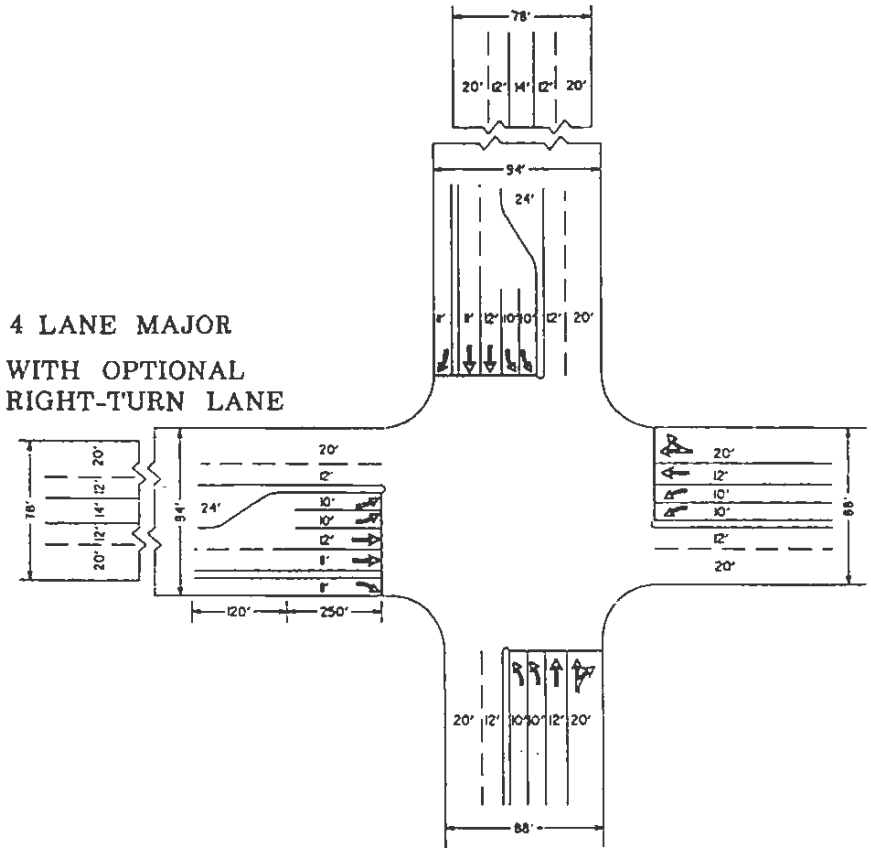
2 LANE COLLECTOR



4 LANE COLLECTOR



4 LANE MAJOR

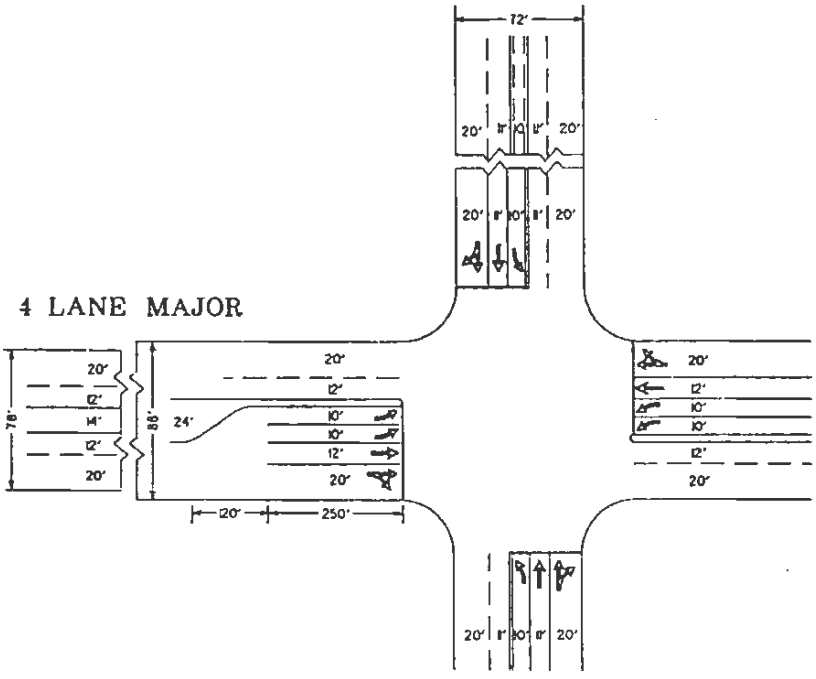


4 LANE MAJOR

WITH OPTIONAL

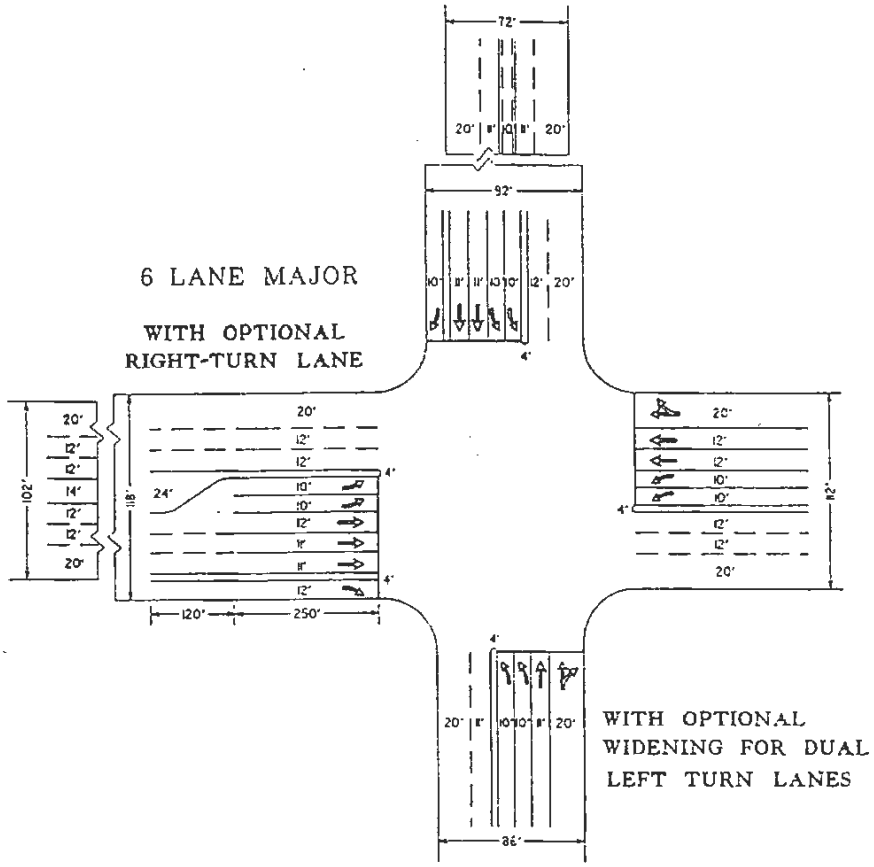
RIGHT-TURN LANE

4 LANE COLLECTOR

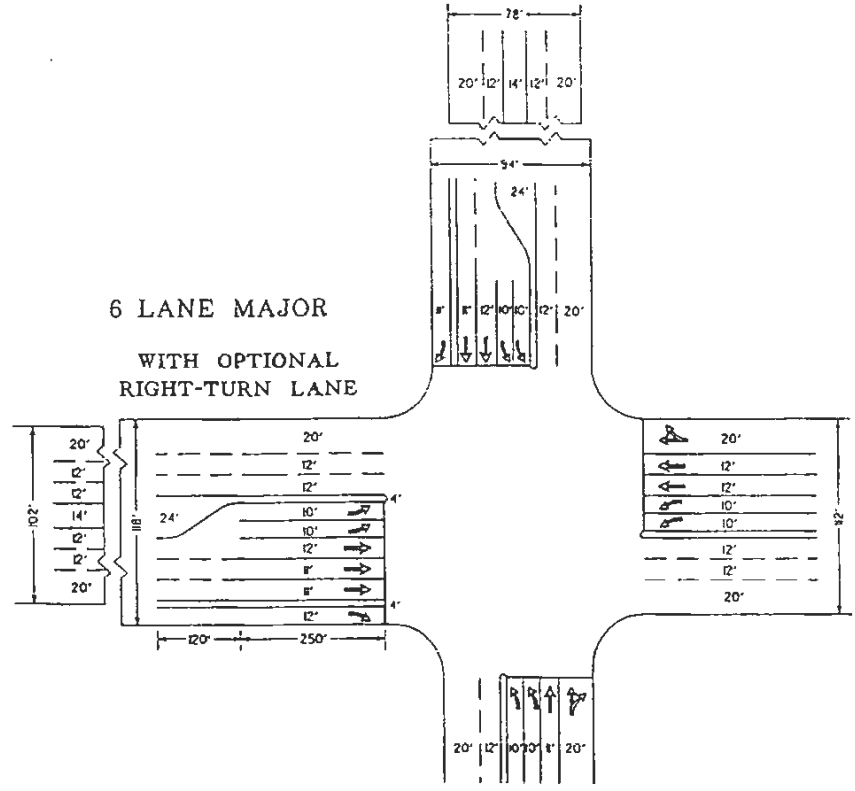


4 LANE MAJOR

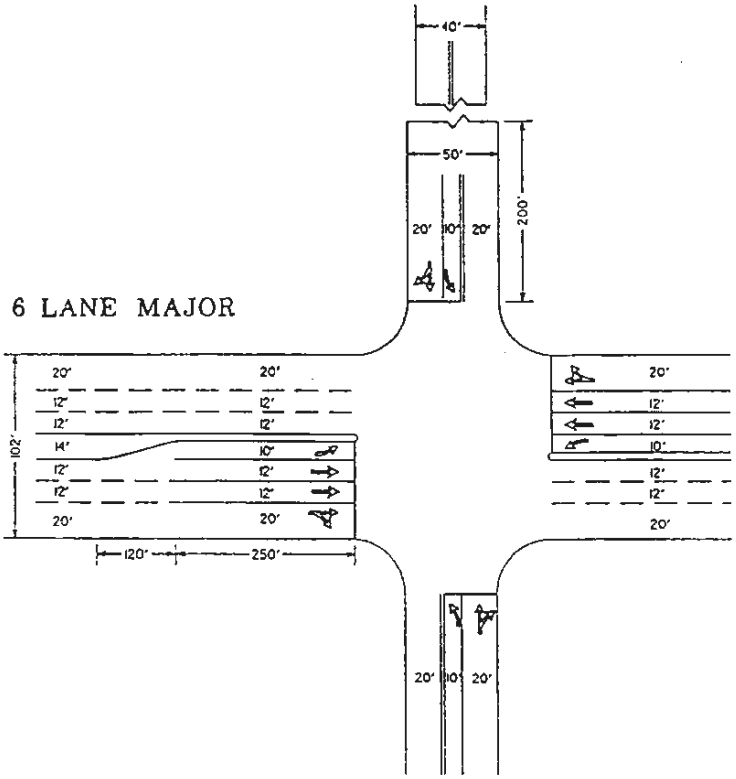
4 LANE COLLECTOR



4 LANE MAJOR

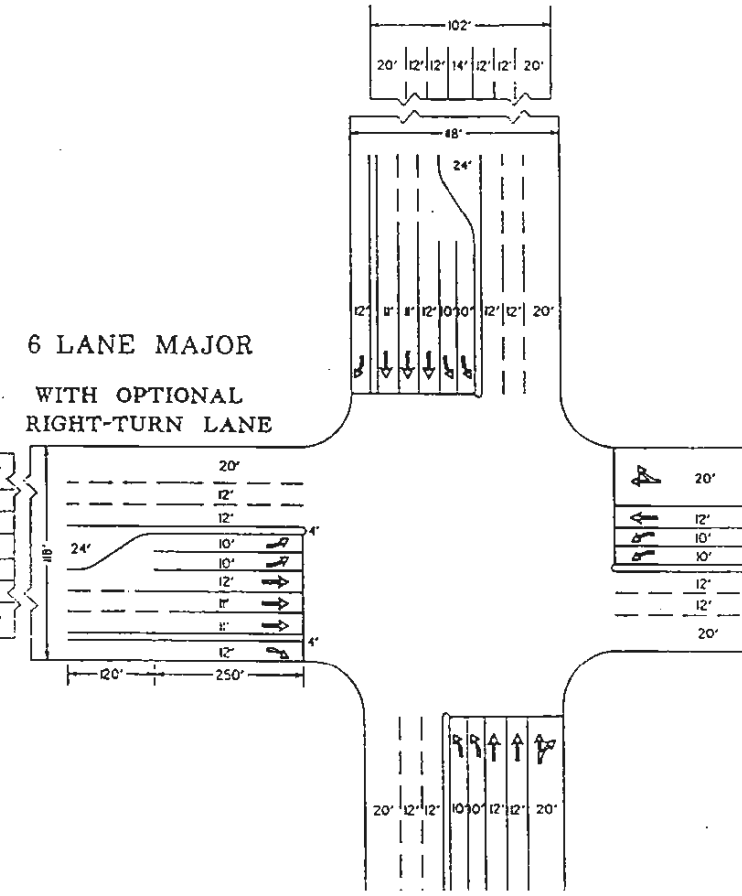


2 LANE COLLECTOR



6 LANE MAJOR

6 LANE MAJOR



6 LANE MAJOR

WITH OPTIONAL
RIGHT-TURN LANE

City Staff Members who participated in the 1993 effort:

Labib Qasem
Linda Marabian
David Sorenson (currently working for Kimley-Horn)
Allen Holden, Jr.
Gary Halbert

Traffic consultants who served on the 1993 Task Force:

Marcos Esparza (JHK & Associates)
Brian Hartshorn (Darnell & Associates, Inc.)
Tijana Stojsic Hamilton (Barton-Aschman Associates, Inc.)
John Keating (Linscott, Law & Greenspan, Engineers)
Erik Ruehr (JHK & Associates)
Ronald Sieke (P&D Technologies, Inc.)

PAGES FROM THE 2014 REGIONAL TRANSPORTATION PLAN/SUSTAINABLE COMMUNITIES STRATEGY, KERN COUNTY COUNCIL OF GOVERNMENTS

Kern Council of Governments

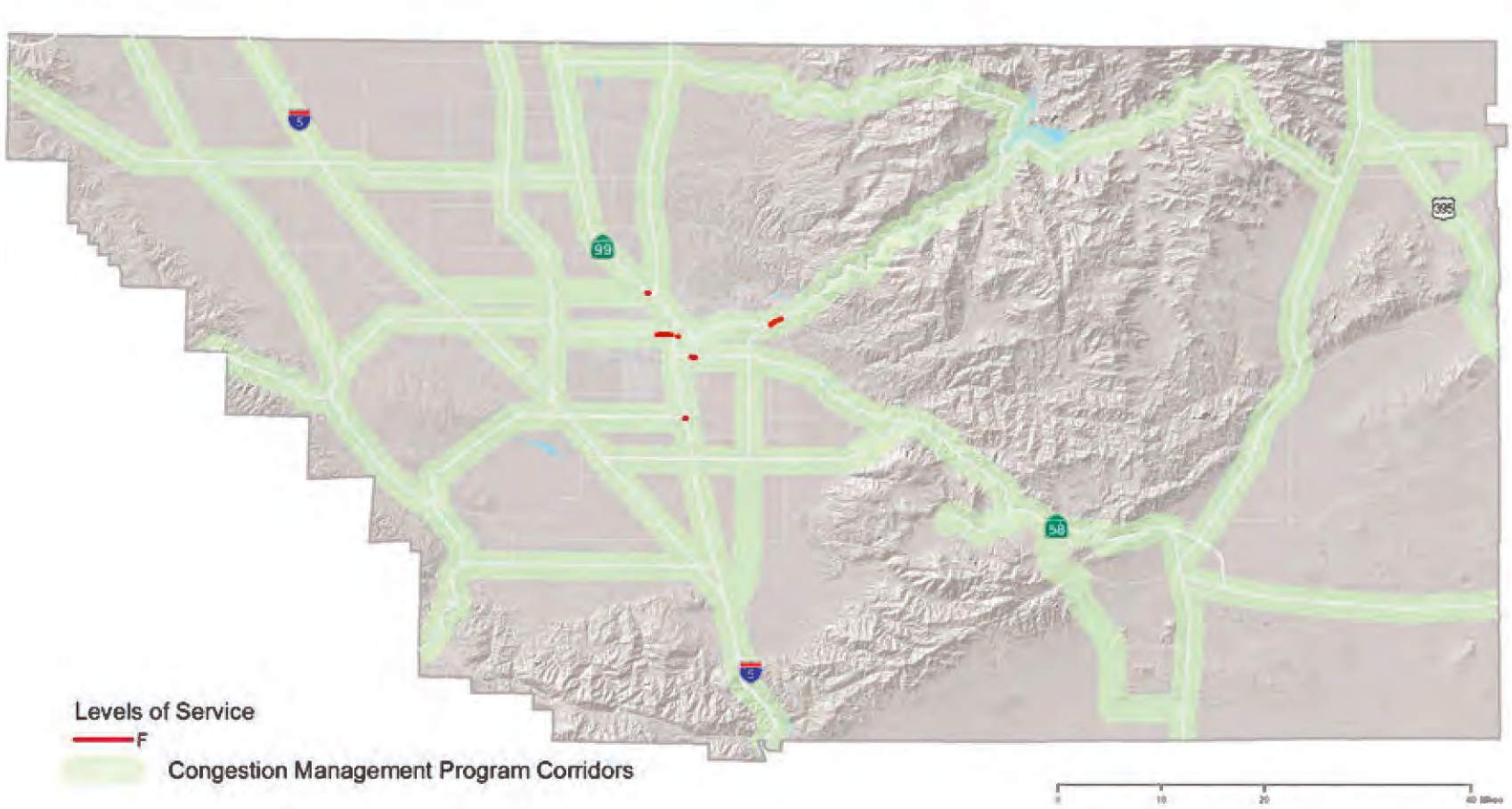
2014 Regional Transportation Plan/Sustainable Communities Strategy

June 19, 2014

Kern Council of Governments

www.kemcog.org

FIGURE 5-10: KERN COUNTY CONGESTION MANAGEMENT PROGRAM CORRIDORS



1401 19th Street, Suite 300, Bakersfield, California 93301
The source of specific funding and Kern COG are not responsible for any misuse or misinformation contained in the report.

Level of Service Standards

The purpose of this section is to establish level of service standards for the Congestion Management road network in Kern County. California Government Code Section 65089(b)(1)(B) requires that level of service standards be established at no worse than LOS E, or LOS F if that is the current level of service.

Level of service, according to the Transportation and Traffic Engineering Handbook, is a "qualitative measure that represents the collective factors of speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort and convenience, and operating costs provided by a highway facility under a particular volume condition." Level of service is ranked from A to F, with A being best and F being worst (see Table 5-6).

TABLE 5-6: LEVELS OF SERVICE

Level of Service A	Free flow: no approach phase is fully used by traffic and no vehicle waits longer than one red indication. Insignificant delays.
Level of Service B	Stable operation: an occasional approach phase is fully used. Many drivers begin to feel somewhat restricted within platoons of vehicles. Minimal delays.
Level of Service C	Stable operation: major approach phase may become fully used and most drivers feel somewhat restricted. Acceptable delays.
Level of Service D	Approaching unstable: drivers may have to wait through more than one red signal cycle. Queues develop but dissipate without excessive delays.
Level of Service E	Unstable operation: volumes at or near capacity. Vehicles may wait through several signal cycles and long queues form upstream from intersection. Significant delays.
Level of Service F	Forced flow: represents jammed conditions. Intersection operates below capacity with several delays that may block upstream intersections.

Jurisdictions are encouraged to incorporate multimodal level of service standards as appropriate for each community facility type, place type and corridor type as recommended in the latest Highway Capacity Manual update. The 2012 update to the project selection criteria includes consideration of highway, bike and pedestrian level of service. To refer to the Kern COG Project Delivery Policies and Procedures please use the followinglink: www.kerncog.org/images/docs/policies/Project_Selection_Process_2012.pdf

Adopted Level of Service Standards

One of the most important elements of the congestion management process is to establish traffic level of service standards to decide how much traffic, during peak hours, is acceptable. LOS is a way of measuring the amount of traffic congestion.

Level of service E has been established as the minimum system-wide LOS traffic standard in the Kern COG Congestion Management Plan. Those roads currently experiencing worse traffic congestion have been accepted at their existing traffic level of LOS F. By so doing, cities and the County will not be penalized through loss of gas tax funds for not meeting the new CMP LOS E standard. Existing LOS F locations are listed below.

- Seventh Standard Road – SR 99 to Coffee Road
- Portions of SR 119 at SR 99

The source of specific funding and Kern COG are not responsible for any misuse or misinformation contained in the report.

- Portions of SR 178/24th Street – Oak Street to N Street
- Portions of SR 58 – SR 99 to Cottonwood Road
- Portions of SR 58/Rosedale Highway – SR 99 to Fruitvale Ave

(List updated based on most recent travel demand model validation base year)

Projects along one of the existing LOS F segments, with 1 or more peak-hour trips (or as required by the most recent Caltrans Guide for the Preparation of Traffic Impact Studies), shall include a deficiency plan for the affected corridor segments as part of the traffic study for the project's environmental document or as a separate stand-alone deficiency plan for the affected corridor.

Overall, the number of congested segments and vehicle miles traveled has dropped since the last travel demand model validation. Of the segments that remain LOS F, a stand-alone Corridor System Management Plan (CSMP)/deficiency plan has been completed for SR 58. Also note that 7th Standard Road LOS F segment received capacity improvements in 2011 and is not included in the most recent transportation model base year validation from 2008. The CMP assumes that recently completed capacity increasing improvements will operate better than LOS F until the next transportation model update indicates that the segment has been degraded to LOS F again. The model update validation uses observed traffic data from the annual traffic monitoring program. A CSMP or Transportation Concept Report (TCR) has not been completed for the congested portions of SR178 and SR119. These routes are under the grace period for requirement of a deficiency plan and have capacity improvements already planned in this RTP. All other deficiencies are off the CMP network.

In addition to the LOS standards of the CMP, some cities and the County of Kern have adopted policies to help maintain their own LOS standards. In most cases, these local policies are aimed at maintaining LOS C. These standards are not intended to replace local policies by allowing greater congestion; they serve a very different purpose. The locally adopted LOS standards are tied to the cities' and County's authority to approve or deny development, require mitigation measures, and construct roadway improvements. The level of service standard is a planning tool to be used in the development review process. Failure to meet the local standard does not have direct negative federal financial impacts.

Mitigating Deficiencies

The Deficiency Plan is similar to a CSMP or TCR. The deficiency plan section of the traffic study should analyze affected portion of the CMP network and parallel corridors as appropriate. A grace period is being provided until Kern COG and/or Caltrans completes the CSMP or TCR for all the congested segments in the Congestion Management network.

- Multimodal Analysis – The modes analyzed should be dependent on the place type. For example, in most cases rural intercity travel need not look at pedestrian facilities. The plan should provide mitigation and a monitoring program to offset impacts to all modes through incident and demand management strategies.

- Corridor Analysis – Corridor impacts to a mode may be mitigated by providing capacity on a parallel facility. For example, an impacted facility may lack pedestrian and bike facilities; however, a parallel bike/pedestrian path within the corridor could offset this deficiency. In addition, impacts to transit buses stuck in the same traffic congestion as single-occupant vehicles could be mitigated by the provision of a transit/HOV lane in the congested travel direction during peak periods. Additional mitigation for congestion could be through the provision of a freeway service patrol to rapidly clear traffic accidents during peak periods.

The source of specific funding and Kern COG are not responsible for any misuse or misinformation contained in the report.

- Multimodal Circulation Plans – As required by AB 1358 effective January 2011, at the next regularly scheduled update, local circulation plans should consider other modes and methods for assessing service. In addition to the road network, circulation plans should include bike, pedestrian, and transit networks. The bike/pedestrian/transit networks should provide for transit-oriented development centers that could serve as transfer points and nodes for future express and/or regional service. The centers also should provide a connected network linking to future high-speed rail and passenger rail stations. These centers should be reflected in the Land Use Element of the General Plan with higher densities and a mix of land uses that make for a vibrant pedestrian-oriented destination.

- Funding Mitigation – Funding for mitigation may be phased as part of the mitigation monitoring program. Developer-funded mitigation would be timed with the completion of phases that created the impacts. Other funding sources could include local and regional traffic impact fees, a transportation sales tax measure, and the Kern Motorist Aid Authority DMV fee for freeway service patrols and traveler assistance 511 services. A Corridor System Management Plan could be prepared by Kern COG to assist with the development of the cost/benefit analysis.

- Congestion Pricing – On major freeway and highway facilities, HOV lanes, bus lanes, and toll lanes can be used to fund new capacity for single-occupant vehicle traffic. At the national level, odometer-based tolling is being considered to fund and maintain infrastructure that supports goods movement activity. Variable parking costs can also be used as a strategy to reduce congestion during peak periods.

- Grace Period – Member agencies are not required to prepare a deficiency plan or traffic study as required under this section until Kern COG or Caltrans completes the Corridor System Management Plan or Transportation Concept Report for the deficient segments on the CMP system.

Congestion Management Agency Role

Under the State CEQA Guidelines, the Congestion Management Agency monitors a countywide level of service standard and withholds federal gas tax funds if the standard is not met or mitigated. Local agencies often establish more stringent level of service requirements as part of the circulation plans. The CMP standard is not viewed as being in conflict with locally adopted LOS standards that are more stringent.

It is the Congestion Management Agency's responsibility to ensure that all cities and the County are following the CMP. Of particular importance is the establishment of traffic counts and regional traffic modeling. Kern COG completes one coordinated and comprehensive review of current LOS traffic data with each RTP update; each city and the County is evaluated in the same manner. Through the Kern Regional Traffic Count Program, the cities, County and Caltrans undertake traffic counts on their roads annually. Use of recent peak-hour traffic counts as a basis for traffic forecasting eliminates much of the "guesswork" and ensures that the review is based on actual traffic conditions.

Provisions include:

- All roadway segments on the Congestion Management network shall maintain a level of service of E or better.

- Any roadway segments on the Congestion Management network that are operating at a level of service worse than E on the adoption of the first CMP shall be required to prepare a deficiency plan as part of the traffic study for a proposed development. The plan shall provide mitigation through transportation system management and travel demand management strategies and/or capacity for other modes such as transit and HOV that is not affected by the slower speeds of congested single-occupant vehicle

The source of specific funding and Kern COG are not responsible for any misuse or misinformation contained in the report.

APPENDIX B

WEEKDAY AND SATURDAY INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – EXISTING

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	27	16	32	3	10	0	2	73	11
Future Vol, veh/h	3	0	3	27	16	32	3	10	0	2	73	11
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	4	35	21	41	4	13	0	3	94	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	179	148	121	150	155	33	118	0	0	23	0	0
Stage 1	117	117	-	31	31	-	-	-	-	-	-	-
Stage 2	62	31	-	119	124	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	783	743	930	818	737	1041	1470	-	-	1592	-	-
Stage 1	888	799	-	986	869	-	-	-	-	-	-	-
Stage 2	949	869	-	885	793	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	719	724	912	796	719	1021	1456	-	-	1577	-	-
Mov Cap-2 Maneuver	719	724	-	796	719	-	-	-	-	-	-	-
Stage 1	877	789	-	974	858	-	-	-	-	-	-	-
Stage 2	878	858	-	871	783	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	9.5	1.7	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1456	-	-	804	765	1021	1577	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.072	0.04	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.5	10.1	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	52	4	30	303	0	2	0	3	0	0	0
Future Vol, veh/h	0	52	4	30	303	0	2	0	3	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	59	5	34	344	0	2	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	354	0	0	74	0	0	494	494	82	495	496	364
Stage 1	-	-	-	-	-	-	72	72	-	422	422	-
Stage 2	-	-	-	-	-	-	422	422	-	73	74	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1205	-	-	1526	-	-	486	476	978	485	475	681
Stage 1	-	-	-	-	-	-	938	835	-	609	588	-
Stage 2	-	-	-	-	-	-	609	588	-	937	833	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1194	-	-	1511	-	-	467	454	959	464	453	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	467	454	-	464	453	-
Stage 1	-	-	-	-	-	-	929	827	-	603	566	-
Stage 2	-	-	-	-	-	-	586	566	-	925	825	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	10.4	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	675	1194	-	-	1511	-	-	-
HCM Lane V/C Ratio	0.008	-	-	-	0.023	-	-	-
HCM Control Delay (s)	10.4	0	-	-	7.4	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	29	38	1	365	0	0	0	0	6	2	14
Future Vol, veh/h	0	29	38	1	365	0	0	0	0	6	2	14
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	36	47	1	451	0	0	0	0	7	2	17

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	46	0	0			499	499	461
Stage 1	-	-	-	-	-	-			453	453	-
Stage 2	-	-	-	-	-	-			46	46	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1562	-	0			531	473	600
Stage 1	0	-	0	-	-	0			640	570	-
Stage 2	0	-	0	-	-	0			976	857	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1562	-	-			530	0	594
Mov Cap-2 Maneuver	-	-	-	-	-	-			530	0	-
Stage 1	-	-	-	-	-	-			640	0	-
Stage 2	-	-	-	-	-	-			975	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1562	-	530	594
HCM Lane V/C Ratio	-	0.001	-	0.019	0.029
HCM Control Delay (s)	-	7.3	0	11.9	11.2
HCM Lane LOS	-	A	A	B	B
HCM 95th %tile Q(veh)	-	0	-	0.1	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	7	28	0	0	327	17	39	0	1	0	0	0
Future Vol, veh/h	7	28	0	0	327	17	39	0	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	32	0	0	372	19	44	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	382	0	-	-	-	0	430	430	42
Stage 1	-	-	-	-	-	-	48	48	-
Stage 2	-	-	-	-	-	-	382	382	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1176	-	0	0	-	0	582	518	1029
Stage 1	-	-	0	0	-	0	974	855	-
Stage 2	-	-	0	0	-	0	690	613	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1176	-	-	-	-	-	572	0	1019
Mov Cap-2 Maneuver	-	-	-	-	-	-	572	0	-
Stage 1	-	-	-	-	-	-	967	0	-
Stage 2	-	-	-	-	-	-	683	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.6	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	572	1019	1176	-	-
HCM Lane V/C Ratio	0.077	0.001	0.007	-	-
HCM Control Delay (s)	11.8	8.5	8.1	0	-
HCM Lane LOS	B	A	A	A	-
HCM 95th %tile Q(veh)	0.3	0	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	0	10	359	10	5
Future Vol, veh/h	27	0	10	359	10	5
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	0	11	390	11	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	39	0	461	35
Stage 1	-	-	-	-	39	-
Stage 2	-	-	-	-	422	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1570	-	544	1030
Stage 1	-	-	-	-	979	-
Stage 2	-	-	-	-	661	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1555	-	529	1010
Mov Cap-2 Maneuver	-	-	-	-	529	-
Stage 1	-	-	-	-	969	-
Stage 2	-	-	-	-	650	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	629	-	-	1555	-
HCM Lane V/C Ratio	0.026	-	-	0.007	-
HCM Control Delay (s)	10.9	-	-	7.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	11	257	35	0	26	0	0	52	79
Future Vol, veh/h	0	0	0	11	257	35	0	26	0	0	52	79
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	12	286	39	0	29	0	0	58	88

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	97	97	39	68	0	-	-	-	0	
Stage 1	29	29	-	-	-	-	-	-	-	
Stage 2	68	68	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	902	793	1033	1533	-	0	0	-	0	
Stage 1	994	871	-	-	-	0	0	-	0	
Stage 2	955	838	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	893	0	1023	1533	-	-	-	-	-	
Mov Cap-2 Maneuver	893	0	-	-	-	-	-	-	-	
Stage 1	994	0	-	-	-	-	-	-	-	
Stage 2	945	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1533	-	893	1023	-
HCM Lane V/C Ratio	-	-	0.333	0.038	-
HCM Control Delay (s)	0	-	11	8.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	1.5	0.1	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	40	0	2	23	17	0	0	0	25	38	0
Future Vol, veh/h	9	40	0	2	23	17	0	0	0	25	38	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	46	0	2	26	20	0	0	0	29	44	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	56	0	-	56	0	0			126	126	56
Stage 1	-	-	-	-	-	-			50	50	-
Stage 2	-	-	-	-	-	-			76	76	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1549	-	0	1549	-	-			869	764	1011
Stage 1	-	-	0	-	-	-			972	853	-
Stage 2	-	-	0	-	-	-			947	832	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1534	-	-	1549	-	-			845	0	992
Mov Cap-2 Maneuver	-	-	-	-	-	-			845	0	-
Stage 1	-	-	-	-	-	-			955	0	-
Stage 2	-	-	-	-	-	-			937	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0.3	9.7
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1534	-	1549	-	-	845
HCM Lane V/C Ratio	0.007	-	0.001	-	-	0.086
HCM Control Delay (s)	7.4	-	7.3	0	-	9.7
HCM Lane LOS	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	-	0	-	-	0.3

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	15	1	27	2	23	0	42
Future Vol, veh/h	0	0	0	0	1	15	1	27	2	23	0	42
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	20	1	36	3	31	0	56
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	6.9	7.9	7.3
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	3%	0%	0%	100%	0%
Vol Thru, %	90%	100%	0%	0%	0%
Vol Right, %	7%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	30	1	15	23	42
LT Vol	1	0	0	23	0
Through Vol	27	1	0	0	0
RT Vol	2	0	15	0	42
Lane Flow Rate	40	1	20	31	56
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.051	0.002	0.022	0.043	0.061
Departure Headway (Hd)	4.601	4.749	4.048	5.091	3.891
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	778	746	873	705	922
Service Time	2.632	2.527	1.826	2.81	1.609
HCM Lane V/C Ratio	0.051	0.001	0.023	0.044	0.061
HCM Control Delay	7.9	7.5	6.9	8	6.9
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0	0.1	0.1	0.2

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	1	0	10	1	14	2	99	0	14	13	3
Future Vol, veh/h	48	1	0	10	1	14	2	99	0	14	13	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	1	0	11	1	15	2	104	0	15	14	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	182	174	36	174	175	124	27	0	0	114	0	0
Stage 1	56	56	-	118	118	-	-	-	-	-	-	-
Stage 2	126	118	-	56	57	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	779	719	1037	789	718	927	1587	-	-	1475	-	-
Stage 1	956	848	-	887	798	-	-	-	-	-	-	-
Stage 2	878	798	-	956	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	745	697	1017	767	696	909	1572	-	-	1461	-	-
Mov Cap-2 Maneuver	745	697	-	767	696	-	-	-	-	-	-	-
Stage 1	945	831	-	877	789	-	-	-	-	-	-	-
Stage 2	854	789	-	936	830	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	9.4	0.1	3.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	744	760	909	1461	-	-
HCM Lane V/C Ratio	0.001	-	-	0.069	0.015	0.016	0.01	-	-
HCM Control Delay (s)	7.3	0	-	10.2	9.8	9	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	249	3	4	63	0	2	0	20	0	0	0
Future Vol, veh/h	0	249	3	4	63	0	2	0	20	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	277	3	4	70	0	2	0	22	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	80	0	0	290	0	0	377	377	299	388	378	90
Stage 1	-	-	-	-	-	-	289	289	-	88	88	-
Stage 2	-	-	-	-	-	-	88	88	-	300	290	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1518	-	-	1272	-	-	580	555	741	571	554	968
Stage 1	-	-	-	-	-	-	719	673	-	920	822	-
Stage 2	-	-	-	-	-	-	920	822	-	709	672	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1504	-	-	1260	-	-	568	542	727	542	541	950
Mov Cap-2 Maneuver	-	-	-	-	-	-	568	542	-	542	541	-
Stage 1	-	-	-	-	-	-	712	666	-	911	811	-
Stage 2	-	-	-	-	-	-	909	811	-	681	665	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	10.3	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	709	1504	-	-	1260	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-	0.004	-	-	-
HCM Control Delay (s)	10.3	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	225	73	1	73	0	0	0	0	2	0	21
Future Vol, veh/h	0	225	73	1	73	0	0	0	0	2	0	21
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	259	84	1	84	0	0	0	0	2	0	24

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	269	0	0			355	355	94
Stage 1	-	-	-	-	-	-			86	86	-
Stage 2	-	-	-	-	-	-			269	269	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1295	-	0			643	571	963
Stage 1	0	-	0	-	-	0			937	824	-
Stage 2	0	-	0	-	-	0			776	687	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1295	-	-			642	0	954
Mov Cap-2 Maneuver	-	-	-	-	-	-			642	0	-
Stage 1	-	-	-	-	-	-			937	0	-
Stage 2	-	-	-	-	-	-			775	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	9
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1295	-	642	954
HCM Lane V/C Ratio	-	0.001	-	0.004	0.025
HCM Control Delay (s)	-	7.8	0	10.6	8.9
HCM Lane LOS	-	A	A	B	A
HCM 95th %tile Q(veh)	-	0	-	0	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩			↑	↱		↩	↱			
Traffic Vol, veh/h	9	218	0	0	45	24	29	1	1	0	0	0
Future Vol, veh/h	9	218	0	0	45	24	29	1	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	245	0	0	51	27	33	1	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	61	0	-	-	-	0	326	326	255
Stage 1	-	-	-	-	-	-	265	265	-
Stage 2	-	-	-	-	-	-	61	61	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1542	-	0	0	-	0	668	592	784
Stage 1	-	-	0	0	-	0	779	689	-
Stage 2	-	-	0	0	-	0	962	844	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1542	-	-	-	-	-	656	0	777
Mov Cap-2 Maneuver	-	-	-	-	-	-	656	0	-
Stage 1	-	-	-	-	-	-	773	0	-
Stage 2	-	-	-	-	-	-	952	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	656	777	1542	-	-
HCM Lane V/C Ratio	0.051	0.001	0.007	-	-
HCM Control Delay (s)	10.8	9.6	7.3	0	-
HCM Lane LOS	B	A	A	A	-
HCM 95th %tile Q(veh)	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	219	0	5	75	10	5
Future Vol, veh/h	219	0	5	75	10	5
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	238	0	5	82	11	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	248	0	350	139
Stage 1	-	-	-	-	248	-
Stage 2	-	-	-	-	102	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1316	-	634	884
Stage 1	-	-	-	-	771	-
Stage 2	-	-	-	-	922	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1303	-	619	867
Mov Cap-2 Maneuver	-	-	-	-	619	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	910	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	10.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	684	-	-	1303	-
HCM Lane V/C Ratio	0.024	-	-	0.004	-
HCM Control Delay (s)	10.4	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	31	32	0	114	0	0	55	20
Future Vol, veh/h	0	0	0	4	31	32	0	114	0	0	55	20
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	33	34	0	123	0	0	59	22

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	192	192	133	69	0	-	-	-	0
Stage 1	123	123	-	-	-	-	-	-	-
Stage 2	69	69	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	797	703	916	1532	-	0	0	-	0
Stage 1	902	794	-	-	-	0	0	-	0
Stage 2	954	837	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	789	0	907	1532	-	-	-	-	-
Mov Cap-2 Maneuver	789	0	-	-	-	-	-	-	-
Stage 1	902	0	-	-	-	-	-	-	-
Stage 2	944	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.5	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1532	-	789	907	-
HCM Lane V/C Ratio	-	-	0.048	0.038	-
HCM Control Delay (s)	0	-	9.8	9.1	-
HCM Lane LOS	A	-	A	A	-
HCM 95th %tile Q(veh)	0	-	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	184	0	7	25	39	0	0	0	29	29	1
Future Vol, veh/h	75	184	0	7	25	39	0	0	0	29	29	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	211	0	8	29	45	0	0	0	33	33	1

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	84	0	-	221	0	0			471	471	72
Stage 1	-	-	-	-	-	-			78	78	-
Stage 2	-	-	-	-	-	-			393	393	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1513	-	0	1348	-	-			551	491	990
Stage 1	-	-	0	-	-	-			945	830	-
Stage 2	-	-	0	-	-	-			682	606	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1499	-	-	1348	-	-			506	0	971
Mov Cap-2 Maneuver	-	-	-	-	-	-			506	0	-
Stage 1	-	-	-	-	-	-			883	0	-
Stage 2	-	-	-	-	-	-			672	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2.2	0.8	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1499	-	1348	-	-	514
HCM Lane V/C Ratio	0.058	-	0.006	-	-	0.132
HCM Control Delay (s)	7.5	-	7.7	0	-	13.1
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.5

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	38	25	2	46	1	20	0	193
Future Vol, veh/h	0	0	0	0	38	25	2	46	1	20	0	193
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	43	28	2	52	1	23	0	219
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.9	8.4	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	4%	0%	0%	100%	0%
Vol Thru, %	94%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	49	38	25	20	193
LT Vol	2	0	0	20	0
Through Vol	46	38	0	0	0
RT Vol	1	0	25	0	193
Lane Flow Rate	56	43	28	23	219
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.076	0.062	0.035	0.033	0.243
Departure Headway (Hd)	4.943	5.191	4.488	5.185	3.984
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	728	694	802	684	888
Service Time	2.949	2.893	2.19	2.968	1.766
HCM Lane V/C Ratio	0.077	0.062	0.035	0.034	0.247
HCM Control Delay	8.4	8.2	7.4	8.1	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0.2	0.1	0.1	1

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	2	11	2	108	0	14	10	3
Future Vol, veh/h	0	0	0	2	2	11	2	108	0	14	10	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	3	15	3	144	0	19	13	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	232	223	35	223	225	164	27	0	0	154	0	0
Stage 1	63	63	-	160	160	-	-	-	-	-	-	-
Stage 2	169	160	-	63	65	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	723	676	1038	733	674	881	1587	-	-	1426	-	-
Stage 1	948	842	-	842	766	-	-	-	-	-	-	-
Stage 2	833	766	-	948	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	687	652	1018	710	650	864	1572	-	-	1412	-	-
Mov Cap-2 Maneuver	687	652	-	710	650	-	-	-	-	-	-	-
Stage 1	937	822	-	832	757	-	-	-	-	-	-	-
Stage 2	807	757	-	926	821	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.5	0.1	3.9
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	-	679	864	1412	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.008	0.017	0.013	-	-
HCM Control Delay (s)	7.3	0	-	0	10.3	9.2	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	231	0	7	57	0	2	1	18	0	0	0
Future Vol, veh/h	0	231	0	7	57	0	2	1	18	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	260	0	8	64	0	2	1	20	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	74	0	0	270	0	0	360	360	280	371	360	84
Stage 1	-	-	-	-	-	-	270	270	-	90	90	-
Stage 2	-	-	-	-	-	-	90	90	-	281	270	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1526	-	-	1293	-	-	596	567	759	586	567	975
Stage 1	-	-	-	-	-	-	736	686	-	917	820	-
Stage 2	-	-	-	-	-	-	917	820	-	726	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1511	-	-	1281	-	-	582	552	745	556	552	957
Mov Cap-2 Maneuver	-	-	-	-	-	-	582	552	-	556	552	-
Stage 1	-	-	-	-	-	-	729	679	-	908	807	-
Stage 2	-	-	-	-	-	-	903	807	-	698	679	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	10.2	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	714	1511	-	-	1281	-	-	-
HCM Lane V/C Ratio	0.033	-	-	-	0.006	-	-	-
HCM Control Delay (s)	10.2	0	-	-	7.8	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	226	73	2	71	0	0	0	0	1	1	33
Future Vol, veh/h	0	226	73	2	71	0	0	0	0	1	1	33
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	272	88	2	86	0	0	0	0	1	1	40

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	282	0	0			372	372	96
Stage 1	-	-	-	-	-	-			90	90	-
Stage 2	-	-	-	-	-	-			282	282	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1280	-	0			629	558	960
Stage 1	0	-	0	-	-	0			934	820	-
Stage 2	0	-	0	-	-	0			766	678	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1280	-	-			628	0	951
Mov Cap-2 Maneuver	-	-	-	-	-	-			628	0	-
Stage 1	-	-	-	-	-	-			934	0	-
Stage 2	-	-	-	-	-	-			764	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.2	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1280	-	628	951
HCM Lane V/C Ratio	-	0.002	-	0.004	0.042
HCM Control Delay (s)	-	7.8	0	10.8	9
HCM Lane LOS	-	A	A	B	A
HCM 95th %tile Q(veh)	-	0	-	0	0.1

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	12	215	0	0	40	23	33	0	0	0	0	0
Future Vol, veh/h	12	215	0	0	40	23	33	0	0	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	244	0	0	45	26	38	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	55	0	-	-	-	0	327	327	254
Stage 1	-	-	-	-	-	-	272	272	-
Stage 2	-	-	-	-	-	-	55	55	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1550	-	0	0	-	0	667	591	785
Stage 1	-	-	0	0	-	0	774	685	-
Stage 2	-	-	0	0	-	0	968	849	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1550	-	-	-	-	-	654	0	778
Mov Cap-2 Maneuver	-	-	-	-	-	-	654	0	-
Stage 1	-	-	-	-	-	-	766	0	-
Stage 2	-	-	-	-	-	-	958	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	654	-	1550	-	-
HCM Lane V/C Ratio	0.057	-	0.009	-	-
HCM Control Delay (s)	10.8	0	7.3	0	-
HCM Lane LOS	B	A	A	A	-
HCM 95th %tile Q(veh)	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	215	0	5	68	10	5
Future Vol, veh/h	215	0	5	68	10	5
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	234	0	5	74	11	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	244	0	338	137
Stage 1	-	-	-	-	244	-
Stage 2	-	-	-	-	94	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1321	-	645	887
Stage 1	-	-	-	-	775	-
Stage 2	-	-	-	-	929	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1308	-	630	870
Mov Cap-2 Maneuver	-	-	-	-	630	-
Stage 1	-	-	-	-	767	-
Stage 2	-	-	-	-	917	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	694	-	-	1308	-
HCM Lane V/C Ratio	0.023	-	-	0.004	-
HCM Control Delay (s)	10.3	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	28	20	0	125	0	0	46	8
Future Vol, veh/h	0	0	0	4	28	20	0	125	0	0	46	8
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	6	42	30	0	187	0	0	69	12

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	266	266	197	79	0	-	-	-	0
Stage 1	187	187	-	-	-	-	-	-	-
Stage 2	79	79	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	723	640	844	1519	-	0	0	-	0
Stage 1	845	745	-	-	-	0	0	-	0
Stage 2	944	829	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	716	0	836	1519	-	-	-	-	-
Mov Cap-2 Maneuver	716	0	-	-	-	-	-	-	-
Stage 1	845	0	-	-	-	-	-	-	-
Stage 2	935	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1519	-	716	836	-
HCM Lane V/C Ratio	-	-	0.067	0.036	-
HCM Control Delay (s)	0	-	10.4	9.5	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	109	206	0	7	32	16	0	0	0	20	30	0
Future Vol, veh/h	109	206	0	7	32	16	0	0	0	20	30	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	165	312	0	11	48	24	0	0	0	30	45	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	82	0	-	322	0	0			744	744	80
Stage 1	-	-	-	-	-	-			92	92	-
Stage 2	-	-	-	-	-	-			652	652	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1515	-	0	1238	-	-			382	343	980
Stage 1	-	-	0	-	-	-			932	819	-
Stage 2	-	-	0	-	-	-			518	464	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1501	-	-	1238	-	-			330	0	961
Mov Cap-2 Maneuver	-	-	-	-	-	-			330	0	-
Stage 1	-	-	-	-	-	-			821	0	-
Stage 2	-	-	-	-	-	-			509	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	1	19.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1501	-	1238	-	-	330
HCM Lane V/C Ratio	0.11	-	0.009	-	-	0.23
HCM Control Delay (s)	7.7	-	7.9	0	-	19.1
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	-	0	-	-	0.9

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	18	15	0	40	3	28	0	198
Future Vol, veh/h	0	0	0	0	18	15	0	40	3	28	0	198
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	25	21	0	55	4	38	0	271
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.9	8.3	8.4
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	93%	100%	0%	0%	0%
Vol Right, %	7%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	43	18	15	28	198
LT Vol	0	0	0	28	0
Through Vol	40	18	0	0	0
RT Vol	3	0	15	0	198
Lane Flow Rate	59	25	21	38	271
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.08	0.037	0.026	0.055	0.297
Departure Headway (Hd)	4.9	5.33	4.626	5.142	3.941
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	736	675	778	692	903
Service Time	2.9	3.033	2.33	2.904	1.702
HCM Lane V/C Ratio	0.08	0.037	0.027	0.055	0.3
HCM Control Delay	8.3	8.2	7.5	8.2	8.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0.1	0.2	1.2

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Existing Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2703	204
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3594	239
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.57	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	509.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.311
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1438
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.2
Flow in Lanes 1 and 2 (v12), pc/h	2156	Ramp Junction Speed (S), mi/h	64.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2395	Average Density (D), pc/mi/ln	19.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Existing Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2541	44
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3422	51
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.51	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	432.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.300
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1369
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.5
Flow in Lanes 1 and 2 (v12), pc/h	2053	Ramp Junction Speed (S), mi/h	64.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2104	Average Density (D), pc/mi/ln	17.8
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	16.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Existing Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	1869	41
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	2461	48
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.56	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.316
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	2461	Ramp Junction Speed (S), mi/h	62.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2509	Average Density (D), pc/mi/ln	20.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Existing Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2714	24
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3650	28
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.82	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.422
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	59.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3650	Ramp Junction Speed (S), mi/h	59.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	3678	Average Density (D), pc/mi/ln	31.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Existing Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3173	75
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4273	88
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.63	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1469
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.649	Outer Lanes Freeway Speed (SO), mi/h	76.7
Flow in Lanes 1 and 2 (v12), pc/h	2804	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Existing Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2703	303
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3640	355
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.54	0.19

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	18.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.483
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1140
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.653	Outer Lanes Freeway Speed (SO), mi/h	78.0
Flow in Lanes 1 and 2 (v12), pc/h	2500	Ramp Junction Speed (S), mi/h	62.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.4
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Existing Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2541	30
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3379	35
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.50	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.455
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1090
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.674	Outer Lanes Freeway Speed (SO), mi/h	78.2
Flow in Lanes 1 and 2 (v12), pc/h	2289	Ramp Junction Speed (S), mi/h	63.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	17.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Existing Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	1869	22
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	2514	26
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.56	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.454
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	2514	Ramp Junction Speed (S), mi/h	58.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Existing Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2714	40
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3573	47
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.456
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3573	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	30.7
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Existing Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3390	204
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4508	239
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.70	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	705.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.342
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1803
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.9
Flow in Lanes 1 and 2 (v12), pc/h	2705	Ramp Junction Speed (S), mi/h	63.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2944	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Existing Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2738	233
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3687	273
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.15

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	536.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.315
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1475
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.1
Flow in Lanes 1 and 2 (v12), pc/h	2212	Ramp Junction Speed (S), mi/h	64.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	2485	Average Density (D), pc/mi/ln	20.5
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Existing Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2852	74
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3755	87
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.85	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.450
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3755	Ramp Junction Speed (S), mi/h	58.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3842	Average Density (D), pc/mi/ln	33.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Existing Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3384	34
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4551	40
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.02	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	671.7	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	52.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4551	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4591	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	36.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Existing Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3710	25
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4996	29
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.454
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1818
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.634	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3178	Ramp Junction Speed (S), mi/h	63.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	28.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Existing Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3390	67
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4565	78
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.68	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	103.2	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.458
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1606
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.642	Outer Lanes Freeway Speed (SO), mi/h	76.2
Flow in Lanes 1 and 2 (v12), pc/h	2959	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Existing Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2738	49
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3641	57
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.54	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.457
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1197
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.666	Outer Lanes Freeway Speed (SO), mi/h	77.8
Flow in Lanes 1 and 2 (v12), pc/h	2444	Ramp Junction Speed (S), mi/h	63.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Existing Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2852	23
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3836	27
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.85	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.454
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3836	Ramp Junction Speed (S), mi/h	58.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Existing Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3384	31
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4455	36
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.99	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.455
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4455	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	38.3
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Existing Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4467	204
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5940	239
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.91	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1011.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.443
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2376
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	64.6
Flow in Lanes 1 and 2 (v12), pc/h	3564	Ramp Junction Speed (S), mi/h	60.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	3803	Average Density (D), pc/mi/ln	33.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Existing Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3668	216
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4939	253
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.77	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	800.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.365
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1976
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.3
Flow in Lanes 1 and 2 (v12), pc/h	2963	Ramp Junction Speed (S), mi/h	62.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3216	Average Density (D), pc/mi/ln	27.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Existing Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3350	76
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4411	89
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.00	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.619
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	53.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	4411	Ramp Junction Speed (S), mi/h	53.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	4500	Average Density (D), pc/mi/ln	42.2
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	35.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Existing Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3989	35
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5365	41
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.20	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	846.1	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	37.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5365	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5406	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	42.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Existing Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4758	15
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6407	18
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.453
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2562
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.599	Outer Lanes Freeway Speed (SO), mi/h	72.5
Flow in Lanes 1 and 2 (v12), pc/h	3845	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Existing Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4467	52
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6015	61
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.89	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	80.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.457
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2340
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.607	Outer Lanes Freeway Speed (SO), mi/h	73.3
Flow in Lanes 1 and 2 (v12), pc/h	3675	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.7
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Existing Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3668	43
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4878	50
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.456
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1757
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.636	Outer Lanes Freeway Speed (SO), mi/h	75.6
Flow in Lanes 1 and 2 (v12), pc/h	3121	Ramp Junction Speed (S), mi/h	63.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Existing Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3350	35
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4505	41
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.00	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.455
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4505	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	38.8
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Existing Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3989	33
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5252	39
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.17	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5252	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5252	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	45.8

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX C

WEEKDAY AND SATURDAY INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – EXISTING + PROJECT PHASE 1 (ALTERNATIVE A1)

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	27	47	32	3	10	0	2	73	11
Future Vol, veh/h	3	0	3	27	47	32	3	10	0	2	73	11
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	4	35	60	41	4	13	0	3	94	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	199	148	121	150	155	33	118	0	0	23	0	0
Stage 1	117	117	-	31	31	-	-	-	-	-	-	-
Stage 2	82	31	-	119	124	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	760	743	930	818	737	1041	1470	-	-	1592	-	-
Stage 1	888	799	-	986	869	-	-	-	-	-	-	-
Stage 2	926	869	-	885	793	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	667	724	912	796	719	1021	1456	-	-	1577	-	-
Mov Cap-2 Maneuver	667	724	-	796	719	-	-	-	-	-	-	-
Stage 1	877	789	-	974	858	-	-	-	-	-	-	-
Stage 2	816	858	-	871	783	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	10	1.7	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1456	-	-	770	745	1021	1577	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.127	0.04	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.7	10.5	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	68	4	30	313	0	2	0	3	0	0	0
Future Vol, veh/h	0	68	4	30	313	0	2	0	3	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	77	5	34	356	0	2	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	366	0	0	92	0	0	524	524	100	525	526	376
Stage 1	-	-	-	-	-	-	90	90	-	434	434	-
Stage 2	-	-	-	-	-	-	434	434	-	91	92	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1193	-	-	1503	-	-	464	458	956	463	457	670
Stage 1	-	-	-	-	-	-	917	820	-	600	581	-
Stage 2	-	-	-	-	-	-	600	581	-	916	819	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1182	-	-	1489	-	-	445	436	938	443	436	657
Mov Cap-2 Maneuver	-	-	-	-	-	-	445	436	-	443	436	-
Stage 1	-	-	-	-	-	-	908	812	-	594	559	-
Stage 2	-	-	-	-	-	-	578	559	-	904	811	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	10.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	650	1182	-	-	1489	-	-	-
HCM Lane V/C Ratio	0.009	-	-	-	0.023	-	-	-
HCM Control Delay (s)	10.6	0	-	-	7.5	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	45	38	20	375	0	0	0	0	84	2	14
Future Vol, veh/h	0	45	38	20	375	0	0	0	0	84	2	14
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	56	47	25	463	0	0	0	0	104	2	17

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	66	0	0			579	579	473
Stage 1	-	-	-	-	-	-			513	513	-
Stage 2	-	-	-	-	-	-			66	66	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1536	-	0			477	426	591
Stage 1	0	-	0	-	-	0			601	536	-
Stage 2	0	-	0	-	-	0			957	840	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1536	-	-			467	0	585
Mov Cap-2 Maneuver	-	-	-	-	-	-			467	0	-
Stage 1	-	-	-	-	-	-			601	0	-
Stage 2	-	-	-	-	-	-			936	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.4	14.5
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1536	-	467	585
HCM Lane V/C Ratio	-	0.016	-	0.227	0.03
HCM Control Delay (s)	-	7.4	0	15	11.3
HCM Lane LOS	-	A	A	C	B
HCM 95th %tile Q(veh)	-	0	-	0.9	0.1

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	122	0	0	356	65	39	0	32	0	0	0
Future Vol, veh/h	7	122	0	0	356	65	39	0	32	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	139	0	0	405	74	44	0	36	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	415	0	-	-	-	0	570	570	149
Stage 1	-	-	-	-	-	-	155	155	-
Stage 2	-	-	-	-	-	-	415	415	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1144	-	0	0	-	0	483	431	898
Stage 1	-	-	0	0	-	0	873	769	-
Stage 2	-	-	0	0	-	0	666	592	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1144	-	-	-	-	-	474	0	889
Mov Cap-2 Maneuver	-	-	-	-	-	-	474	0	-
Stage 1	-	-	-	-	-	-	866	0	-
Stage 2	-	-	-	-	-	-	659	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	474	889	1144	-	-
HCM Lane V/C Ratio	0.093	0.041	0.007	-	-
HCM Control Delay (s)	13.4	9.2	8.2	0	-
HCM Lane LOS	B	A	A	A	-
HCM 95th %tile Q(veh)	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	125	27	0	10	359	156	10	0	5	114	0	76
Future Vol, veh/h	125	27	0	10	359	156	10	0	5	114	0	76
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	136	29	0	11	390	170	11	0	5	124	0	83

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	560	0	0	39	0	0	860	893	35	794	808	485
Stage 1	-	-	-	-	-	-	311	311	-	497	497	-
Stage 2	-	-	-	-	-	-	549	582	-	297	311	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1009	-	-	1570	-	-	263	280	1030	292	314	581
Stage 1	-	-	-	-	-	-	675	658	-	554	544	-
Stage 2	-	-	-	-	-	-	519	498	-	688	658	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1009	-	-	1555	-	-	197	237	1010	256	266	575
Mov Cap-2 Maneuver	-	-	-	-	-	-	197	237	-	256	266	-
Stage 1	-	-	-	-	-	-	577	562	-	478	540	-
Stage 2	-	-	-	-	-	-	437	495	-	585	562	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.5	0.1	19.2	32.7
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	269	1009	-	-	1555	-	-	329
HCM Lane V/C Ratio	0.061	0.135	-	-	0.007	-	-	0.628
HCM Control Delay (s)	19.2	9.1	0.1	-	7.3	-	-	32.7
HCM Lane LOS	C	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	0.2	0.5	-	-	0	-	-	4

Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	11	304	35	0	26	0	0	52	79
Future Vol, veh/h	0	0	0	11	304	35	0	26	0	0	52	79
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	12	338	39	0	29	0	0	58	88

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	97	97	39	68	0	-	-	-	0	
Stage 1	29	29	-	-	-	-	-	-	-	
Stage 2	68	68	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	902	793	1033	1533	-	0	0	-	0	
Stage 1	994	871	-	-	-	0	0	-	0	
Stage 2	955	838	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	893	0	1023	1533	-	-	-	-	-	
Mov Cap-2 Maneuver	893	0	-	-	-	-	-	-	-	
Stage 1	994	0	-	-	-	-	-	-	-	
Stage 2	945	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1533	-	893	1023	-
HCM Lane V/C Ratio	-	-	0.392	0.038	-
HCM Control Delay (s)	0	-	11.6	8.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	1.9	0.1	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	88	0	2	132	17	0	0	0	25	38	0
Future Vol, veh/h	9	88	0	2	132	17	0	0	0	25	38	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	101	0	2	152	20	0	0	0	29	44	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	182	0	-	111	0	0	307	307	182
Stage 1	-	-	-	-	-	-	176	176	-
Stage 2	-	-	-	-	-	-	131	131	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1393	-	0	1479	-	-	685	607	861
Stage 1	-	-	0	-	-	-	855	753	-
Stage 2	-	-	0	-	-	-	895	788	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1380	-	-	1479	-	-	666	0	845
Mov Cap-2 Maneuver	-	-	-	-	-	-	666	0	-
Stage 1	-	-	-	-	-	-	840	0	-
Stage 2	-	-	-	-	-	-	885	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0.1	11.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1380	-	1479	-	-	666
HCM Lane V/C Ratio	0.007	-	0.002	-	-	0.109
HCM Control Delay (s)	7.6	-	7.4	0	-	11.1
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.4

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	15	1	136	2	23	0	90
Future Vol, veh/h	0	0	0	0	1	15	1	136	2	23	0	90
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	20	1	181	3	31	0	120
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.4	9.2	7.5
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	139	1	15	23	90
LT Vol	1	0	0	23	0
Through Vol	136	1	0	0	0
RT Vol	2	0	15	0	90
Lane Flow Rate	185	1	20	31	120
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.241	0.002	0.026	0.044	0.132
Departure Headway (Hd)	4.673	5.307	4.604	5.163	3.961
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	765	678	782	689	896
Service Time	2.724	3.007	2.304	2.925	1.722
HCM Lane V/C Ratio	0.242	0.001	0.026	0.045	0.134
HCM Control Delay	9.2	8	7.4	8.2	7.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.9	0	0.1	0.1	0.5

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	1	0	10	46	14	2	99	0	14	13	3
Future Vol, veh/h	48	1	0	10	46	14	2	99	0	14	13	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	1	0	11	48	15	2	104	0	15	14	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	206	174	36	174	175	124	27	0	0	114	0	0
Stage 1	56	56	-	118	118	-	-	-	-	-	-	-
Stage 2	150	118	-	56	57	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	752	719	1037	789	718	927	1587	-	-	1475	-	-
Stage 1	956	848	-	887	798	-	-	-	-	-	-	-
Stage 2	853	798	-	956	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	681	697	1017	767	696	909	1572	-	-	1461	-	-
Mov Cap-2 Maneuver	681	697	-	767	696	-	-	-	-	-	-	-
Stage 1	945	831	-	877	789	-	-	-	-	-	-	-
Stage 2	779	789	-	936	830	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	10.2	0.1	3.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	681	708	909	1461	-	-
HCM Lane V/C Ratio	0.001	-	-	0.076	0.083	0.016	0.01	-	-
HCM Control Delay (s)	7.3	0	-	10.7	10.5	9	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.3	0	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	271	3	4	81	0	2	0	20	0	0	0
Future Vol, veh/h	0	271	3	4	81	0	2	0	20	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	301	3	4	90	0	2	0	22	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	100	0	0	314	0	0	421	421	323	432	422	110
Stage 1	-	-	-	-	-	-	313	313	-	108	108	-
Stage 2	-	-	-	-	-	-	108	108	-	324	314	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1493	-	-	1246	-	-	543	524	718	534	523	943
Stage 1	-	-	-	-	-	-	698	657	-	897	806	-
Stage 2	-	-	-	-	-	-	897	806	-	688	656	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1479	-	-	1234	-	-	532	512	704	506	511	925
Mov Cap-2 Maneuver	-	-	-	-	-	-	532	512	-	506	511	-
Stage 1	-	-	-	-	-	-	691	650	-	888	796	-
Stage 2	-	-	-	-	-	-	886	796	-	660	649	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	10.5	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	684	1479	-	-	1234	-	-	-
HCM Lane V/C Ratio	0.036	-	-	-	0.004	-	-	-
HCM Control Delay (s)	10.5	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	247	73	38	91	0	0	0	0	114	0	21
Future Vol, veh/h	0	247	73	38	91	0	0	0	0	114	0	21
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	284	84	44	105	0	0	0	0	131	0	24

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	294	0	0				487	487	115
Stage 1	-	-	-	-	-	-				193	193	-
Stage 2	-	-	-	-	-	-				294	294	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1268	-	0				540	481	937
Stage 1	0	-	0	-	-	0				840	741	-
Stage 2	0	-	0	-	-	0				756	670	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	1268	-	-				520	0	928
Mov Cap-2 Maneuver	-	-	-	-	-	-				520	0	-
Stage 1	-	-	-	-	-	-				840	0	-
Stage 2	-	-	-	-	-	-				728	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.3	13.4
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1268	-	520	928
HCM Lane V/C Ratio	-	0.034	-	0.252	0.026
HCM Control Delay (s)	-	7.9	0	14.2	9
HCM Lane LOS	-	A	A	B	A
HCM 95th %tile Q(veh)	-	0.1	-	1	0.1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	9	352	0	0	100	116	29	1	46	0	0	0
Future Vol, veh/h	9	352	0	0	100	116	29	1	46	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	396	0	0	112	130	33	1	52	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	122	0	-	-	-	0	538	538	406
Stage 1	-	-	-	-	-	-	416	416	-
Stage 2	-	-	-	-	-	-	122	122	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1465	-	0	0	-	0	504	450	645
Stage 1	-	-	0	0	-	0	666	592	-
Stage 2	-	-	0	0	-	0	903	795	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1465	-	-	-	-	-	494	0	639
Mov Cap-2 Maneuver	-	-	-	-	-	-	494	0	-
Stage 1	-	-	-	-	-	-	660	0	-
Stage 2	-	-	-	-	-	-	894	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	494	639	1465	-	-
HCM Lane V/C Ratio	0.068	0.081	0.007	-	-
HCM Control Delay (s)	12.8	11.1	7.5	0	-
HCM Lane LOS	B	B	A	A	-
HCM 95th %tile Q(veh)	0.2	0.3	0	-	-

Intersection	
Int Delay, s/veh	36.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	179	219	0	5	75	224	10	0	5	220	0	147
Future Vol, veh/h	179	219	0	5	75	224	10	0	5	220	0	147
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	195	238	0	5	82	243	11	0	5	239	0	160

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	325	0	0	248	0	0	942	973	139	733	852	214
Stage 1	-	-	-	-	-	-	638	638	-	214	214	-
Stage 2	-	-	-	-	-	-	304	335	-	519	638	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1233	-	-	1316	-	-	230	251	884	322	296	825
Stage 1	-	-	-	-	-	-	432	470	-	788	725	-
Stage 2	-	-	-	-	-	-	705	642	-	509	470	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1233	-	-	1303	-	-	156	203	867	272	239	817
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	203	-	272	239	-
Stage 1	-	-	-	-	-	-	350	381	-	645	722	-
Stage 2	-	-	-	-	-	-	560	639	-	410	381	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4	0.1	23.1	102.2
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	215	1233	-	-	1303	-	-	371
HCM Lane V/C Ratio	0.076	0.158	-	-	0.004	-	-	1.075
HCM Control Delay (s)	23.1	8.5	0.3	-	7.8	-	-	102.2
HCM Lane LOS	C	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.2	0.6	-	-	0	-	-	14.1

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	98	32	0	114	0	0	55	20
Future Vol, veh/h	0	0	0	4	98	32	0	114	0	0	55	20
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	105	34	0	123	0	0	59	22

Major/Minor	Minor1			Major1				Major2		
Conflicting Flow All	192	192	133	69	0	-	-	-	0	
Stage 1	123	123	-	-	-	-	-	-	-	
Stage 2	69	69	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	797	703	916	1532	-	0	0	-	0	
Stage 1	902	794	-	-	-	0	0	-	0	
Stage 2	954	837	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	789	0	907	1532	-	-	-	-	-	
Mov Cap-2 Maneuver	789	0	-	-	-	-	-	-	-	
Stage 1	902	0	-	-	-	-	-	-	-	
Stage 2	944	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1532	-	789	907	-
HCM Lane V/C Ratio	-	-	0.139	0.038	-
HCM Control Delay (s)	0	-	10.3	9.1	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.5	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	276	0	7	182	39	0	0	0	29	29	1
Future Vol, veh/h	75	276	0	7	182	39	0	0	0	29	29	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	317	0	8	209	45	0	0	0	33	33	1

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	264	0	-	327	0	0			757	757	252
Stage 1	-	-	-	-	-	-			258	258	-
Stage 2	-	-	-	-	-	-			499	499	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1300	-	0	1233	-	-			375	337	787
Stage 1	-	-	0	-	-	-			785	694	-
Stage 2	-	-	0	-	-	-			610	544	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1288	-	-	1233	-	-			340	0	772
Mov Cap-2 Maneuver	-	-	-	-	-	-			340	0	-
Stage 1	-	-	-	-	-	-			725	0	-
Stage 2	-	-	-	-	-	-			600	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0.2	17.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1288	-	1233	-	-	346
HCM Lane V/C Ratio	0.067	-	0.007	-	-	0.196
HCM Control Delay (s)	8	-	7.9	0	-	17.9
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.7

Intersection	
Intersection Delay, s/veh	9.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	38	25	2	203	1	20	0	285
Future Vol, veh/h	0	0	0	0	38	25	2	203	1	20	0	285
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	43	28	2	231	1	23	0	324
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.6	10.6	9.4
HCM LOS	A	B	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	99%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	206	38	25	20	285
LT Vol	2	0	0	20	0
Through Vol	203	38	0	0	0
RT Vol	1	0	25	0	285
Lane Flow Rate	234	43	28	23	324
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.33	0.07	0.04	0.034	0.38
Departure Headway (Hd)	5.071	5.831	5.125	5.433	4.227
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	709	614	697	661	852
Service Time	3.095	3.573	2.867	3.152	1.946
HCM Lane V/C Ratio	0.33	0.07	0.04	0.035	0.38
HCM Control Delay	10.6	9	8.1	8.3	9.5
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.4	0.2	0.1	0.1	1.8

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	44	11	2	108	0	14	10	3
Future Vol, veh/h	0	0	0	2	44	11	2	108	0	14	10	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	59	15	3	144	0	19	13	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	260	223	35	223	225	164	27	0	0	154	0	0
Stage 1	63	63	-	160	160	-	-	-	-	-	-	-
Stage 2	197	160	-	63	65	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	693	676	1038	733	674	881	1587	-	-	1426	-	-
Stage 1	948	842	-	842	766	-	-	-	-	-	-	-
Stage 2	805	766	-	948	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	615	652	1018	710	650	864	1572	-	-	1412	-	-
Mov Cap-2 Maneuver	615	652	-	710	650	-	-	-	-	-	-	-
Stage 1	937	822	-	832	757	-	-	-	-	-	-	-
Stage 2	722	757	-	926	821	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.7	0.1	3.9
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	-	652	864	1412	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.094	0.017	0.013	-	-
HCM Control Delay (s)	7.3	0	-	0	11.1	9.2	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	252	0	7	88	0	2	1	18	0	0	0
Future Vol, veh/h	0	252	0	7	88	0	2	1	18	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	283	0	8	99	0	2	1	20	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	109	0	0	293	0	0	418	418	303	429	418	119
Stage 1	-	-	-	-	-	-	293	293	-	125	125	-
Stage 2	-	-	-	-	-	-	125	125	-	304	293	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1481	-	-	1269	-	-	545	526	737	536	526	933
Stage 1	-	-	-	-	-	-	715	670	-	879	792	-
Stage 2	-	-	-	-	-	-	879	792	-	705	670	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1467	-	-	1257	-	-	532	512	723	508	512	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	532	512	-	508	512	-
Stage 1	-	-	-	-	-	-	708	663	-	870	779	-
Stage 2	-	-	-	-	-	-	865	779	-	678	663	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	10.4	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	686	1467	-	-	1257	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-	0.006	-	-	-
HCM Control Delay (s)	10.4	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	247	73	65	102	0	0	0	0	105	1	33
Future Vol, veh/h	0	247	73	65	102	0	0	0	0	105	1	33
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	298	88	78	123	0	0	0	0	127	1	40

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	308	0	0				587	587	133
Stage 1	-	-	-	-	-	-				279	279	-
Stage 2	-	-	-	-	-	-				308	308	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1253	-	0				472	422	916
Stage 1	0	-	0	-	-	0				768	680	-
Stage 2	0	-	0	-	-	0				745	660	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	1253	-	-				440	0	907
Mov Cap-2 Maneuver	-	-	-	-	-	-				440	0	-
Stage 1	-	-	-	-	-	-				768	0	-
Stage 2	-	-	-	-	-	-				695	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3.1	14.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1253	-	440	907
HCM Lane V/C Ratio	-	0.063	-	0.29	0.044
HCM Control Delay (s)	-	8.1	0	16.5	9.2
HCM Lane LOS	-	A	A	C	A
HCM 95th %tile Q(veh)	-	0.2	-	1.2	0.1

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	12	340	0	0	134	179	33	0	42	0	0	0
Future Vol, veh/h	12	340	0	0	134	179	33	0	42	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	386	0	0	152	203	38	0	48	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	162	0	-	-	-	0	576	576	396
Stage 1	-	-	-	-	-	-	414	414	-
Stage 2	-	-	-	-	-	-	162	162	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1417	-	0	0	-	0	479	428	653
Stage 1	-	-	0	0	-	0	667	593	-
Stage 2	-	-	0	0	-	0	867	764	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1417	-	-	-	-	-	468	0	647
Mov Cap-2 Maneuver	-	-	-	-	-	-	468	0	-
Stage 1	-	-	-	-	-	-	658	0	-
Stage 2	-	-	-	-	-	-	858	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	468	647	1417	-	-
HCM Lane V/C Ratio	0.08	0.074	0.01	-	-
HCM Control Delay (s)	13.4	11	7.6	0	-
HCM Lane LOS	B	B	A	A	-
HCM 95th %tile Q(veh)	0.3	0.2	0	-	-

Intersection	
Int Delay, s/veh	167

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	166	215	0	5	68	208	10	0	5	375	0	250
Future Vol, veh/h	166	215	0	5	68	208	10	0	5	375	0	250
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	180	234	0	5	74	226	11	0	5	408	0	272

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	300	0	0	244	0	0	947	914	137	684	801	197
Stage 1	-	-	-	-	-	-	604	604	-	197	197	-
Stage 2	-	-	-	-	-	-	343	310	-	487	604	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1260	-	-	1321	-	-	228	272	887	~ 348	317	843
Stage 1	-	-	-	-	-	-	453	487	-	804	737	-
Stage 2	-	-	-	-	-	-	671	658	-	532	487	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1260	-	-	1308	-	-	132	224	870	~ 299	261	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	224	-	~ 299	261	-
Stage 1	-	-	-	-	-	-	375	403	-	672	734	-
Stage 2	-	-	-	-	-	-	447	655	-	438	403	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.8	0.1	26.5	$ 345
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	184	1260	-	-	1308	-	-	402
HCM Lane V/C Ratio	0.089	0.143	-	-	0.004	-	-	1.69
HCM Control Delay (s)	26.5	8.3	0.3	-	7.8	-	-	$ 345
HCM Lane LOS	D	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	40.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	90	20	0	125	0	0	46	8
Future Vol, veh/h	0	0	0	4	90	20	0	125	0	0	46	8
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	6	134	30	0	187	0	0	69	12

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	266	266	197	79	0	-	-	-	0
Stage 1	187	187	-	-	-	-	-	-	-
Stage 2	79	79	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	723	640	844	1519	-	0	0	-	0
Stage 1	845	745	-	-	-	0	0	-	0
Stage 2	944	829	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	716	0	836	1519	-	-	-	-	-
Mov Cap-2 Maneuver	716	0	-	-	-	-	-	-	-
Stage 1	845	0	-	-	-	-	-	-	-
Stage 2	935	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1519	-	716	836	-
HCM Lane V/C Ratio	-	-	0.196	0.036	-
HCM Control Delay (s)	0	-	11.2	9.5	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	109	362	0	7	178	16	0	0	0	20	30	0
Future Vol, veh/h	109	362	0	7	178	16	0	0	0	20	30	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	165	548	0	11	270	24	0	0	0	30	45	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	304	0	-	558	0	0	1202	1202	302
Stage 1	-	-	-	-	-	-	314	314	-
Stage 2	-	-	-	-	-	-	888	888	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1257	-	0	1013	-	-	204	185	738
Stage 1	-	-	0	-	-	-	741	656	-
Stage 2	-	-	0	-	-	-	402	362	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1245	-	-	1013	-	-	171	0	724
Mov Cap-2 Maneuver	-	-	-	-	-	-	171	0	-
Stage 1	-	-	-	-	-	-	636	0	-
Stage 2	-	-	-	-	-	-	393	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0.3	41.8
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1245	-	1013	-	-	171
HCM Lane V/C Ratio	0.133	-	0.01	-	-	0.443
HCM Control Delay (s)	8.3	-	8.6	0	-	41.8
HCM Lane LOS	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.5	-	0	-	-	2

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	18	15	0	186	3	28	0	354
Future Vol, veh/h	0	0	0	0	18	15	0	186	3	28	0	354
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	25	21	0	255	4	38	0	485
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.8	11.2	11.8
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	189	18	15	28	354
LT Vol	0	0	0	28	0
Through Vol	186	18	0	0	0
RT Vol	3	0	15	0	354
Lane Flow Rate	259	25	21	38	485
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.37	0.043	0.031	0.057	0.562
Departure Headway (Hd)	5.145	6.219	5.51	5.381	4.175
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	699	575	648	667	868
Service Time	3.171	3.968	3.259	3.099	1.893
HCM Lane V/C Ratio	0.371	0.043	0.032	0.057	0.559
HCM Control Delay	11.2	9.2	8.4	8.4	12.1
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.7	0.1	0.1	0.2	3.6

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2703	270
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3594	316
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.58	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	526.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.314
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1438
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.2
Flow in Lanes 1 and 2 (v12), pc/h	2156	Ramp Junction Speed (S), mi/h	64.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	2472	Average Density (D), pc/mi/ln	20.3
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2541	92
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3422	108
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.52	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	444.6	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1369
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.5
Flow in Lanes 1 and 2 (v12), pc/h	2053	Ramp Junction Speed (S), mi/h	64.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	2161	Average Density (D), pc/mi/ln	18.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1869	60
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	2461	70
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.56	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.317
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	2461	Ramp Junction Speed (S), mi/h	62.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2531	Average Density (D), pc/mi/ln	20.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2714	72
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3650	84
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.83	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.431
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3650	Ramp Junction Speed (S), mi/h	58.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3734	Average Density (D), pc/mi/ln	31.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3173	106
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4273	124
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.63	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1465
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.647	Outer Lanes Freeway Speed (SO), mi/h	76.7
Flow in Lanes 1 and 2 (v12), pc/h	2808	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2703	350
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3640	410
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.54	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	18.9	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.488
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1130
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.650	Outer Lanes Freeway Speed (SO), mi/h	78.0
Flow in Lanes 1 and 2 (v12), pc/h	2510	Ramp Junction Speed (S), mi/h	62.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.4
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2541	139
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3379	163
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.50	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1068
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.668	Outer Lanes Freeway Speed (SO), mi/h	78.3
Flow in Lanes 1 and 2 (v12), pc/h	2311	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	17.9
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1869	100
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	2514	117
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.56	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.462
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	2514	Ramp Junction Speed (S), mi/h	57.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2714	71
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3573	83
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3573	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	30.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3390	332
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4508	389
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.21

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	737.2	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.354
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1803
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.9
Flow in Lanes 1 and 2 (v12), pc/h	2705	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	3094	Average Density (D), pc/mi/ln	25.9
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2738	325
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3687	380
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.60	0.20

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	559.6	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.320
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1475
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.1
Flow in Lanes 1 and 2 (v12), pc/h	2212	Ramp Junction Speed (S), mi/h	64.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2592	Average Density (D), pc/mi/ln	21.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2852	111
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3755	130
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.86	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.458
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3755	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3885	Average Density (D), pc/mi/ln	33.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3384	126
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4551	147
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	694.6	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	51.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4551	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4698	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	37.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3710	70
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4996	82
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1813
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.631	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3183	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	28.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3390	134
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4565	157
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.68	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	107.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1591
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.639	Outer Lanes Freeway Speed (SO), mi/h	76.2
Flow in Lanes 1 and 2 (v12), pc/h	2974	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2738	206
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3641	241
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.54	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.473
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1163
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.658	Outer Lanes Freeway Speed (SO), mi/h	77.9
Flow in Lanes 1 and 2 (v12), pc/h	2478	Ramp Junction Speed (S), mi/h	62.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2852	135
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3836	158
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.85	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3836	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3384	76
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4455	89
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.99	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4455	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	38.4
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4467	423
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5940	495
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.26

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1066.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.494
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2376
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	64.6
Flow in Lanes 1 and 2 (v12), pc/h	3564	Ramp Junction Speed (S), mi/h	59.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	4059	Average Density (D), pc/mi/ln	36.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2738	325
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3687	380
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.60	0.20

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	559.6	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.320
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1475
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.1
Flow in Lanes 1 and 2 (v12), pc/h	2212	Ramp Junction Speed (S), mi/h	64.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2592	Average Density (D), pc/mi/ln	21.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2852	111
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3755	130
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.86	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.458
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3755	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3885	Average Density (D), pc/mi/ln	33.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3384	126
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4551	147
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	694.6	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	51.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4551	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4698	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	37.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3710	70
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4996	82
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1813
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.631	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3183	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	28.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3390	134
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4565	157
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.68	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	107.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1591
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.639	Outer Lanes Freeway Speed (SO), mi/h	76.2
Flow in Lanes 1 and 2 (v12), pc/h	2974	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2738	206
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3641	241
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.54	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.473
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1163
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.658	Outer Lanes Freeway Speed (SO), mi/h	77.9
Flow in Lanes 1 and 2 (v12), pc/h	2478	Ramp Junction Speed (S), mi/h	62.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2852	135
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3836	158
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.85	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3836	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3384	76
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4455	89
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.99	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4455	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	38.4
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.0

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX D

WEEKDAY AND SATURDAY INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – OPENING YEAR (2023)

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	30	18	35	3	11	0	2	80	12
Future Vol, veh/h	3	0	3	30	18	35	3	11	0	2	80	12
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	4	38	23	45	4	14	0	3	103	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	193	159	131	161	166	34	128	0	0	24	0	0
Stage 1	127	127	-	32	32	-	-	-	-	-	-	-
Stage 2	66	32	-	129	134	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	767	733	919	804	727	1039	1458	-	-	1591	-	-
Stage 1	877	791	-	984	868	-	-	-	-	-	-	-
Stage 2	945	868	-	875	785	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	699	715	902	782	709	1019	1444	-	-	1576	-	-
Mov Cap-2 Maneuver	699	715	-	782	709	-	-	-	-	-	-	-
Stage 1	866	782	-	972	857	-	-	-	-	-	-	-
Stage 2	868	857	-	861	776	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9.6	1.6	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1444	-	-	788	753	1019	1576	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.082	0.044	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.6	10.2	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	288	4	33	564	0	2	0	3	0	0	0
Future Vol, veh/h	0	288	4	33	564	0	2	0	3	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	327	5	38	641	0	2	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	651	0	0	342	0	0	1067	1067	350	1068	1069	661
Stage 1	-	-	-	-	-	-	340	340	-	727	727	-
Stage 2	-	-	-	-	-	-	727	727	-	341	342	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	935	-	-	1217	-	-	200	222	693	199	221	462
Stage 1	-	-	-	-	-	-	675	639	-	415	429	-
Stage 2	-	-	-	-	-	-	415	429	-	674	638	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	926	-	-	1205	-	-	189	207	680	187	206	453
Mov Cap-2 Maneuver	-	-	-	-	-	-	189	207	-	187	206	-
Stage 1	-	-	-	-	-	-	668	633	-	411	404	-
Stage 2	-	-	-	-	-	-	391	404	-	664	632	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	16	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	333	926	-	-	1205	-	-	-
HCM Lane V/C Ratio	0.017	-	-	-	0.031	-	-	-
HCM Control Delay (s)	16	0	-	-	8.1	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	186	119	1	556	0	0	0	0	7	2	92
Future Vol, veh/h	0	186	119	1	556	0	0	0	0	7	2	92
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	230	147	1	686	0	0	0	0	9	2	114

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	240	0	0			928	928	696
Stage 1	-	-	-	-	-	-			688	688	-
Stage 2	-	-	-	-	-	-			240	240	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1327	-	0			297	268	442
Stage 1	0	-	0	-	-	0			499	447	-
Stage 2	0	-	0	-	-	0			800	707	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1327	-	-			297	0	438
Mov Cap-2 Maneuver	-	-	-	-	-	-			297	0	-
Stage 1	-	-	-	-	-	-			499	0	-
Stage 2	-	-	-	-	-	-			799	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1327	-	297	438
HCM Lane V/C Ratio	-	0.001	-	0.037	0.259
HCM Control Delay (s)	-	7.7	0	17.6	16.1
HCM Lane LOS	-	A	A	C	C
HCM 95th %tile Q(veh)	-	0	-	0.1	1

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	85	108	0	0	437	19	115	0	1	0	0	0
Future Vol, veh/h	85	108	0	0	437	19	115	0	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	123	0	0	497	22	131	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	507	0	-	-	-	0	824	824	133
Stage 1	-	-	-	-	-	-	317	317	-
Stage 2	-	-	-	-	-	-	507	507	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1058	-	0	0	-	0	343	308	916
Stage 1	-	-	0	0	-	0	738	654	-
Stage 2	-	-	0	0	-	0	605	539	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1058	-	-	-	-	-	306	0	907
Mov Cap-2 Maneuver	-	-	-	-	-	-	306	0	-
Stage 1	-	-	-	-	-	-	666	0	-
Stage 2	-	-	-	-	-	-	599	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.9	0	25.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	306	907	1058	-	-
HCM Lane V/C Ratio	0.427	0.001	0.091	-	-
HCM Control Delay (s)	25.3	9	8.7	0	-
HCM Lane LOS	D	A	A	A	-
HCM 95th %tile Q(veh)	2	0	0.3	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	107	0	11	472	11	6
Future Vol, veh/h	107	0	11	472	11	6
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	116	0	12	513	12	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	126	0	673	78
Stage 1	-	-	-	-	126	-
Stage 2	-	-	-	-	547	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1459	-	404	967
Stage 1	-	-	-	-	887	-
Stage 2	-	-	-	-	579	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1445	-	393	949
Mov Cap-2 Maneuver	-	-	-	-	393	-
Stage 1	-	-	-	-	878	-
Stage 2	-	-	-	-	569	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	495	-	-	1445	-
HCM Lane V/C Ratio	0.037	-	-	0.008	-
HCM Control Delay (s)	12.6	-	-	7.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	12	360	39	0	29	0	0	57	87
Future Vol, veh/h	0	0	0	12	360	39	0	29	0	0	57	87
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	400	43	0	32	0	0	63	97

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	105	105	42	73	0	-	-	-	0	
Stage 1	32	32	-	-	-	-	-	-	-	
Stage 2	73	73	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	893	785	1029	1527	-	0	0	-	0	
Stage 1	991	868	-	-	-	0	0	-	0	
Stage 2	950	834	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	884	0	1019	1527	-	-	-	-	-	
Mov Cap-2 Maneuver	884	0	-	-	-	-	-	-	-	
Stage 1	991	0	-	-	-	-	-	-	-	
Stage 2	941	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	12.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1527	-	884	1019	-
HCM Lane V/C Ratio	-	-	0.468	0.043	-
HCM Control Delay (s)	0	-	12.6	8.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	2.5	0.1	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	121	0	2	25	19	0	0	0	28	42	0
Future Vol, veh/h	10	121	0	2	25	19	0	0	0	28	42	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	139	0	2	29	22	0	0	0	32	48	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	61	0	-	149	0	0			225	225	60
Stage 1	-	-	-	-	-	-			54	54	-
Stage 2	-	-	-	-	-	-			171	171	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1542	-	0	1432	-	-			763	674	1005
Stage 1	-	-	0	-	-	-			969	850	-
Stage 2	-	-	0	-	-	-			859	757	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1527	-	-	1432	-	-			742	0	986
Mov Cap-2 Maneuver	-	-	-	-	-	-			742	0	-
Stage 1	-	-	-	-	-	-			953	0	-
Stage 2	-	-	-	-	-	-			850	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0.3	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1527	-	1432	-	-	742
HCM Lane V/C Ratio	0.008	-	0.002	-	-	0.108
HCM Control Delay (s)	7.4	-	7.5	0	-	10.4
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.4

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	17	1	30	2	25	0	123
Future Vol, veh/h	0	0	0	0	1	17	1	30	2	25	0	123
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	23	1	40	3	33	0	164
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.2	8	7.6
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	3%	0%	0%	100%	0%
Vol Thru, %	91%	100%	0%	0%	0%
Vol Right, %	6%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	1	17	25	123
LT Vol	1	0	0	25	0
Through Vol	30	1	0	0	0
RT Vol	2	0	17	0	123
Lane Flow Rate	44	1	23	33	164
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.057	0.002	0.027	0.047	0.177
Departure Headway (Hd)	4.688	5.06	4.358	5.097	3.896
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	760	711	826	703	920
Service Time	2.741	2.76	2.058	2.823	1.622
HCM Lane V/C Ratio	0.058	0.001	0.028	0.047	0.178
HCM Control Delay	8	7.8	7.2	8.1	7.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0	0.1	0.1	0.6

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	1	0	11	1	15	2	109	0	15	14	3
Future Vol, veh/h	53	1	0	11	1	15	2	109	0	15	14	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	1	0	12	1	16	2	115	0	16	15	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	197	188	37	188	189	135	28	0	0	125	0	0
Stage 1	59	59	-	129	129	-	-	-	-	-	-	-
Stage 2	138	129	-	59	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	762	707	1035	772	706	914	1585	-	-	1462	-	-
Stage 1	953	846	-	875	789	-	-	-	-	-	-	-
Stage 2	865	789	-	953	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	727	684	1015	750	683	897	1570	-	-	1448	-	-
Mov Cap-2 Maneuver	727	684	-	750	683	-	-	-	-	-	-	-
Stage 1	943	828	-	865	780	-	-	-	-	-	-	-
Stage 2	840	780	-	932	827	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	9.5	0.1	3.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1570	-	-	726	744	897	1448	-	-
HCM Lane V/C Ratio	0.001	-	-	0.078	0.017	0.018	0.011	-	-
HCM Control Delay (s)	7.3	0	-	10.4	9.9	9.1	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	329	3	4	124	0	2	0	22	0	0	0
Future Vol, veh/h	0	329	3	4	124	0	2	0	22	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	366	3	4	138	0	2	0	24	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	148	0	0	379	0	0	534	534	388	546	535	158
Stage 1	-	-	-	-	-	-	378	378	-	156	156	-
Stage 2	-	-	-	-	-	-	156	156	-	390	379	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1434	-	-	1179	-	-	457	452	660	448	452	887
Stage 1	-	-	-	-	-	-	644	615	-	846	769	-
Stage 2	-	-	-	-	-	-	846	769	-	634	615	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1420	-	-	1168	-	-	447	441	647	422	441	870
Mov Cap-2 Maneuver	-	-	-	-	-	-	447	441	-	422	441	-
Stage 1	-	-	-	-	-	-	638	609	-	838	758	-
Stage 2	-	-	-	-	-	-	835	758	-	604	609	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	11	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	624	1420	-	-	1168	-	-	-
HCM Lane V/C Ratio	0.043	-	-	-	0.004	-	-	-
HCM Control Delay (s)	11	0	-	-	8.1	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	285	98	1	117	0	0	0	0	2	0	41
Future Vol, veh/h	0	285	98	1	117	0	0	0	0	2	0	41
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	328	113	1	134	0	0	0	0	2	0	47

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	338	0	0			474	474	144
Stage 1	-	-	-	-	-	-			136	136	-
Stage 2	-	-	-	-	-	-			338	338	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1221	-	0			549	489	903
Stage 1	0	-	0	-	-	0			890	784	-
Stage 2	0	-	0	-	-	0			722	641	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1221	-	-			548	0	894
Mov Cap-2 Maneuver	-	-	-	-	-	-			548	0	-
Stage 1	-	-	-	-	-	-			890	0	-
Stage 2	-	-	-	-	-	-			721	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1221	-	548	894
HCM Lane V/C Ratio	-	0.001	-	0.004	0.053
HCM Control Delay (s)	-	8	0	11.6	9.3
HCM Lane LOS	-	A	A	B	A
HCM 95th %tile Q(veh)	-	0	-	0	0.2

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	28	258	0	0	68	26	50	1	1	0	0	0
Future Vol, veh/h	28	258	0	0	68	26	50	1	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	290	0	0	76	29	56	1	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	86	0	-	-	-	0	438	438	300
Stage 1	-	-	-	-	-	-	352	352	-
Stage 2	-	-	-	-	-	-	86	86	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1510	-	0	0	-	0	576	512	740
Stage 1	-	-	0	0	-	0	712	632	-
Stage 2	-	-	0	0	-	0	937	824	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1510	-	-	-	-	-	556	0	733
Mov Cap-2 Maneuver	-	-	-	-	-	-	556	0	-
Stage 1	-	-	-	-	-	-	695	0	-
Stage 2	-	-	-	-	-	-	928	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.7	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	556	733	1510	-	-
HCM Lane V/C Ratio	0.103	0.002	0.021	-	-
HCM Control Delay (s)	12.2	9.9	7.4	0	-
HCM Lane LOS	B	A	A	A	-
HCM 95th %tile Q(veh)	0.3	0	0.1	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	259	0	6	101	11	6
Future Vol, veh/h	259	0	6	101	11	6
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	282	0	7	110	12	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	292	0	426	161
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	134	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1268	-	571	856
Stage 1	-	-	-	-	733	-
Stage 2	-	-	-	-	892	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1256	-	556	840
Mov Cap-2 Maneuver	-	-	-	-	556	-
Stage 1	-	-	-	-	726	-
Stage 2	-	-	-	-	879	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	631	-	-	1256	-
HCM Lane V/C Ratio	0.029	-	-	0.005	-
HCM Control Delay (s)	10.9	-	-	7.9	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	52	35	0	125	0	0	61	22
Future Vol, veh/h	0	0	0	4	52	35	0	125	0	0	61	22
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	56	38	0	134	0	0	66	24

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	210	210	144	76	0	-	-	-	0
Stage 1	134	134	-	-	-	-	-	-	-
Stage 2	76	76	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	778	687	903	1523	-	0	0	-	0
Stage 1	892	785	-	-	-	0	0	-	0
Stage 2	947	832	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	770	0	894	1523	-	-	-	-	-
Mov Cap-2 Maneuver	770	0	-	-	-	-	-	-	-
Stage 1	892	0	-	-	-	-	-	-	-
Stage 2	938	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.8	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1523	-	770	894	-
HCM Lane V/C Ratio	-	-	0.078	0.042	-
HCM Control Delay (s)	0	-	10.1	9.2	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.3	0.1	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	83	220	0	8	28	43	0	0	0	32	32	1
Future Vol, veh/h	83	220	0	8	28	43	0	0	0	32	32	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	253	0	9	32	49	0	0	0	37	37	1

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	91	0	-	263	0	0			538	538	77
Stage 1	-	-	-	-	-	-			85	85	-
Stage 2	-	-	-	-	-	-			453	453	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1504	-	0	1301	-	-			504	450	984
Stage 1	-	-	0	-	-	-			938	824	-
Stage 2	-	-	0	-	-	-			640	570	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1490	-	-	1301	-	-			459	0	965
Mov Cap-2 Maneuver	-	-	-	-	-	-			459	0	-
Stage 1	-	-	-	-	-	-			870	0	-
Stage 2	-	-	-	-	-	-			630	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0.8	14.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1490	-	1301	-	-	466
HCM Lane V/C Ratio	0.064	-	0.007	-	-	0.16
HCM Control Delay (s)	7.6	-	7.8	0	-	14.2
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.6

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	42	28	2	51	1	22	0	230
Future Vol, veh/h	0	0	0	0	42	28	2	51	1	22	0	230
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	48	32	2	58	1	25	0	261
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8	8.5	8.5
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	4%	0%	0%	100%	0%
Vol Thru, %	94%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	54	42	28	22	230
LT Vol	2	0	0	22	0
Through Vol	51	42	0	0	0
RT Vol	1	0	28	0	230
Lane Flow Rate	61	48	32	25	261
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.085	0.07	0.041	0.036	0.29
Departure Headway (Hd)	5.011	5.296	4.593	5.203	4.001
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	718	680	784	680	883
Service Time	3.019	3	2.296	3.001	1.799
HCM Lane V/C Ratio	0.085	0.071	0.041	0.037	0.296
HCM Control Delay	8.5	8.4	7.5	8.2	8.5
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.2	0.1	0.1	1.2

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	2	12	2	119	0	15	11	3
Future Vol, veh/h	0	0	0	2	2	12	2	119	0	15	11	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	3	16	3	159	0	20	15	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	252	242	37	242	244	179	29	0	0	169	0	0
Stage 1	67	67	-	175	175	-	-	-	-	-	-	-
Stage 2	185	175	-	67	69	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	701	660	1035	712	658	864	1584	-	-	1409	-	-
Stage 1	943	839	-	827	754	-	-	-	-	-	-	-
Stage 2	817	754	-	943	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	665	636	1015	690	634	848	1569	-	-	1396	-	-
Mov Cap-2 Maneuver	665	636	-	690	634	-	-	-	-	-	-	-
Stage 1	932	819	-	817	745	-	-	-	-	-	-	-
Stage 2	790	745	-	921	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.6	0.1	3.9
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1569	-	-	-	661	848	1396	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.008	0.019	0.014	-	-
HCM Control Delay (s)	7.3	0	-	0	10.5	9.3	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	254	0	8	63	0	2	1	20	0	0	0
Future Vol, veh/h	0	254	0	8	63	0	2	1	20	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	285	0	9	71	0	2	1	22	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	81	0	0	295	0	0	394	394	305	406	394	91
Stage 1	-	-	-	-	-	-	295	295	-	99	99	-
Stage 2	-	-	-	-	-	-	99	99	-	307	295	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1517	-	-	1266	-	-	566	542	735	555	542	967
Stage 1	-	-	-	-	-	-	713	669	-	907	813	-
Stage 2	-	-	-	-	-	-	907	813	-	703	669	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1503	-	-	1254	-	-	552	527	721	524	527	949
Mov Cap-2 Maneuver	-	-	-	-	-	-	552	527	-	524	527	-
Stage 1	-	-	-	-	-	-	706	662	-	898	799	-
Stage 2	-	-	-	-	-	-	892	799	-	673	662	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.9	10.4	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	692	1503	-	-	1254	-	-	-
HCM Lane V/C Ratio	0.037	-	-	-	0.007	-	-	-
HCM Control Delay (s)	10.4	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	249	80	2	78	0	0	0	0	1	1	36
Future Vol, veh/h	0	249	80	2	78	0	0	0	0	1	1	36
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	300	96	2	94	0	0	0	0	1	1	43

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	310	0	0				408	408	104
Stage 1	-	-	-	-	-	-				98	98	-
Stage 2	-	-	-	-	-	-				310	310	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1250	-	0				599	533	951
Stage 1	0	-	0	-	-	0				926	814	-
Stage 2	0	-	0	-	-	0				744	659	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	1250	-	-				598	0	942
Mov Cap-2 Maneuver	-	-	-	-	-	-				598	0	-
Stage 1	-	-	-	-	-	-				926	0	-
Stage 2	-	-	-	-	-	-				743	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.2	9.1
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1250	-	598	942
HCM Lane V/C Ratio	-	0.002	-	0.004	0.046
HCM Control Delay (s)	-	7.9	0	11	9
HCM Lane LOS	-	A	A	B	A
HCM 95th %tile Q(veh)	-	0	-	0	0.1

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	13	237	0	0	44	25	36	0	0	0	0	0
Future Vol, veh/h	13	237	0	0	44	25	36	0	0	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	269	0	0	50	28	41	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	60	0	-	-	-	0	359	359	279
Stage 1	-	-	-	-	-	-	299	299	-
Stage 2	-	-	-	-	-	-	60	60	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1544	-	0	0	-	0	640	568	760
Stage 1	-	-	0	0	-	0	752	666	-
Stage 2	-	-	0	0	-	0	963	845	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1544	-	-	-	-	-	627	0	753
Mov Cap-2 Maneuver	-	-	-	-	-	-	627	0	-
Stage 1	-	-	-	-	-	-	744	0	-
Stage 2	-	-	-	-	-	-	953	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.4	0	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	627	-	1544	-	-
HCM Lane V/C Ratio	0.065	-	0.01	-	-
HCM Control Delay (s)	11.1	0	7.4	0	-
HCM Lane LOS	B	A	A	A	-
HCM 95th %tile Q(veh)	0.2	-	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	237	0	6	75	11	6
Future Vol, veh/h	237	0	6	75	11	6
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	258	0	7	82	12	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	268	0	374	149
Stage 1	-	-	-	-	268	-
Stage 2	-	-	-	-	106	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1294	-	613	871
Stage 1	-	-	-	-	753	-
Stage 2	-	-	-	-	918	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1282	-	598	854
Mov Cap-2 Maneuver	-	-	-	-	598	-
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	905	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	10.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	669	-	-	1282	-
HCM Lane V/C Ratio	0.028	-	-	0.005	-
HCM Control Delay (s)	10.5	-	-	7.8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	31	22	0	138	0	0	51	9
Future Vol, veh/h	0	0	0	4	31	22	0	138	0	0	51	9
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	6	46	33	0	206	0	0	76	13

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	292	292	216	86	0	-	-	-	0	
Stage 1	206	206	-	-	-	-	-	-	-	
Stage 2	86	86	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	699	619	824	1510	-	0	0	-	0	
Stage 1	829	731	-	-	-	0	0	-	0	
Stage 2	937	824	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	692	0	816	1510	-	-	-	-	-	
Mov Cap-2 Maneuver	692	0	-	-	-	-	-	-	-	
Stage 1	829	0	-	-	-	-	-	-	-	
Stage 2	928	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	10.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1510	-	692	816	-
HCM Lane V/C Ratio	-	-	0.075	0.04	-
HCM Control Delay (s)	0	-	10.6	9.6	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.2	0.1	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	227	0	8	35	18	0	0	0	22	33	0
Future Vol, veh/h	120	227	0	8	35	18	0	0	0	22	33	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	182	344	0	12	53	27	0	0	0	33	50	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	90	0	-	354	0	0			819	819	87
Stage 1	-	-	-	-	-	-			101	101	-
Stage 2	-	-	-	-	-	-			718	718	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1505	-	0	1205	-	-			345	310	971
Stage 1	-	-	0	-	-	-			923	811	-
Stage 2	-	-	0	-	-	-			483	433	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1491	-	-	1205	-	-			294	0	953
Mov Cap-2 Maneuver	-	-	-	-	-	-			294	0	-
Stage 1	-	-	-	-	-	-			802	0	-
Stage 2	-	-	-	-	-	-			474	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2.7	1.1	22
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1491	-	1205	-	-	294
HCM Lane V/C Ratio	0.122	-	0.01	-	-	0.283
HCM Control Delay (s)	7.8	-	8	0	-	22
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.4	-	0	-	-	1.1

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	20	17	0	44	3	31	0	218
Future Vol, veh/h	0	0	0	0	20	17	0	44	3	31	0	218
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	27	23	0	60	4	42	0	299
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8	8.4	8.7
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	94%	100%	0%	0%	0%
Vol Right, %	6%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	47	20	17	31	218
LT Vol	0	0	0	31	0
Through Vol	44	20	0	0	0
RT Vol	3	0	17	0	218
Lane Flow Rate	64	27	23	42	299
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.088	0.041	0.03	0.061	0.328
Departure Headway (Hd)	4.945	5.409	4.705	5.155	3.953
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	728	665	765	690	899
Service Time	2.949	3.112	2.409	2.924	1.722
HCM Lane V/C Ratio	0.088	0.041	0.03	0.061	0.333
HCM Control Delay	8.4	8.3	7.6	8.3	8.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.1	0.1	0.2	1.4

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Near-Term Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2970	220
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3949	257
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.62	0.14

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	589.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.322
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1580
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.7
Flow in Lanes 1 and 2 (v12), pc/h	2369	Ramp Junction Speed (S), mi/h	64.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	2626	Average Density (D), pc/mi/ln	21.9
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Near-Term Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2800	127
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3771	149
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.58	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	528.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.311
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1508
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.0
Flow in Lanes 1 and 2 (v12), pc/h	2263	Ramp Junction Speed (S), mi/h	64.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2412	Average Density (D), pc/mi/ln	20.3
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Near-Term Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2060	127
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	2712	149
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.63	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.336
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	2712	Ramp Junction Speed (S), mi/h	61.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	2861	Average Density (D), pc/mi/ln	23.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Near-Term Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2990	107
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4021	125
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.92	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.514
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	4021	Ramp Junction Speed (S), mi/h	56.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	4146	Average Density (D), pc/mi/ln	36.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Near-Term Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3490	80
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4700	94
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.70	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.460
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1667
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.638	Outer Lanes Freeway Speed (SO), mi/h	75.9
Flow in Lanes 1 and 2 (v12), pc/h	3033	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2980	407
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4013	476
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.25

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	18.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.494
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1280
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.638	Outer Lanes Freeway Speed (SO), mi/h	77.5
Flow in Lanes 1 and 2 (v12), pc/h	2733	Ramp Junction Speed (S), mi/h	62.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2800	107
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3723	125
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.55	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1220
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.661	Outer Lanes Freeway Speed (SO), mi/h	77.7
Flow in Lanes 1 and 2 (v12), pc/h	2503	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2060	97
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	2771	114
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.61	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.462
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	2771	Ramp Junction Speed (S), mi/h	57.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.9
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2990	117
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3937	137
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.464
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3937	Ramp Junction Speed (S), mi/h	57.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Near-Term Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3730	220
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4960	257
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.77	0.14

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	805.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.367
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1984
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.3
Flow in Lanes 1 and 2 (v12), pc/h	2976	Ramp Junction Speed (S), mi/h	62.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	3233	Average Density (D), pc/mi/ln	27.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Near-Term Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3010	278
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4053	325
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.65	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	626.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.329
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1621
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.6
Flow in Lanes 1 and 2 (v12), pc/h	2432	Ramp Junction Speed (S), mi/h	63.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	2757	Average Density (D), pc/mi/ln	22.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Near-Term Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3140	98
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4134	115
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.94	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.541
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	4134	Ramp Junction Speed (S), mi/h	55.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	4249	Average Density (D), pc/mi/ln	38.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Near-Term Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3720	58
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5003	68
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.13	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	774.4	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	45.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5003	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5071	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	40.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Near-Term Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4080	30
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5494	35
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.81	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.455
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2069
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.621	Outer Lanes Freeway Speed (SO), mi/h	74.4
Flow in Lanes 1 and 2 (v12), pc/h	3425	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3730	88
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5023	103
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	104.8	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.461
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1820
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.630	Outer Lanes Freeway Speed (SO), mi/h	75.3
Flow in Lanes 1 and 2 (v12), pc/h	3203	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3020	68
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4016	80
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1354
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.656	Outer Lanes Freeway Speed (SO), mi/h	77.2
Flow in Lanes 1 and 2 (v12), pc/h	2662	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3130	48
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4210	56
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.93	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.456
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4210	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	36.2
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	36.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3730	48
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4911	56
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.09	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4911	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4911	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	42.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Near-Term Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4910	220
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	6529	257
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	1.00	0.14

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1141.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.521
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2612
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	63.2
Flow in Lanes 1 and 2 (v12), pc/h	3917	Ramp Junction Speed (S), mi/h	58.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	4174	Average Density (D), pc/mi/ln	38.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Near-Term Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4030	240
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5427	281
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.84	0.15

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	910.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.402
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2171
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	59.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	65.6
Flow in Lanes 1 and 2 (v12), pc/h	3256	Ramp Junction Speed (S), mi/h	61.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3537	Average Density (D), pc/mi/ln	30.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	28.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Near-Term Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3690	80
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4858	94
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.10	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	749.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	47.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4858	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4952	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	39.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Near-Term Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4390	40
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5904	47
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.32	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	962.7	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	19.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5904	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5951	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	46.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Near-Term Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5230	20
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	7043	23
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	19.2	Flow Outer Lanes (vOA), pc/h/ln	2700
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.583	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4343	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4343	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4910	60
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6612	70
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.98	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	80.6	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.458
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2676
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.591	Outer Lanes Freeway Speed (SO), mi/h	72.0
Flow in Lanes 1 and 2 (v12), pc/h	3936	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	35.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4030	50
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5359	59
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.457
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1998
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.623	Outer Lanes Freeway Speed (SO), mi/h	74.7
Flow in Lanes 1 and 2 (v12), pc/h	3361	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3680	40
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4949	47
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.10	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4949	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4949	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	43.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Near-Term Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4380	40
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5767	47
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.28	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5767	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5767	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	50.2

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX E

WEEKDAY AND SATURDAY INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – OPENING YEAR (2023) + PROJECT PHASE 1 (ALTERNATIVE A1)

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	30	49	35	3	11	0	2	80	12
Future Vol, veh/h	3	0	3	30	49	35	3	11	0	2	80	12
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	4	38	63	45	4	14	0	3	103	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	213	159	131	161	166	34	128	0	0	24	0	0
Stage 1	127	127	-	32	32	-	-	-	-	-	-	-
Stage 2	86	32	-	129	134	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	744	733	919	804	727	1039	1458	-	-	1591	-	-
Stage 1	877	791	-	984	868	-	-	-	-	-	-	-
Stage 2	922	868	-	875	785	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	648	715	902	782	709	1019	1444	-	-	1576	-	-
Mov Cap-2 Maneuver	648	715	-	782	709	-	-	-	-	-	-	-
Stage 1	866	782	-	972	857	-	-	-	-	-	-	-
Stage 2	807	857	-	861	776	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	10.1	1.6	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1444	-	-	754	735	1019	1576	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.138	0.044	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.8	10.7	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	304	4	33	574	0	2	0	3	0	0	0
Future Vol, veh/h	0	304	4	33	574	0	2	0	3	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	345	5	38	652	0	2	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	662	0	0	360	0	0	1096	1096	368	1097	1098	672
Stage 1	-	-	-	-	-	-	358	358	-	738	738	-
Stage 2	-	-	-	-	-	-	738	738	-	359	360	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	927	-	-	1199	-	-	191	213	677	191	213	456
Stage 1	-	-	-	-	-	-	660	628	-	410	424	-
Stage 2	-	-	-	-	-	-	410	424	-	659	626	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	918	-	-	1188	-	-	180	198	664	179	198	447
Mov Cap-2 Maneuver	-	-	-	-	-	-	180	198	-	179	198	-
Stage 1	-	-	-	-	-	-	653	622	-	406	399	-
Stage 2	-	-	-	-	-	-	386	399	-	649	620	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	16.5	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	320	918	-	-	1188	-	-	-
HCM Lane V/C Ratio	0.018	-	-	-	0.032	-	-	-
HCM Control Delay (s)	16.5	0	-	-	8.1	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	202	119	20	566	0	0	0	0	85	2	92
Future Vol, veh/h	0	202	119	20	566	0	0	0	0	85	2	92
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	249	147	25	699	0	0	0	0	105	2	114

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	259	0	0			1008	1008	709
Stage 1	-	-	-	-	-	-			749	749	-
Stage 2	-	-	-	-	-	-			259	259	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1306	-	0			267	240	434
Stage 1	0	-	0	-	-	0			467	419	-
Stage 2	0	-	0	-	-	0			784	694	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1306	-	-			259	0	430
Mov Cap-2 Maneuver	-	-	-	-	-	-			259	0	-
Stage 1	-	-	-	-	-	-			467	0	-
Stage 2	-	-	-	-	-	-			760	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.3	22.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1306	-	259	430
HCM Lane V/C Ratio	-	0.019	-	0.415	0.264
HCM Control Delay (s)	-	7.8	0	28.4	16.4
HCM Lane LOS	-	A	A	D	C
HCM 95th %tile Q(veh)	-	0.1	-	1.9	1

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	85	202	0	0	466	67	115	0	32	0	0	0
Future Vol, veh/h	85	202	0	0	466	67	115	0	32	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	230	0	0	530	76	131	0	36	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	540	0	-	-	-	0	964	964	240
Stage 1	-	-	-	-	-	-	424	424	-
Stage 2	-	-	-	-	-	-	540	540	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1028	-	0	0	-	0	283	255	799
Stage 1	-	-	0	0	-	0	660	587	-
Stage 2	-	-	0	0	-	0	584	521	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1028	-	-	-	-	-	250	0	791
Mov Cap-2 Maneuver	-	-	-	-	-	-	250	0	-
Stage 1	-	-	-	-	-	-	589	0	-
Stage 2	-	-	-	-	-	-	578	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.6	0	28.9
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	250	791	1028	-	-
HCM Lane V/C Ratio	0.523	0.046	0.094	-	-
HCM Control Delay (s)	34.2	9.8	8.9	0	-
HCM Lane LOS	D	A	A	A	-
HCM 95th %tile Q(veh)	2.8	0.1	0.3	-	-

Intersection	
Int Delay, s/veh	12.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	125	107	0	11	472	156	11	0	6	114	0	76
Future Vol, veh/h	125	107	0	11	472	156	11	0	6	114	0	76
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	136	116	0	12	513	170	12	0	7	124	0	83

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	683	0	0	126	0	0	1072	1105	78	962	1020	608
Stage 1	-	-	-	-	-	-	398	398	-	622	622	-
Stage 2	-	-	-	-	-	-	674	707	-	340	398	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	908	-	-	1459	-	-	186	210	967	223	236	495
Stage 1	-	-	-	-	-	-	600	602	-	473	478	-
Stage 2	-	-	-	-	-	-	443	437	-	649	602	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	908	-	-	1445	-	-	132	173	949	191	195	490
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	173	-	191	195	-
Stage 1	-	-	-	-	-	-	499	501	-	397	474	-
Stage 2	-	-	-	-	-	-	362	434	-	536	501	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5.3	0.1	26	61.2
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	190	908	-	-	1445	-	-	253
HCM Lane V/C Ratio	0.097	0.15	-	-	0.008	-	-	0.816
HCM Control Delay (s)	26	9.7	0.2	-	7.5	-	-	61.2
HCM Lane LOS	D	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	6.4

Intersection	
Int Delay, s/veh	11

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	12	407	39	0	29	0	0	57	87
Future Vol, veh/h	0	0	0	12	407	39	0	29	0	0	57	87
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	452	43	0	32	0	0	63	97

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	105	105	42	73	0	-	-	-	0	
Stage 1	32	32	-	-	-	-	-	-	-	
Stage 2	73	73	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	893	785	1029	1527	-	0	0	-	0	
Stage 1	991	868	-	-	-	0	0	-	0	
Stage 2	950	834	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	884	0	1019	1527	-	-	-	-	-	
Mov Cap-2 Maneuver	884	0	-	-	-	-	-	-	-	
Stage 1	991	0	-	-	-	-	-	-	-	
Stage 2	941	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	13.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1527	-	884	1019	-
HCM Lane V/C Ratio	-	-	0.527	0.043	-
HCM Control Delay (s)	0	-	13.5	8.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	3.1	0.1	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	169	0	2	134	19	0	0	0	28	42	0
Future Vol, veh/h	10	169	0	2	134	19	0	0	0	28	42	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	194	0	2	154	22	0	0	0	32	48	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	186	0	-	204	0	0			405	405	185
Stage 1	-	-	-	-	-	-			179	179	-
Stage 2	-	-	-	-	-	-			226	226	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1388	-	0	1368	-	-			602	535	857
Stage 1	-	-	0	-	-	-			852	751	-
Stage 2	-	-	0	-	-	-			812	717	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1375	-	-	1368	-	-			584	0	841
Mov Cap-2 Maneuver	-	-	-	-	-	-			584	0	-
Stage 1	-	-	-	-	-	-			837	0	-
Stage 2	-	-	-	-	-	-			802	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0.1	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1375	-	1368	-	-	584
HCM Lane V/C Ratio	0.008	-	0.002	-	-	0.138
HCM Control Delay (s)	7.6	-	7.6	0	-	12.1
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.5

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	17	1	139	2	25	0	171
Future Vol, veh/h	0	0	0	0	1	17	1	139	2	25	0	171
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	23	1	185	3	33	0	228
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.7	9.4	8.1
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	142	1	17	25	171
LT Vol	1	0	0	25	0
Through Vol	139	1	0	0	0
RT Vol	2	0	17	0	171
Lane Flow Rate	189	1	23	33	228
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.25	0.002	0.03	0.048	0.251
Departure Headway (Hd)	4.757	5.536	4.831	5.169	3.967
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	748	650	746	688	896
Service Time	2.83	3.236	2.531	2.938	1.735
HCM Lane V/C Ratio	0.253	0.002	0.031	0.048	0.254
HCM Control Delay	9.4	8.2	7.7	8.2	8.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	1	0	0.1	0.2	1

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	1	0	11	46	15	2	109	0	15	14	3
Future Vol, veh/h	53	1	0	11	46	15	2	109	0	15	14	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	1	0	12	48	16	2	115	0	16	15	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	220	188	37	188	189	135	28	0	0	125	0	0
Stage 1	59	59	-	129	129	-	-	-	-	-	-	-
Stage 2	161	129	-	59	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	736	707	1035	772	706	914	1585	-	-	1462	-	-
Stage 1	953	846	-	875	789	-	-	-	-	-	-	-
Stage 2	841	789	-	953	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	665	684	1015	750	683	897	1570	-	-	1448	-	-
Mov Cap-2 Maneuver	665	684	-	750	683	-	-	-	-	-	-	-
Stage 1	943	828	-	865	780	-	-	-	-	-	-	-
Stage 2	767	780	-	932	827	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	10.4	0.1	3.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1570	-	-	665	695	897	1448	-	-
HCM Lane V/C Ratio	0.001	-	-	0.085	0.086	0.018	0.011	-	-
HCM Control Delay (s)	7.3	0	-	10.9	10.7	9.1	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	351	3	4	142	0	2	0	22	0	0	0
Future Vol, veh/h	0	351	3	4	142	0	2	0	22	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	390	3	4	158	0	2	0	24	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	168	0	0	403	0	0	578	578	412	590	579	178
Stage 1	-	-	-	-	-	-	402	402	-	176	176	-
Stage 2	-	-	-	-	-	-	176	176	-	414	403	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1410	-	-	1156	-	-	427	427	640	419	426	865
Stage 1	-	-	-	-	-	-	625	600	-	826	753	-
Stage 2	-	-	-	-	-	-	826	753	-	616	600	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1397	-	-	1145	-	-	418	417	628	394	416	849
Mov Cap-2 Maneuver	-	-	-	-	-	-	418	417	-	394	416	-
Stage 1	-	-	-	-	-	-	619	594	-	818	742	-
Stage 2	-	-	-	-	-	-	815	742	-	586	594	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	11.2	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	603	1397	-	-	1145	-	-	-
HCM Lane V/C Ratio	0.044	-	-	-	0.004	-	-	-
HCM Control Delay (s)	11.2	0	-	-	8.2	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	307	98	38	135	0	0	0	0	114	0	41
Future Vol, veh/h	0	307	98	38	135	0	0	0	0	114	0	41
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	353	113	44	155	0	0	0	0	131	0	47

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	363	0	0			606	606	165
Stage 1	-	-	-	-	-	-			243	243	-
Stage 2	-	-	-	-	-	-			363	363	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1196	-	0			460	411	879
Stage 1	0	-	0	-	-	0			797	705	-
Stage 2	0	-	0	-	-	0			704	625	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1196	-	-			442	0	871
Mov Cap-2 Maneuver	-	-	-	-	-	-			442	0	-
Stage 1	-	-	-	-	-	-			797	0	-
Stage 2	-	-	-	-	-	-			676	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.8	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1196	-	442	871
HCM Lane V/C Ratio	-	0.037	-	0.296	0.054
HCM Control Delay (s)	-	8.1	0	16.5	9.4
HCM Lane LOS	-	A	A	C	A
HCM 95th %tile Q(veh)	-	0.1	-	1.2	0.2

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	28	392	0	0	123	118	50	1	46	0	0	0
Future Vol, veh/h	28	392	0	0	123	118	50	1	46	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	440	0	0	138	133	56	1	52	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	148	0	-	-	-	0	650	650	450
Stage 1	-	-	-	-	-	-	502	502	-
Stage 2	-	-	-	-	-	-	148	148	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1434	-	0	0	-	0	434	388	609
Stage 1	-	-	0	0	-	0	608	542	-
Stage 2	-	-	0	0	-	0	880	775	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1434	-	-	-	-	-	417	0	603
Mov Cap-2 Maneuver	-	-	-	-	-	-	417	0	-
Stage 1	-	-	-	-	-	-	590	0	-
Stage 2	-	-	-	-	-	-	871	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0	13.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	417	603	1434	-	-
HCM Lane V/C Ratio	0.137	0.086	0.022	-	-
HCM Control Delay (s)	15	11.5	7.6	0	-
HCM Lane LOS	C	B	A	A	-
HCM 95th %tile Q(veh)	0.5	0.3	0.1	-	-

Intersection	
Int Delay, s/veh	46

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	179	259	0	6	101	224	11	0	6	220	0	147
Future Vol, veh/h	179	259	0	6	101	224	11	0	6	220	0	147
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	195	282	0	7	110	243	12	0	7	239	0	160

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	353	0	0	292	0	0	1018	1049	161	787	928	242
Stage 1	-	-	-	-	-	-	682	682	-	246	246	-
Stage 2	-	-	-	-	-	-	336	367	-	541	682	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1204	-	-	1268	-	-	203	227	856	295	267	796
Stage 1	-	-	-	-	-	-	407	449	-	757	702	-
Stage 2	-	-	-	-	-	-	677	621	-	494	449	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1204	-	-	1256	-	-	135	180	840	246	212	788
Mov Cap-2 Maneuver	-	-	-	-	-	-	135	180	-	246	212	-
Stage 1	-	-	-	-	-	-	326	359	-	612	698	-
Stage 2	-	-	-	-	-	-	532	617	-	392	359	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.7	0.1	25.7	138.9
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	192	1204	-	-	1256	-	-	340
HCM Lane V/C Ratio	0.096	0.162	-	-	0.005	-	-	1.173
HCM Control Delay (s)	25.7	8.6	0.3	-	7.9	-	-	138.9
HCM Lane LOS	D	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	0.6	-	-	0	-	-	16.5

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	119	35	0	125	0	0	61	22
Future Vol, veh/h	0	0	0	4	119	35	0	125	0	0	61	22
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	128	38	0	134	0	0	66	24

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	210	210	144	76	0	-	-	-	0
Stage 1	134	134	-	-	-	-	-	-	-
Stage 2	76	76	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	778	687	903	1523	-	0	0	-	0
Stage 1	892	785	-	-	-	0	0	-	0
Stage 2	947	832	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	770	0	894	1523	-	-	-	-	-
Mov Cap-2 Maneuver	770	0	-	-	-	-	-	-	-
Stage 1	892	0	-	-	-	-	-	-	-
Stage 2	938	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1523	-	770	894	-
HCM Lane V/C Ratio	-	-	0.172	0.042	-
HCM Control Delay (s)	0	-	10.6	9.2	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	83	312	0	8	185	43	0	0	0	32	32	1
Future Vol, veh/h	83	312	0	8	185	43	0	0	0	32	32	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	359	0	9	213	49	0	0	0	37	37	1

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	272	0	-	369	0	0			825	825	258
Stage 1	-	-	-	-	-	-			266	266	-
Stage 2	-	-	-	-	-	-			559	559	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1291	-	0	1190	-	-			342	308	781
Stage 1	-	-	0	-	-	-			779	689	-
Stage 2	-	-	0	-	-	-			572	511	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1279	-	-	1190	-	-			307	0	766
Mov Cap-2 Maneuver	-	-	-	-	-	-			307	0	-
Stage 1	-	-	-	-	-	-			714	0	-
Stage 2	-	-	-	-	-	-			562	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0.3	20.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1279	-	1190	-	-	313
HCM Lane V/C Ratio	0.075	-	0.008	-	-	0.239
HCM Control Delay (s)	8	-	8	0	-	20.1
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.9

Intersection	
Intersection Delay, s/veh	10.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	42	28	2	208	1	22	0	322
Future Vol, veh/h	0	0	0	0	42	28	2	208	1	22	0	322
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	48	32	2	236	1	25	0	366
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.8	10.8	10.1
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	99%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	211	42	28	22	322
LT Vol	2	0	0	22	0
Through Vol	208	42	0	0	0
RT Vol	1	0	28	0	322
Lane Flow Rate	240	48	32	25	366
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.342	0.079	0.046	0.038	0.433
Departure Headway (Hd)	5.141	5.938	5.231	5.467	4.261
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	700	602	682	656	845
Service Time	3.172	3.687	2.98	3.192	1.985
HCM Lane V/C Ratio	0.343	0.08	0.047	0.038	0.433
HCM Control Delay	10.8	9.2	8.2	8.4	10.2
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.5	0.3	0.1	0.1	2.2

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	44	12	2	119	0	15	11	3
Future Vol, veh/h	0	0	0	2	44	12	2	119	0	15	11	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	59	16	3	159	0	20	15	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	280	242	37	242	244	179	29	0	0	169	0	0
Stage 1	67	67	-	175	175	-	-	-	-	-	-	-
Stage 2	213	175	-	67	69	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	672	660	1035	712	658	864	1584	-	-	1409	-	-
Stage 1	943	839	-	827	754	-	-	-	-	-	-	-
Stage 2	789	754	-	943	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	594	636	1015	690	634	848	1569	-	-	1396	-	-
Mov Cap-2 Maneuver	594	636	-	690	634	-	-	-	-	-	-	-
Stage 1	932	819	-	817	745	-	-	-	-	-	-	-
Stage 2	705	745	-	921	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.9	0.1	3.9
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1569	-	-	-	636	848	1396	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.096	0.019	0.014	-	-
HCM Control Delay (s)	7.3	0	-	0	11.3	9.3	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	275	0	8	94	0	2	1	20	0	0	0
Future Vol, veh/h	0	275	0	8	94	0	2	1	20	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	309	0	9	106	0	2	1	22	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	116	0	0	319	0	0	453	453	329	465	453	126
Stage 1	-	-	-	-	-	-	319	319	-	134	134	-
Stage 2	-	-	-	-	-	-	134	134	-	331	319	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1473	-	-	1241	-	-	517	503	712	508	503	924
Stage 1	-	-	-	-	-	-	693	653	-	869	785	-
Stage 2	-	-	-	-	-	-	869	785	-	682	653	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1459	-	-	1229	-	-	504	489	699	479	489	906
Mov Cap-2 Maneuver	-	-	-	-	-	-	504	489	-	479	489	-
Stage 1	-	-	-	-	-	-	686	646	-	860	771	-
Stage 2	-	-	-	-	-	-	854	771	-	653	646	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	10.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	664	1459	-	-	1229	-	-	-
HCM Lane V/C Ratio	0.039	-	-	-	0.007	-	-	-
HCM Control Delay (s)	10.6	0	-	-	8	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	270	80	65	109	0	0	0	0	105	1	36
Future Vol, veh/h	0	270	80	65	109	0	0	0	0	105	1	36
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	325	96	78	131	0	0	0	0	127	1	43

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	335	0	0			622	622	141
Stage 1	-	-	-	-	-	-			287	287	-
Stage 2	-	-	-	-	-	-			335	335	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1224	-	0			450	403	907
Stage 1	0	-	0	-	-	0			762	674	-
Stage 2	0	-	0	-	-	0			725	643	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1224	-	-			419	0	898
Mov Cap-2 Maneuver	-	-	-	-	-	-			419	0	-
Stage 1	-	-	-	-	-	-			762	0	-
Stage 2	-	-	-	-	-	-			675	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1224	-	419	898
HCM Lane V/C Ratio	-	0.064	-	0.305	0.048
HCM Control Delay (s)	-	8.1	0	17.3	9.2
HCM Lane LOS	-	A	A	C	A
HCM 95th %tile Q(veh)	-	0.2	-	1.3	0.2

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	13	362	0	0	138	181	36	0	42	0	0	0
Future Vol, veh/h	13	362	0	0	138	181	36	0	42	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	411	0	0	157	206	41	0	48	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	167	0	-	-	-	0	608	608	421
Stage 1	-	-	-	-	-	-	441	441	-
Stage 2	-	-	-	-	-	-	167	167	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1411	-	0	0	-	0	459	410	632
Stage 1	-	-	0	0	-	0	648	577	-
Stage 2	-	-	0	0	-	0	863	760	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1411	-	-	-	-	-	448	0	626
Mov Cap-2 Maneuver	-	-	-	-	-	-	448	0	-
Stage 1	-	-	-	-	-	-	639	0	-
Stage 2	-	-	-	-	-	-	854	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0	12.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	448	626	1411	-	-
HCM Lane V/C Ratio	0.091	0.076	0.01	-	-
HCM Control Delay (s)	13.8	11.2	7.6	0	-
HCM Lane LOS	B	B	A	A	-
HCM 95th %tile Q(veh)	0.3	0.2	0	-	-

Intersection	
Int Delay, s/veh	177

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	166	237	0	6	75	208	11	0	6	375	0	250
Future Vol, veh/h	166	237	0	6	75	208	11	0	6	375	0	250
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	180	258	0	7	82	226	12	0	7	408	0	272

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	308	0	0	268	0	0	983	950	149	708	837	205
Stage 1	-	-	-	-	-	-	628	628	-	209	209	-
Stage 2	-	-	-	-	-	-	355	322	-	499	628	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1251	-	-	1294	-	-	215	259	871	~ 335	302	835
Stage 1	-	-	-	-	-	-	438	475	-	792	729	-
Stage 2	-	-	-	-	-	-	662	650	-	523	475	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1251	-	-	1282	-	-	123	212	854	~ 286	248	827
Mov Cap-2 Maneuver	-	-	-	-	-	-	123	212	-	~ 286	248	-
Stage 1	-	-	-	-	-	-	361	391	-	659	725	-
Stage 2	-	-	-	-	-	-	438	647	-	428	391	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.6	0.2	27.8	$ 374.6
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	176	1251	-	-	1282	-	-	387
HCM Lane V/C Ratio	0.105	0.144	-	-	0.005	-	-	1.755
HCM Control Delay (s)	27.8	8.4	0.3	-	7.8	-	-	$ 374.6
HCM Lane LOS	D	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	42.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	93	22	0	138	0	0	51	9
Future Vol, veh/h	0	0	0	4	93	22	0	138	0	0	51	9
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	6	139	33	0	206	0	0	76	13

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	292	292	216	86	0	-	-	-	0	
Stage 1	206	206	-	-	-	-	-	-	-	
Stage 2	86	86	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	699	619	824	1510	-	0	0	-	0	
Stage 1	829	731	-	-	-	0	0	-	0	
Stage 2	937	824	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	692	0	816	1510	-	-	-	-	-	
Mov Cap-2 Maneuver	692	0	-	-	-	-	-	-	-	
Stage 1	829	0	-	-	-	-	-	-	-	
Stage 2	928	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1510	-	692	816	-
HCM Lane V/C Ratio	-	-	0.209	0.04	-
HCM Control Delay (s)	0	-	11.6	9.6	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.8	0.1	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	383	0	8	181	18	0	0	0	22	33	0
Future Vol, veh/h	120	383	0	8	181	18	0	0	0	22	33	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	182	580	0	12	274	27	0	0	0	33	50	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	311	0	-	590	0	0	1276	1276	308
Stage 1	-	-	-	-	-	-	322	322	-
Stage 2	-	-	-	-	-	-	954	954	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1249	-	0	985	-	-	184	167	732
Stage 1	-	-	0	-	-	-	735	651	-
Stage 2	-	-	0	-	-	-	374	337	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1237	-	-	985	-	-	151	0	718
Mov Cap-2 Maneuver	-	-	-	-	-	-	151	0	-
Stage 1	-	-	-	-	-	-	620	0	-
Stage 2	-	-	-	-	-	-	365	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0.3	54.8
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1237	-	985	-	-	151
HCM Lane V/C Ratio	0.147	-	0.012	-	-	0.552
HCM Control Delay (s)	8.4	-	8.7	0	-	54.8
HCM Lane LOS	A	-	A	A	-	F
HCM 95th %tile Q(veh)	0.5	-	0	-	-	2.8

Intersection	
Intersection Delay, s/veh	12.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	20	17	0	190	3	31	0	374
Future Vol, veh/h	0	0	0	0	20	17	0	190	3	31	0	374
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	27	23	0	260	4	42	0	512
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	9	11.4	12.7
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	193	20	17	31	374
LT Vol	0	0	0	31	0
Through Vol	190	20	0	0	0
RT Vol	3	0	17	0	374
Lane Flow Rate	264	27	23	42	512
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.381	0.048	0.036	0.064	0.598
Departure Headway (Hd)	5.193	6.295	5.586	5.406	4.201
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	693	567	639	664	861
Service Time	3.224	4.051	3.341	3.127	1.921
HCM Lane V/C Ratio	0.381	0.048	0.036	0.063	0.595
HCM Control Delay	11.4	9.4	8.6	8.5	13
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.8	0.2	0.1	0.2	4.1

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2970	286
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3949	335
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.63	0.18

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	606.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.326
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1580
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.7
Flow in Lanes 1 and 2 (v12), pc/h	2369	Ramp Junction Speed (S), mi/h	64.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	2704	Average Density (D), pc/mi/ln	22.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2800	175
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3771	205
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	540.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.314
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1508
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.0
Flow in Lanes 1 and 2 (v12), pc/h	2263	Ramp Junction Speed (S), mi/h	64.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	2468	Average Density (D), pc/mi/ln	20.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2060	146
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	2712	171
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.64	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.338
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	2712	Ramp Junction Speed (S), mi/h	61.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2883	Average Density (D), pc/mi/ln	23.4
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2990	155
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4021	181
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.93	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.528
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	4021	Ramp Junction Speed (S), mi/h	56.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	4202	Average Density (D), pc/mi/ln	37.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3490	111
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4700	130
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.70	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1659
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.637	Outer Lanes Freeway Speed (SO), mi/h	76.0
Flow in Lanes 1 and 2 (v12), pc/h	3041	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2980	454
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4013	531
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.28

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	19.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.499
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1271
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	56.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.635	Outer Lanes Freeway Speed (SO), mi/h	77.5
Flow in Lanes 1 and 2 (v12), pc/h	2742	Ramp Junction Speed (S), mi/h	62.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2800	216
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3723	253
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.55	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.474
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1197
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.655	Outer Lanes Freeway Speed (SO), mi/h	77.8
Flow in Lanes 1 and 2 (v12), pc/h	2526	Ramp Junction Speed (S), mi/h	62.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2060	175
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	2771	205
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.61	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.470
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	2771	Ramp Junction Speed (S), mi/h	57.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2990	148
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3937	173
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.467
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3937	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Highway/CD Roadway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3730	348
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4960	407
Capacity (c), pc/h	6197	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	837.8	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.383
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1984
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.3
Flow in Lanes 1 and 2 (v12), pc/h	2976	Ramp Junction Speed (S), mi/h	62.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	3383	Average Density (D), pc/mi/ln	28.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3010	370
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4053	433
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.66	0.23

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	649.2	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.336
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1621
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.6
Flow in Lanes 1 and 2 (v12), pc/h	2432	Ramp Junction Speed (S), mi/h	63.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	2865	Average Density (D), pc/mi/ln	23.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3140	135
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4134	158
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.553
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	4134	Ramp Junction Speed (S), mi/h	55.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	4292	Average Density (D), pc/mi/ln	38.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3720	150
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5003	176
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.15	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	797.5	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	43.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5003	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5179	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	40.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4080	75
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5494	88
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.81	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2060
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.619	Outer Lanes Freeway Speed (SO), mi/h	74.4
Flow in Lanes 1 and 2 (v12), pc/h	3434	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	29.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3730	155
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5023	181
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	108.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.468
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1811
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.626	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3212	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.6
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3020	225
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4016	263
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.14

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.475
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1321
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.648	Outer Lanes Freeway Speed (SO), mi/h	77.3
Flow in Lanes 1 and 2 (v12), pc/h	2695	Ramp Junction Speed (S), mi/h	62.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3130	160
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4210	187
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.93	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.468
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4210	Ramp Junction Speed (S), mi/h	57.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	36.5
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	36.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3730	93
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4911	109
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.09	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4911	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4911	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	42.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4910	439
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	6529	514
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.27

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1196.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2612
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	3917	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4431	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	34.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4030	396
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5427	463
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.25

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	949.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.429
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2171
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	65.6
Flow in Lanes 1 and 2 (v12), pc/h	3256	Ramp Junction Speed (S), mi/h	61.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3719	Average Density (D), pc/mi/ln	32.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3690	143
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4858	167
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.11	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	764.6	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	46.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4858	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5025	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	39.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	NT + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4390	196
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5904	229
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.36	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1001.7	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	10.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5904	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	6133	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	48.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	5230	62
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	7043	73
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	19.6	Flow Outer Lanes (vOA), pc/h/ln	2700
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.581	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4343	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4343	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4910	122
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6612	143
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.98	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	82.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.464
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2665
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.588	Outer Lanes Freeway Speed (SO), mi/h	72.1
Flow in Lanes 1 and 2 (v12), pc/h	3947	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	35.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4030	196
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5359	229
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.472
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1975
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.615	Outer Lanes Freeway Speed (SO), mi/h	74.7
Flow in Lanes 1 and 2 (v12), pc/h	3384	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.4
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3680	144
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4949	169
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.10	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4949	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4949	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	43.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A1 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4380	82
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5767	96
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.28	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5767	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5767	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	50.2

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX F

INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – YEAR 2040 WITHOUT PROJECT

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	4	35	21	41	4	13	0	2	94	14
Future Vol, veh/h	4	0	4	35	21	41	4	13	0	2	94	14
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	5	45	27	53	5	17	0	3	121	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	223	183	150	186	192	37	149	0	0	27	0	0
Stage 1	146	146	-	37	37	-	-	-	-	-	-	-
Stage 2	77	37	-	149	155	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	733	711	896	775	703	1035	1432	-	-	1587	-	-
Stage 1	857	776	-	978	864	-	-	-	-	-	-	-
Stage 2	932	864	-	854	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	658	693	879	753	685	1015	1418	-	-	1572	-	-
Mov Cap-2 Maneuver	658	693	-	753	685	-	-	-	-	-	-	-
Stage 1	846	767	-	965	852	-	-	-	-	-	-	-
Stage 2	844	852	-	839	760	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	9.7	1.8	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	753	726	1015	1572	-	-
HCM Lane V/C Ratio	0.004	-	-	0.014	0.099	0.052	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.8	10.5	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	337	5	39	660	0	2	0	4	0	0	0
Future Vol, veh/h	0	337	5	39	660	0	2	0	4	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	383	6	44	750	0	2	0	5	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	760	0	0	399	0	0	1244	1244	406	1247	1247	770
Stage 1	-	-	-	-	-	-	396	396	-	848	848	-
Stage 2	-	-	-	-	-	-	848	848	-	399	399	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	852	-	-	1160	-	-	151	174	645	150	173	401
Stage 1	-	-	-	-	-	-	629	604	-	356	378	-
Stage 2	-	-	-	-	-	-	356	378	-	627	602	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	844	-	-	1149	-	-	141	159	633	139	158	393
Mov Cap-2 Maneuver	-	-	-	-	-	-	141	159	-	139	158	-
Stage 1	-	-	-	-	-	-	623	598	-	352	350	-
Stage 2	-	-	-	-	-	-	329	350	-	617	596	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	17.6	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	293	844	-	-	1149	-	-	-
HCM Lane V/C Ratio	0.023	-	-	-	0.039	-	-	-
HCM Control Delay (s)	17.6	0	-	-	8.3	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	218	139	1	651	0	0	0	0	8	2	108
Future Vol, veh/h	0	218	139	1	651	0	0	0	0	8	2	108
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	269	172	1	804	0	0	0	0	10	2	133

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	279	0	0	1085	1085	814
Stage 1	-	-	-	-	-	-	806	806	-
Stage 2	-	-	-	-	-	-	279	279	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1284	-	0	240	217	378
Stage 1	0	-	0	-	-	0	439	395	-
Stage 2	0	-	0	-	-	0	768	680	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	1284	-	-	240	0	374
Mov Cap-2 Maneuver	-	-	-	-	-	-	240	0	-
Stage 1	-	-	-	-	-	-	439	0	-
Stage 2	-	-	-	-	-	-	767	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	20
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1284	-	240	374
HCM Lane V/C Ratio	-	0.001	-	0.051	0.357
HCM Control Delay (s)	-	7.8	0	20.8	19.9
HCM Lane LOS	-	A	A	C	C
HCM 95th %tile Q(veh)	-	0	-	0.2	1.6

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	99	126	0	0	511	22	140	0	1	0	0	0
Future Vol, veh/h	99	126	0	0	511	22	140	0	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	113	143	0	0	581	25	159	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	591	0	-	-	-	0	960	960	153
Stage 1	-	-	-	-	-	-	369	369	-
Stage 2	-	-	-	-	-	-	591	591	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	985	-	0	0	-	0	285	257	893
Stage 1	-	-	0	0	-	0	699	621	-
Stage 2	-	-	0	0	-	0	553	494	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	985	-	-	-	-	-	247	0	884
Mov Cap-2 Maneuver	-	-	-	-	-	-	247	0	-
Stage 1	-	-	-	-	-	-	612	0	-
Stage 2	-	-	-	-	-	-	547	0	-

Approach	EB	WB	NB
HCM Control Delay, s	4	0	42.4
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	247	884	985	-	-
HCM Lane V/C Ratio	0.644	0.001	0.114	-	-
HCM Control Delay (s)	42.6	9.1	9.1	0	-
HCM Lane LOS	E	A	A	A	-
HCM 95th %tile Q(veh)	4	0	0.4	-	-

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	125	0	13	552	13	7
Future Vol, veh/h	125	0	13	552	13	7
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	136	0	14	600	14	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	146	0	784	88
Stage 1	-	-	-	-	146	-
Stage 2	-	-	-	-	638	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1435	-	346	953
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	525	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1421	-	336	935
Mov Cap-2 Maneuver	-	-	-	-	336	-
Stage 1	-	-	-	-	858	-
Stage 2	-	-	-	-	515	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	433	-	-	1421	-
HCM Lane V/C Ratio	0.05	-	-	0.01	-
HCM Control Delay (s)	13.8	-	-	7.6	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	11.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	14	421	46	0	34	0	0	67	102
Future Vol, veh/h	0	0	0	14	421	46	0	34	0	0	67	102
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	468	51	0	38	0	0	74	113

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	122	122	48	84	0	-	-	-	0	
Stage 1	38	38	-	-	-	-	-	-	-	
Stage 2	84	84	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	873	768	1021	1513	-	0	0	-	0	
Stage 1	984	863	-	-	-	0	0	-	0	
Stage 2	939	825	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	864	0	1011	1513	-	-	-	-	-	
Mov Cap-2 Maneuver	864	0	-	-	-	-	-	-	-	
Stage 1	984	0	-	-	-	-	-	-	-	
Stage 2	930	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1513	-	864	1011	-
HCM Lane V/C Ratio	-	-	0.559	0.051	-
HCM Control Delay (s)	0	-	14.3	8.8	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	3.5	0.2	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	142	0	2	29	22	0	0	0	33	49	0
Future Vol, veh/h	12	142	0	2	29	22	0	0	0	33	49	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	163	0	2	33	25	0	0	0	38	56	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	68	0	-	173	0	0			261	261	66
Stage 1	-	-	-	-	-	-			60	60	-
Stage 2	-	-	-	-	-	-			201	201	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1533	-	0	1404	-	-			728	644	998
Stage 1	-	-	0	-	-	-			963	845	-
Stage 2	-	-	0	-	-	-			833	735	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1518	-	-	1404	-	-			706	0	979
Mov Cap-2 Maneuver	-	-	-	-	-	-			706	0	-
Stage 1	-	-	-	-	-	-			945	0	-
Stage 2	-	-	-	-	-	-			824	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.6	0.3	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1518	-	1404	-	-	706
HCM Lane V/C Ratio	0.009	-	0.002	-	-	0.134
HCM Control Delay (s)	7.4	-	7.6	0	-	10.9
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.5

Intersection	
Intersection Delay, s/veh	7.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	20	1	35	2	29	0	144
Future Vol, veh/h	0	0	0	0	1	20	1	35	2	29	0	144
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	27	1	47	3	39	0	192
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.3	8.1	7.8
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	3%	0%	0%	100%	0%
Vol Thru, %	92%	100%	0%	0%	0%
Vol Right, %	5%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	38	1	20	29	144
LT Vol	1	0	0	29	0
Through Vol	35	1	0	0	0
RT Vol	2	0	20	0	144
Lane Flow Rate	51	1	27	39	192
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.066	0.002	0.033	0.055	0.208
Departure Headway (Hd)	4.723	5.146	4.444	5.108	3.907
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	752	700	810	701	918
Service Time	2.788	2.846	2.144	2.84	1.639
HCM Lane V/C Ratio	0.068	0.001	0.033	0.056	0.209
HCM Control Delay	8.1	7.9	7.3	8.1	7.7
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.2	0	0.1	0.2	0.8

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	1	0	13	1	18	2	128	0	18	16	4
Future Vol, veh/h	62	1	0	13	1	18	2	128	0	18	16	4
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	1	0	14	1	19	2	135	0	19	17	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	226	216	39	217	218	155	31	0	0	145	0	0
Stage 1	67	67	-	149	149	-	-	-	-	-	-	-
Stage 2	159	149	-	68	69	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	729	682	1033	739	680	891	1582	-	-	1437	-	-
Stage 1	943	839	-	854	774	-	-	-	-	-	-	-
Stage 2	843	774	-	942	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	691	658	1013	716	656	874	1567	-	-	1423	-	-
Mov Cap-2 Maneuver	691	658	-	716	656	-	-	-	-	-	-	-
Stage 1	933	819	-	845	765	-	-	-	-	-	-	-
Stage 2	815	765	-	919	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	9.6	0.1	3.6
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	690	711	874	1423	-	-
HCM Lane V/C Ratio	0.001	-	-	0.096	0.021	0.022	0.013	-	-
HCM Control Delay (s)	7.3	0	-	10.8	10.2	9.2	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	385	4	5	145	0	2	0	26	0	0	0
Future Vol, veh/h	0	385	4	5	145	0	2	0	26	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	428	4	6	161	0	2	0	29	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	171	0	0	442	0	0	623	623	450	638	625	181
Stage 1	-	-	-	-	-	-	440	440	-	183	183	-
Stage 2	-	-	-	-	-	-	183	183	-	455	442	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1406	-	-	1118	-	-	398	402	609	389	401	862
Stage 1	-	-	-	-	-	-	596	578	-	819	748	-
Stage 2	-	-	-	-	-	-	819	748	-	585	576	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1393	-	-	1107	-	-	389	392	597	361	391	846
Mov Cap-2 Maneuver	-	-	-	-	-	-	389	392	-	361	391	-
Stage 1	-	-	-	-	-	-	590	572	-	811	736	-
Stage 2	-	-	-	-	-	-	806	736	-	551	570	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	11.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	575	1393	-	-	1107	-	-	-
HCM Lane V/C Ratio	0.054	-	-	-	0.005	-	-	-
HCM Control Delay (s)	11.6	0	-	-	8.3	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	333	115	1	137	0	0	0	0	2	0	48
Future Vol, veh/h	0	333	115	1	137	0	0	0	0	2	0	48
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	383	132	1	157	0	0	0	0	2	0	55

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	393	0	0			552	552	167
Stage 1	-	-	-	-	-	-			159	159	-
Stage 2	-	-	-	-	-	-			393	393	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1166	-	0			495	442	877
Stage 1	0	-	0	-	-	0			870	766	-
Stage 2	0	-	0	-	-	0			682	606	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1166	-	-			495	0	869
Mov Cap-2 Maneuver	-	-	-	-	-	-			495	0	-
Stage 1	-	-	-	-	-	-			870	0	-
Stage 2	-	-	-	-	-	-			681	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	9.5
HCM LOS			A

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1166	-	495	869
HCM Lane V/C Ratio	-	0.001	-	0.005	0.063
HCM Control Delay (s)	-	8.1	0	12.3	9.4
HCM Lane LOS	-	A	A	B	A
HCM 95th %tile Q(veh)	-	0	-	0	0.2

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	33	302	0	0	80	30	59	1	1	0	0	0
Future Vol, veh/h	33	302	0	0	80	30	59	1	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	339	0	0	90	34	66	1	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	100	0	-	-	-	0	513	513	349
Stage 1	-	-	-	-	-	-	413	413	-
Stage 2	-	-	-	-	-	-	100	100	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1493	-	0	0	-	0	521	465	694
Stage 1	-	-	0	0	-	0	668	594	-
Stage 2	-	-	0	0	-	0	924	812	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1493	-	-	-	-	-	500	0	687
Mov Cap-2 Maneuver	-	-	-	-	-	-	500	0	-
Stage 1	-	-	-	-	-	-	647	0	-
Stage 2	-	-	-	-	-	-	915	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.7	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	500	687	1493	-	-
HCM Lane V/C Ratio	0.135	0.002	0.025	-	-
HCM Control Delay (s)	13.3	10.2	7.5	0	-
HCM Lane LOS	B	B	A	A	-
HCM 95th %tile Q(veh)	0.5	0	0.1	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	303	0	7	118	13	7
Future Vol, veh/h	303	0	7	118	13	7
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	329	0	8	128	14	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	339	0	493	185
Stage 1	-	-	-	-	339	-
Stage 2	-	-	-	-	154	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1219	-	520	826
Stage 1	-	-	-	-	694	-
Stage 2	-	-	-	-	874	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1207	-	506	810
Mov Cap-2 Maneuver	-	-	-	-	506	-
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	860	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	583	-	-	1207	-
HCM Lane V/C Ratio	0.037	-	-	0.006	-
HCM Control Delay (s)	11.4	-	-	8	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	61	41	0	146	0	0	71	26
Future Vol, veh/h	0	0	0	5	61	41	0	146	0	0	71	26
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	66	44	0	157	0	0	76	28

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	243	243	167	86	0	-	-	-	0
Stage 1	157	157	-	-	-	-	-	-	-
Stage 2	86	86	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	745	659	877	1510	-	0	0	-	0
Stage 1	871	768	-	-	-	0	0	-	0
Stage 2	937	824	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	738	0	869	1510	-	-	-	-	-
Mov Cap-2 Maneuver	738	0	-	-	-	-	-	-	-
Stage 1	871	0	-	-	-	-	-	-	-
Stage 2	928	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1510	-	738	869	-
HCM Lane V/C Ratio	-	-	0.096	0.051	-
HCM Control Delay (s)	0	-	10.4	9.4	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.3	0.2	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	97	257	0	9	33	50	0	0	0	37	37	1
Future Vol, veh/h	97	257	0	9	33	50	0	0	0	37	37	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	295	0	10	38	57	0	0	0	43	43	1

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	105	0	-	305	0	0			624	624	87
Stage 1	-	-	-	-	-	-			97	97	-
Stage 2	-	-	-	-	-	-			527	527	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1486	-	0	1256	-	-			449	402	971
Stage 1	-	-	0	-	-	-			927	815	-
Stage 2	-	-	0	-	-	-			592	528	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1472	-	-	1256	-	-			404	0	953
Mov Cap-2 Maneuver	-	-	-	-	-	-			404	0	-
Stage 1	-	-	-	-	-	-			849	0	-
Stage 2	-	-	-	-	-	-			582	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0.8	16.1
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1472	-	1256	-	-	410
HCM Lane V/C Ratio	0.076	-	0.008	-	-	0.21
HCM Control Delay (s)	7.6	-	7.9	0	-	16.1
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.8

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	49	33	2	60	1	26	0	269
Future Vol, veh/h	0	0	0	0	49	33	2	60	1	26	0	269
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	56	38	2	68	1	30	0	306
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.3	8.7	9
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	3%	0%	0%	100%	0%
Vol Thru, %	95%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	63	49	33	26	269
LT Vol	2	0	0	26	0
Through Vol	60	49	0	0	0
RT Vol	1	0	33	0	269
Lane Flow Rate	72	56	38	30	306
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.101	0.084	0.049	0.044	0.352
Departure Headway (Hd)	5.102	5.428	4.724	5.343	4.14
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	704	661	759	673	871
Service Time	3.121	3.153	2.449	3.055	1.851
HCM Lane V/C Ratio	0.102	0.085	0.05	0.045	0.351
HCM Control Delay	8.7	8.7	7.7	8.3	9.1
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.3	0.3	0.2	0.1	1.6

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Year 2040 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3470	260
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4614	304
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.73	0.16

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	741.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.352
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1846
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.8
Flow in Lanes 1 and 2 (v12), pc/h	2768	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3072	Average Density (D), pc/mi/ln	25.9
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Year 2040 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3280	150
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4417	176
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.68	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	672.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.334
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1767
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.0
Flow in Lanes 1 and 2 (v12), pc/h	2650	Ramp Junction Speed (S), mi/h	63.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2826	Average Density (D), pc/mi/ln	24.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Year 2040 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2410	150
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3173	176
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.379
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3173	Ramp Junction Speed (S), mi/h	60.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	3349	Average Density (D), pc/mi/ln	27.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Year 2040 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3500	130
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4707	152
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.08	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	729.1	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	48.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4707	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4859	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Year 2040 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4090	90
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5508	105
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.81	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.461
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2069
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.617	Outer Lanes Freeway Speed (SO), mi/h	74.4
Flow in Lanes 1 and 2 (v12), pc/h	3439	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	29.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3480	480
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4686	562
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.30

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	17.2	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.502
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1579
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	56.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.617	Outer Lanes Freeway Speed (SO), mi/h	76.3
Flow in Lanes 1 and 2 (v12), pc/h	3107	Ramp Junction Speed (S), mi/h	62.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3270	130
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4348	152
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.64	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.465
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1494
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.644	Outer Lanes Freeway Speed (SO), mi/h	76.6
Flow in Lanes 1 and 2 (v12), pc/h	2854	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2410	110
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3241	129
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3241	Ramp Junction Speed (S), mi/h	57.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3500	140
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4608	164
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.02	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4608	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4608	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	40.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Year 2040 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4360	260
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5798	304
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.90	0.16

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	995.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.439
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2319
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow in Lanes 1 and 2 (v12), pc/h	3479	Ramp Junction Speed (S), mi/h	60.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	3783	Average Density (D), pc/mi/ln	33.4
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Year 2040 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3520	330
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4740	386
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.76	0.21

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	786.2	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.366
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1896
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.6
Flow in Lanes 1 and 2 (v12), pc/h	2844	Ramp Junction Speed (S), mi/h	62.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3230	Average Density (D), pc/mi/ln	27.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Year 2040 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3670	110
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4832	129
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.10	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	750.9	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	47.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4832	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4961	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	39.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Year 2040 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4350	70
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5850	82
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.32	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	958.7	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	20.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5850	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5932	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	46.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Year 2040 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4770	40
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6423	47
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.456
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2570
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.597	Outer Lanes Freeway Speed (SO), mi/h	72.4
Flow in Lanes 1 and 2 (v12), pc/h	3853	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4370	100
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5885	117
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	112.6	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.462
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2267
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.607	Outer Lanes Freeway Speed (SO), mi/h	73.6
Flow in Lanes 1 and 2 (v12), pc/h	3618	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3530	80
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4694	94
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.460
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1665
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.638	Outer Lanes Freeway Speed (SO), mi/h	76.0
Flow in Lanes 1 and 2 (v12), pc/h	3029	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3660	60
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4922	70
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.09	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4922	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4922	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	43.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4360	60
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5740	70
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.27	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5740	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5740	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	50.0

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX G

INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – YEAR 2040 WITH ENTIRE PROJECT (ALTERNATIVE A1)

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	4	35	67	41	4	13	0	2	94	14
Future Vol, veh/h	4	0	4	35	67	41	4	13	0	2	94	14
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	5	45	86	53	5	17	0	3	121	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	253	183	150	186	192	37	149	0	0	27	0	0
Stage 1	146	146	-	37	37	-	-	-	-	-	-	-
Stage 2	107	37	-	149	155	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	700	711	896	775	703	1035	1432	-	-	1587	-	-
Stage 1	857	776	-	978	864	-	-	-	-	-	-	-
Stage 2	898	864	-	854	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	586	693	879	753	685	1015	1418	-	-	1572	-	-
Mov Cap-2 Maneuver	586	693	-	753	685	-	-	-	-	-	-	-
Stage 1	846	767	-	965	852	-	-	-	-	-	-	-
Stage 2	755	852	-	839	760	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.5	1.8	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	703	707	1015	1572	-	-
HCM Lane V/C Ratio	0.004	-	-	0.015	0.185	0.052	0.002	-	-
HCM Control Delay (s)	7.5	0	-	10.2	11.2	8.7	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.7	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	360	5	39	674	0	2	0	4	0	0	0
Future Vol, veh/h	0	360	5	39	674	0	2	0	4	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	409	6	44	766	0	2	0	5	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	776	0	0	425	0	0	1286	1286	432	1289	1289	786
Stage 1	-	-	-	-	-	-	422	422	-	864	864	-
Stage 2	-	-	-	-	-	-	864	864	-	425	425	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	840	-	-	1134	-	-	141	164	624	141	164	392
Stage 1	-	-	-	-	-	-	609	588	-	349	371	-
Stage 2	-	-	-	-	-	-	349	371	-	607	586	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	832	-	-	1123	-	-	131	150	612	130	150	385
Mov Cap-2 Maneuver	-	-	-	-	-	-	131	150	-	130	150	-
Stage 1	-	-	-	-	-	-	603	582	-	346	342	-
Stage 2	-	-	-	-	-	-	322	342	-	597	580	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	18.4	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	275	832	-	-	1123	-	-	-
HCM Lane V/C Ratio	0.025	-	-	-	0.039	-	-	-
HCM Control Delay (s)	18.4	0	-	-	8.3	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	9.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	241	139	30	665	0	0	0	0	124	2	108
Future Vol, veh/h	0	241	139	30	665	0	0	0	0	124	2	108
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	298	172	37	821	0	0	0	0	153	2	133

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	308	0	0			1203	1203	831
Stage 1	-	-	-	-	-	-			895	895	-
Stage 2	-	-	-	-	-	-			308	308	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1253	-	0			204	184	370
Stage 1	0	-	0	-	-	0			399	359	-
Stage 2	0	-	0	-	-	0			745	660	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1253	-	-			193	0	366
Mov Cap-2 Maneuver	-	-	-	-	-	-			193	0	-
Stage 1	-	-	-	-	-	-			399	0	-
Stage 2	-	-	-	-	-	-			705	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.3	48.8
HCM LOS			E

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1253	-	193	366
HCM Lane V/C Ratio	-	0.03	-	0.806	0.364
HCM Control Delay (s)	-	8	0	73.1	20.4
HCM Lane LOS	-	A	A	F	C
HCM 95th %tile Q(veh)	-	0.1	-	5.6	1.6

Intersection	
Int Delay, s/veh	12.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	99	265	0	0	554	93	140	0	47	0	0	0
Future Vol, veh/h	99	265	0	0	554	93	140	0	47	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	113	301	0	0	630	106	159	0	53	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	640	0	-	-	-	0	1167	1167	311
Stage 1	-	-	-	-	-	-	527	527	-
Stage 2	-	-	-	-	-	-	640	640	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	944	-	0	0	-	0	214	194	729
Stage 1	-	-	0	0	-	0	592	528	-
Stage 2	-	-	0	0	-	0	525	470	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	944	-	-	-	-	-	181	0	722
Mov Cap-2 Maneuver	-	-	-	-	-	-	181	0	-
Stage 1	-	-	-	-	-	-	507	0	-
Stage 2	-	-	-	-	-	-	520	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.5	0	70.3
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	181	722	944	-	-
HCM Lane V/C Ratio	0.879	0.074	0.119	-	-
HCM Control Delay (s)	90.4	10.4	9.3	0	-
HCM Lane LOS	F	B	A	A	-
HCM 95th %tile Q(veh)	6.5	0.2	0.4	-	-

Intersection	
Int Delay, s/veh	106.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	185	125	0	13	552	232	13	0	7	171	0	114
Future Vol, veh/h	185	125	0	13	552	232	13	0	7	171	0	114
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	201	136	0	14	600	252	14	0	8	186	0	124

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	852	0	0	146	0	0	1374	1428	88	1234	1302	736
Stage 1	-	-	-	-	-	-	548	548	-	754	754	-
Stage 2	-	-	-	-	-	-	826	880	-	480	548	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	785	-	-	1435	-	-	113	134	953	~ 143	160	418
Stage 1	-	-	-	-	-	-	489	516	-	400	416	-
Stage 2	-	-	-	-	-	-	365	364	-	537	516	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	785	-	-	1421	-	-	61	95	935	~ 110	113	414
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	95	-	~ 110	113	-
Stage 1	-	-	-	-	-	-	350	369	-	289	412	-
Stage 2	-	-	-	-	-	-	251	360	-	381	369	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.8	0.1	56.6	$ 514.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	91	785	-	-	1421	-	-	156
HCM Lane V/C Ratio	0.239	0.256	-	-	0.01	-	-	1.986
HCM Control Delay (s)	56.6	11.2	0.4	-	7.6	-	-	$ 514.1
HCM Lane LOS	F	B	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.9	1	-	-	0	-	-	24.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	13.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					↰	↱		↰			↳	
Traffic Vol, veh/h	0	0	0	14	490	46	0	34	0	0	67	102
Future Vol, veh/h	0	0	0	14	490	46	0	34	0	0	67	102
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	544	51	0	38	0	0	74	113

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	122	122	48	84	0	-	-	-	0
Stage 1	38	38	-	-	-	-	-	-	-
Stage 2	84	84	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	873	768	1021	1513	-	0	0	-	0
Stage 1	984	863	-	-	-	0	0	-	0
Stage 2	939	825	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	864	0	1011	1513	-	-	-	-	-
Mov Cap-2 Maneuver	864	0	-	-	-	-	-	-	-
Stage 1	984	0	-	-	-	-	-	-	-
Stage 2	930	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.9	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1513	-	864	1011	-
HCM Lane V/C Ratio	-	-	0.648	0.051	-
HCM Control Delay (s)	0	-	16.5	8.8	-
HCM Lane LOS	A	-	C	A	-
HCM 95th %tile Q(veh)	0	-	4.9	0.2	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	213	0	2	191	22	0	0	0	33	49	0
Future Vol, veh/h	12	213	0	2	191	22	0	0	0	33	49	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	245	0	2	220	25	0	0	0	38	56	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	255	0	-	255	0	0	530	530	253
Stage 1	-	-	-	-	-	-	247	247	-
Stage 2	-	-	-	-	-	-	283	283	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1310	-	0	1310	-	-	510	455	786
Stage 1	-	-	0	-	-	-	794	702	-
Stage 2	-	-	0	-	-	-	765	677	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1298	-	-	1310	-	-	493	0	771
Mov Cap-2 Maneuver	-	-	-	-	-	-	493	0	-
Stage 1	-	-	-	-	-	-	777	0	-
Stage 2	-	-	-	-	-	-	756	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0.1	14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1298	-	1310	-	-	493
HCM Lane V/C Ratio	0.011	-	0.002	-	-	0.191
HCM Control Delay (s)	7.8	-	7.8	0	-	14
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.7

Intersection	
Intersection Delay, s/veh	9.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	20	1	197	2	29	0	215
Future Vol, veh/h	0	0	0	0	1	20	1	197	2	29	0	215
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	27	1	263	3	39	0	287
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8	10.6	8.7
HCM LOS	A	B	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	200	1	20	29	215
LT Vol	1	0	0	29	0
Through Vol	197	1	0	0	0
RT Vol	2	0	20	0	215
Lane Flow Rate	267	1	27	39	287
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.356	0.002	0.038	0.056	0.32
Departure Headway (Hd)	4.812	5.846	5.14	5.216	4.013
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	739	616	701	678	880
Service Time	2.909	3.546	2.84	3.016	1.812
HCM Lane V/C Ratio	0.361	0.002	0.039	0.058	0.326
HCM Control Delay	10.6	8.6	8	8.3	8.7
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.6	0	0.1	0.2	1.4

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	1	0	13	60	18	2	128	0	18	16	4
Future Vol, veh/h	62	1	0	13	60	18	2	128	0	18	16	4
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	1	0	14	63	19	2	135	0	19	17	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	257	216	39	217	218	155	31	0	0	145	0	0
Stage 1	67	67	-	149	149	-	-	-	-	-	-	-
Stage 2	190	149	-	68	69	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	696	682	1033	739	680	891	1582	-	-	1437	-	-
Stage 1	943	839	-	854	774	-	-	-	-	-	-	-
Stage 2	812	774	-	942	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	612	658	1013	716	656	874	1567	-	-	1423	-	-
Mov Cap-2 Maneuver	612	658	-	716	656	-	-	-	-	-	-	-
Stage 1	933	819	-	845	765	-	-	-	-	-	-	-
Stage 2	721	765	-	919	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.6	10.7	0.1	3.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	613	666	874	1423	-	-
HCM Lane V/C Ratio	0.001	-	-	0.108	0.115	0.022	0.013	-	-
HCM Control Delay (s)	7.3	0	-	11.6	11.1	9.2	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.4	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	415	4	5	173	0	2	0	26	0	0	0
Future Vol, veh/h	0	415	4	5	173	0	2	0	26	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	461	4	6	192	0	2	0	29	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	202	0	0	475	0	0	687	687	483	702	689	212
Stage 1	-	-	-	-	-	-	473	473	-	214	214	-
Stage 2	-	-	-	-	-	-	214	214	-	488	475	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1370	-	-	1087	-	-	361	370	584	353	369	828
Stage 1	-	-	-	-	-	-	572	558	-	788	725	-
Stage 2	-	-	-	-	-	-	788	725	-	561	557	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1357	-	-	1077	-	-	353	360	573	327	359	812
Mov Cap-2 Maneuver	-	-	-	-	-	-	353	360	-	327	359	-
Stage 1	-	-	-	-	-	-	566	552	-	780	713	-
Stage 2	-	-	-	-	-	-	776	713	-	528	551	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	12	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	549	1357	-	-	1077	-	-	-
HCM Lane V/C Ratio	0.057	-	-	-	0.005	-	-	-
HCM Control Delay (s)	12	0	-	-	8.4	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	363	115	57	165	0	0	0	0	151	0	48
Future Vol, veh/h	0	363	115	57	165	0	0	0	0	151	0	48
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	417	132	66	190	0	0	0	0	174	0	55

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	427	0	0			749	749	200
Stage 1	-	-	-	-	-	-			322	322	-
Stage 2	-	-	-	-	-	-			427	427	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1132	-	0			379	341	841
Stage 1	0	-	0	-	-	0			735	651	-
Stage 2	0	-	0	-	-	0			658	585	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1132	-	-			354	0	833
Mov Cap-2 Maneuver	-	-	-	-	-	-			354	0	-
Stage 1	-	-	-	-	-	-			735	0	-
Stage 2	-	-	-	-	-	-			615	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.2	21
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1132	-	354	833
HCM Lane V/C Ratio	-	0.058	-	0.49	0.066
HCM Control Delay (s)	-	8.4	0	24.6	9.6
HCM Lane LOS	-	A	A	C	A
HCM 95th %tile Q(veh)	-	0.2	-	2.6	0.2

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	33	480	0	0	164	170	59	1	60	0	0	0
Future Vol, veh/h	33	480	0	0	164	170	59	1	60	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	539	0	0	184	191	66	1	67	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	194	0	-	-	-	0	807	807	549
Stage 1	-	-	-	-	-	-	613	613	-
Stage 2	-	-	-	-	-	-	194	194	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1379	-	0	0	-	0	351	315	535
Stage 1	-	-	0	0	-	0	541	483	-
Stage 2	-	-	0	0	-	0	839	740	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1379	-	-	-	-	-	334	0	530
Mov Cap-2 Maneuver	-	-	-	-	-	-	334	0	-
Stage 1	-	-	-	-	-	-	520	0	-
Stage 2	-	-	-	-	-	-	831	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	334	530	1379	-	-
HCM Lane V/C Ratio	0.202	0.127	0.027	-	-
HCM Control Delay (s)	18.5	12.8	7.7	0	-
HCM Lane LOS	C	B	A	A	-
HCM 95th %tile Q(veh)	0.7	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	282.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	238	303	0	7	118	297	13	0	7	337	0	224
Future Vol, veh/h	238	303	0	7	118	297	13	0	7	337	0	224
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	259	329	0	8	128	323	14	0	8	366	0	243

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	451	0	0	339	0	0	1294	1324	185	999	1163	300
Stage 1	-	-	-	-	-	-	857	857	-	306	306	-
Stage 2	-	-	-	-	-	-	437	467	-	693	857	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1108	-	-	1219	-	-	129	155	826	~ 210	194	739
Stage 1	-	-	-	-	-	-	319	373	-	703	661	-
Stage 2	-	-	-	-	-	-	597	561	-	401	373	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1108	-	-	1207	-	-	65	109	810	~ 160	136	732
Mov Cap-2 Maneuver	-	-	-	-	-	-	65	109	-	~ 160	136	-
Stage 1	-	-	-	-	-	-	226	264	-	502	656	-
Stage 2	-	-	-	-	-	-	392	557	-	~ 281	264	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.3	0.1	53.2	$ 772.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	96	1108	-	-	1207	-	-	233
HCM Lane V/C Ratio	0.226	0.233	-	-	0.006	-	-	2.617
HCM Control Delay (s)	53.2	9.2	0.5	-	8	-	-	$ 772.3
HCM Lane LOS	F	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.8	0.9	-	-	0	-	-	51.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	150	41	0	146	0	0	71	26
Future Vol, veh/h	0	0	0	5	150	41	0	146	0	0	71	26
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	161	44	0	157	0	0	76	28

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	243	243	167	86	0	-	-	-	0
Stage 1	157	157	-	-	-	-	-	-	-
Stage 2	86	86	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	745	659	877	1510	-	0	0	-	0
Stage 1	871	768	-	-	-	0	0	-	0
Stage 2	937	824	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	738	0	869	1510	-	-	-	-	-
Mov Cap-2 Maneuver	738	0	-	-	-	-	-	-	-
Stage 1	871	0	-	-	-	-	-	-	-
Stage 2	928	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1510	-	738	869	-
HCM Lane V/C Ratio	-	-	0.226	0.051	-
HCM Control Delay (s)	0	-	11.3	9.4	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.9	0.2	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	97	397	0	9	241	50	0	0	0	37	37	1
Future Vol, veh/h	97	397	0	9	241	50	0	0	0	37	37	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	456	0	10	277	57	0	0	0	43	43	1

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	344	0	-	466	0	0	1024	1024	326
Stage 1	-	-	-	-	-	-	336	336	-
Stage 2	-	-	-	-	-	-	688	688	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1215	-	0	1095	-	-	261	235	715
Stage 1	-	-	0	-	-	-	724	642	-
Stage 2	-	-	0	-	-	-	499	447	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1203	-	-	1095	-	-	230	0	701
Mov Cap-2 Maneuver	-	-	-	-	-	-	230	0	-
Stage 1	-	-	-	-	-	-	651	0	-
Stage 2	-	-	-	-	-	-	489	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0.2	29.1
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1203	-	1095	-	-	234
HCM Lane V/C Ratio	0.093	-	0.009	-	-	0.368
HCM Control Delay (s)	8.3	-	8.3	0	-	29.1
HCM Lane LOS	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.3	-	0	-	-	1.6

Intersection	
Intersection Delay, s/veh	12.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	49	33	2	268	1	26	0	409
Future Vol, veh/h	0	0	0	0	49	33	2	268	1	26	0	409
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	56	38	2	305	1	30	0	465
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	9.4	12.7	12.5
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	99%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	271	49	33	26	409
LT Vol	2	0	0	26	0
Through Vol	268	49	0	0	0
RT Vol	1	0	33	0	409
Lane Flow Rate	308	56	38	30	465
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.453	0.098	0.058	0.046	0.566
Departure Headway (Hd)	5.3	6.31	5.601	5.589	4.381
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	678	564	634	640	823
Service Time	3.353	4.092	3.382	3.33	2.122
HCM Lane V/C Ratio	0.454	0.099	0.06	0.047	0.565
HCM Control Delay	12.7	9.8	8.7	8.6	12.7
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	2.4	0.3	0.2	0.1	3.6

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3470	360
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4614	421
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	766.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.363
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1846
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.8
Flow in Lanes 1 and 2 (v12), pc/h	2768	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	3189	Average Density (D), pc/mi/ln	26.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3280	221
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4417	259
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.14

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	689.9	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.339
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1767
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.0
Flow in Lanes 1 and 2 (v12), pc/h	2650	Ramp Junction Speed (S), mi/h	63.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2909	Average Density (D), pc/mi/ln	24.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2410	179
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3173	209
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.75	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.383
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3173	Ramp Junction Speed (S), mi/h	60.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3382	Average Density (D), pc/mi/ln	28.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3500	201
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4707	235
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.10	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	746.8	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	47.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4707	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4942	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	39.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4090	136
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5508	159
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.81	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2059
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.615	Outer Lanes Freeway Speed (SO), mi/h	74.4
Flow in Lanes 1 and 2 (v12), pc/h	3449	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	29.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3480	549
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4686	643
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.34

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	18.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.509
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1565
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	56.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.613	Outer Lanes Freeway Speed (SO), mi/h	76.3
Flow in Lanes 1 and 2 (v12), pc/h	3121	Ramp Junction Speed (S), mi/h	61.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3270	292
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4348	342
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.64	0.18

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.482
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1458
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.636	Outer Lanes Freeway Speed (SO), mi/h	76.8
Flow in Lanes 1 and 2 (v12), pc/h	2890	Ramp Junction Speed (S), mi/h	62.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2410	226
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3241	264
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.14

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.475
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3241	Ramp Junction Speed (S), mi/h	57.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3500	186
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4608	218
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.02	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4608	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4608	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	40.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4360	456
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5798	534
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.94	0.28

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1044.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.484
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2319
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow in Lanes 1 and 2 (v12), pc/h	3479	Ramp Junction Speed (S), mi/h	59.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	4013	Average Density (D), pc/mi/ln	35.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3520	470
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4740	550
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.78	0.29

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	821.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.384
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1896
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.6
Flow in Lanes 1 and 2 (v12), pc/h	2844	Ramp Junction Speed (S), mi/h	62.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3394	Average Density (D), pc/mi/ln	28.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3670	166
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4832	194
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.12	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	764.8	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	46.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4832	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5026	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	39.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4350	210
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5850	246
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.35	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	993.8	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	12.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5850	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	6096	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	48.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4770	99
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6423	116
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.462
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2561
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.594	Outer Lanes Freeway Speed (SO), mi/h	72.5
Flow in Lanes 1 and 2 (v12), pc/h	3862	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4370	189
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5885	221
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	117.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.471
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2249
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.603	Outer Lanes Freeway Speed (SO), mi/h	73.7
Flow in Lanes 1 and 2 (v12), pc/h	3636	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3530	288
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4694	337
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.18

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.482
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1625
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.627	Outer Lanes Freeway Speed (SO), mi/h	76.1
Flow in Lanes 1 and 2 (v12), pc/h	3069	Ramp Junction Speed (S), mi/h	62.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3660	209
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4922	245
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.09	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4922	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4922	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	43.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4360	119
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5740	139
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.27	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5740	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5740	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	50.0

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX H

WEEKDAY AND SATURDAY INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – EXISTING + PROJECT PHASE 1 (ALTERNATIVE A2)

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	27	44	32	3	10	0	2	73	11
Future Vol, veh/h	3	0	3	27	44	32	3	10	0	2	73	11
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	4	35	56	41	4	13	0	3	94	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	197	148	121	150	155	33	118	0	0	23	0	0
Stage 1	117	117	-	31	31	-	-	-	-	-	-	-
Stage 2	80	31	-	119	124	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	762	743	930	818	737	1041	1470	-	-	1592	-	-
Stage 1	888	799	-	986	869	-	-	-	-	-	-	-
Stage 2	929	869	-	885	793	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	672	724	912	796	719	1021	1456	-	-	1577	-	-
Mov Cap-2 Maneuver	672	724	-	796	719	-	-	-	-	-	-	-
Stage 1	877	789	-	974	858	-	-	-	-	-	-	-
Stage 2	823	858	-	871	783	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	9.9	1.7	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1456	-	-	774	746	1021	1577	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.122	0.04	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.7	10.5	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.4	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	66	4	30	311	0	2	0	3	0	0	0
Future Vol, veh/h	0	66	4	30	311	0	2	0	3	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	75	5	34	353	0	2	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	363	0	0	90	0	0	519	519	98	520	521	373
Stage 1	-	-	-	-	-	-	88	88	-	431	431	-
Stage 2	-	-	-	-	-	-	431	431	-	89	90	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1196	-	-	1505	-	-	467	461	958	467	460	673
Stage 1	-	-	-	-	-	-	920	822	-	603	583	-
Stage 2	-	-	-	-	-	-	603	583	-	918	820	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1185	-	-	1491	-	-	448	439	940	447	438	660
Mov Cap-2 Maneuver	-	-	-	-	-	-	448	439	-	447	438	-
Stage 1	-	-	-	-	-	-	911	814	-	597	561	-
Stage 2	-	-	-	-	-	-	581	561	-	906	812	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	10.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	653	1185	-	-	1491	-	-	-
HCM Lane V/C Ratio	0.009	-	-	-	0.023	-	-	-
HCM Control Delay (s)	10.6	0	-	-	7.5	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	43	38	18	373	0	0	0	0	77	2	14
Future Vol, veh/h	0	43	38	18	373	0	0	0	0	77	2	14
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	53	47	22	460	0	0	0	0	95	2	17

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	63	0	0			567	567	470
Stage 1	-	-	-	-	-	-			504	504	-
Stage 2	-	-	-	-	-	-			63	63	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1540	-	0			485	433	594
Stage 1	0	-	0	-	-	0			607	541	-
Stage 2	0	-	0	-	-	0			960	842	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1540	-	-			476	0	588
Mov Cap-2 Maneuver	-	-	-	-	-	-			476	0	-
Stage 1	-	-	-	-	-	-			607	0	-
Stage 2	-	-	-	-	-	-			942	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.3	14
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1540	-	476	588
HCM Lane V/C Ratio	-	0.014	-	0.205	0.029
HCM Control Delay (s)	-	7.4	0	14.5	11.3
HCM Lane LOS	-	A	A	B	B
HCM 95th %tile Q(veh)	-	0	-	0.8	0.1

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	7	113	0	0	352	59	39	0	29	0	0	0
Future Vol, veh/h	7	113	0	0	352	59	39	0	29	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	128	0	0	400	67	44	0	33	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	410	0	-	-	-	0	554	554	138
Stage 1	-	-	-	-	-	-	144	144	-
Stage 2	-	-	-	-	-	-	410	410	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1149	-	0	0	-	0	493	440	910
Stage 1	-	-	0	0	-	0	883	778	-
Stage 2	-	-	0	0	-	0	670	595	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1149	-	-	-	-	-	485	0	901
Mov Cap-2 Maneuver	-	-	-	-	-	-	485	0	-
Stage 1	-	-	-	-	-	-	877	0	-
Stage 2	-	-	-	-	-	-	663	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	485	901	1149	-	-
HCM Lane V/C Ratio	0.091	0.037	0.007	-	-
HCM Control Delay (s)	13.2	9.1	8.2	0	-
HCM Lane LOS	B	A	A	A	-
HCM 95th %tile Q(veh)	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	6.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	113	27	0	10	359	142	10	0	5	101	0	68
Future Vol, veh/h	113	27	0	10	359	142	10	0	5	101	0	68
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	29	0	11	390	154	11	0	5	110	0	74

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	544	0	0	39	0	0	821	851	35	760	774	477
Stage 1	-	-	-	-	-	-	285	285	-	489	489	-
Stage 2	-	-	-	-	-	-	536	566	-	271	285	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1023	-	-	1570	-	-	280	296	1030	308	329	587
Stage 1	-	-	-	-	-	-	699	675	-	560	548	-
Stage 2	-	-	-	-	-	-	528	507	-	712	675	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1023	-	-	1555	-	-	216	255	1010	274	284	581
Mov Cap-2 Maneuver	-	-	-	-	-	-	216	255	-	274	284	-
Stage 1	-	-	-	-	-	-	608	587	-	492	544	-
Stage 2	-	-	-	-	-	-	453	503	-	616	587	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	7.3	0.1	18	26.3
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	293	1023	-	-	1555	-	-	348
HCM Lane V/C Ratio	0.056	0.12	-	-	0.007	-	-	0.528
HCM Control Delay (s)	18	9	0.1	-	7.3	-	-	26.3
HCM Lane LOS	C	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	0.2	0.4	-	-	0	-	-	2.9

Intersection	
Int Delay, s/veh	9.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	11	299	35	0	26	0	0	52	79
Future Vol, veh/h	0	0	0	11	299	35	0	26	0	0	52	79
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	12	332	39	0	29	0	0	58	88

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	97	97	39	68	0	-	-	-	0
Stage 1	29	29	-	-	-	-	-	-	-
Stage 2	68	68	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	902	793	1033	1533	-	0	0	-	0
Stage 1	994	871	-	-	-	0	0	-	0
Stage 2	955	838	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	893	0	1023	1533	-	-	-	-	-
Mov Cap-2 Maneuver	893	0	-	-	-	-	-	-	-
Stage 1	994	0	-	-	-	-	-	-	-
Stage 2	945	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1533	-	893	1023	-
HCM Lane V/C Ratio	-	-	0.386	0.038	-
HCM Control Delay (s)	0	-	11.5	8.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	1.8	0.1	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	82	0	2	122	17	0	0	0	25	38	0
Future Vol, veh/h	9	82	0	2	122	17	0	0	0	25	38	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	94	0	2	140	20	0	0	0	29	44	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	170	0	-	104	0	0			288	288	170
Stage 1	-	-	-	-	-	-			164	164	-
Stage 2	-	-	-	-	-	-			124	124	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1407	-	0	1488	-	-			702	622	874
Stage 1	-	-	0	-	-	-			865	762	-
Stage 2	-	-	0	-	-	-			902	793	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1394	-	-	1488	-	-			682	0	857
Mov Cap-2 Maneuver	-	-	-	-	-	-			682	0	-
Stage 1	-	-	-	-	-	-			850	0	-
Stage 2	-	-	-	-	-	-			892	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0.1	10.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1394	-	1488	-	-	682
HCM Lane V/C Ratio	0.007	-	0.002	-	-	0.106
HCM Control Delay (s)	7.6	-	7.4	0	-	10.9
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.4

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	15	1	126	2	23	0	84
Future Vol, veh/h	0	0	0	0	1	15	1	126	2	23	0	84
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	20	1	168	3	31	0	112
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.4	9.1	7.5
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	129	1	15	23	84
LT Vol	1	0	0	23	0
Through Vol	126	1	0	0	0
RT Vol	2	0	15	0	84
Lane Flow Rate	172	1	20	31	112
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.223	0.002	0.025	0.044	0.123
Departure Headway (Hd)	4.667	5.259	4.556	5.156	3.955
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	767	685	790	691	899
Service Time	2.714	2.959	2.256	2.912	1.71
HCM Lane V/C Ratio	0.224	0.001	0.025	0.045	0.125
HCM Control Delay	9.1	8	7.4	8.2	7.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.9	0	0.1	0.1	0.4

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	1	0	10	41	14	2	99	0	14	13	3
Future Vol, veh/h	48	1	0	10	41	14	2	99	0	14	13	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	1	0	11	43	15	2	104	0	15	14	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	203	174	36	174	175	124	27	0	0	114	0	0
Stage 1	56	56	-	118	118	-	-	-	-	-	-	-
Stage 2	147	118	-	56	57	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	755	719	1037	789	718	927	1587	-	-	1475	-	-
Stage 1	956	848	-	887	798	-	-	-	-	-	-	-
Stage 2	856	798	-	956	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	689	697	1017	767	696	909	1572	-	-	1461	-	-
Mov Cap-2 Maneuver	689	697	-	767	696	-	-	-	-	-	-	-
Stage 1	945	831	-	877	789	-	-	-	-	-	-	-
Stage 2	788	789	-	936	830	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.6	10.2	0.1	3.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	689	709	909	1461	-	-
HCM Lane V/C Ratio	0.001	-	-	0.075	0.076	0.016	0.01	-	-
HCM Control Delay (s)	7.3	0	-	10.6	10.5	9	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.2	0	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	269	3	4	80	0	2	0	20	0	0	0
Future Vol, veh/h	0	269	3	4	80	0	2	0	20	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	299	3	4	89	0	2	0	22	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	99	0	0	312	0	0	418	418	321	429	419	109
Stage 1	-	-	-	-	-	-	311	311	-	107	107	-
Stage 2	-	-	-	-	-	-	107	107	-	322	312	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1494	-	-	1248	-	-	545	526	720	536	525	945
Stage 1	-	-	-	-	-	-	699	658	-	898	807	-
Stage 2	-	-	-	-	-	-	898	807	-	690	658	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1480	-	-	1236	-	-	534	514	706	508	513	927
Mov Cap-2 Maneuver	-	-	-	-	-	-	534	514	-	508	513	-
Stage 1	-	-	-	-	-	-	692	651	-	889	797	-
Stage 2	-	-	-	-	-	-	887	797	-	662	651	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	10.4	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	686	1480	-	-	1236	-	-	-
HCM Lane V/C Ratio	0.036	-	-	-	0.004	-	-	-
HCM Control Delay (s)	10.4	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	245	73	34	90	0	0	0	0	102	0	21
Future Vol, veh/h	0	245	73	34	90	0	0	0	0	102	0	21
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	282	84	39	103	0	0	0	0	117	0	24

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	292	0	0				473	473	113
Stage 1	-	-	-	-	-	-				181	181	-
Stage 2	-	-	-	-	-	-				292	292	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1270	-	0				550	490	940
Stage 1	0	-	0	-	-	0				850	750	-
Stage 2	0	-	0	-	-	0				758	671	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	1270	-	-				532	0	931
Mov Cap-2 Maneuver	-	-	-	-	-	-				532	0	-
Stage 1	-	-	-	-	-	-				850	0	-
Stage 2	-	-	-	-	-	-				733	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.2	12.9
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1270	-	532	931
HCM Lane V/C Ratio	-	0.031	-	0.22	0.026
HCM Control Delay (s)	-	7.9	0	13.7	9
HCM Lane LOS	-	A	A	B	A
HCM 95th %tile Q(veh)	-	0.1	-	0.8	0.1

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	9	338	0	0	95	107	29	1	41	0	0	0
Future Vol, veh/h	9	338	0	0	95	107	29	1	41	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	380	0	0	107	120	33	1	46	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	117	0	-	-	-	0	517	517	390
Stage 1	-	-	-	-	-	-	400	400	-
Stage 2	-	-	-	-	-	-	117	117	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1471	-	0	0	-	0	518	462	658
Stage 1	-	-	0	0	-	0	677	602	-
Stage 2	-	-	0	0	-	0	908	799	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1471	-	-	-	-	-	508	0	652
Mov Cap-2 Maneuver	-	-	-	-	-	-	508	0	-
Stage 1	-	-	-	-	-	-	671	0	-
Stage 2	-	-	-	-	-	-	899	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.2	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	508	652	1471	-	-
HCM Lane V/C Ratio	0.066	0.071	0.007	-	-
HCM Control Delay (s)	12.6	10.9	7.5	0	-
HCM Lane LOS	B	B	A	A	-
HCM 95th %tile Q(veh)	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	19.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	160	219	0	5	75	200	10	0	5	200	0	133
Future Vol, veh/h	160	219	0	5	75	200	10	0	5	200	0	133
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	174	238	0	5	82	217	11	0	5	217	0	145

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	299	0	0	248	0	0	879	905	139	678	797	201
Stage 1	-	-	-	-	-	-	596	596	-	201	201	-
Stage 2	-	-	-	-	-	-	283	309	-	477	596	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1261	-	-	1316	-	-	255	276	884	352	319	839
Stage 1	-	-	-	-	-	-	458	491	-	800	734	-
Stage 2	-	-	-	-	-	-	723	659	-	539	491	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1261	-	-	1303	-	-	181	229	867	303	264	831
Mov Cap-2 Maneuver	-	-	-	-	-	-	181	229	-	303	264	-
Stage 1	-	-	-	-	-	-	382	409	-	673	731	-
Stage 2	-	-	-	-	-	-	589	656	-	446	409	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.7	0.1	20.7	53.9
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	246	1261	-	-	1303	-	-	406
HCM Lane V/C Ratio	0.066	0.138	-	-	0.004	-	-	0.892
HCM Control Delay (s)	20.7	8.3	0.3	-	7.8	-	-	53.9
HCM Lane LOS	C	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.2	0.5	-	-	0	-	-	9.2

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	91	32	0	114	0	0	55	20
Future Vol, veh/h	0	0	0	4	91	32	0	114	0	0	55	20
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	98	34	0	123	0	0	59	22

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	192	192	133	69	0	-	-	-	0
Stage 1	123	123	-	-	-	-	-	-	-
Stage 2	69	69	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	797	703	916	1532	-	0	0	-	0
Stage 1	902	794	-	-	-	0	0	-	0
Stage 2	954	837	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	789	0	907	1532	-	-	-	-	-
Mov Cap-2 Maneuver	789	0	-	-	-	-	-	-	-
Stage 1	902	0	-	-	-	-	-	-	-
Stage 2	944	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.9	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1532	-	789	907	-
HCM Lane V/C Ratio	-	-	0.129	0.038	-
HCM Control Delay (s)	0	-	10.2	9.1	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	267	0	7	165	39	0	0	0	29	29	1
Future Vol, veh/h	75	267	0	7	165	39	0	0	0	29	29	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	307	0	8	190	45	0	0	0	33	33	1

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	245	0	-	317	0	0			728	728	233
Stage 1	-	-	-	-	-	-			239	239	-
Stage 2	-	-	-	-	-	-			489	489	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1321	-	0	1243	-	-			390	350	806
Stage 1	-	-	0	-	-	-			801	708	-
Stage 2	-	-	0	-	-	-			616	549	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1308	-	-	1243	-	-			355	0	791
Mov Cap-2 Maneuver	-	-	-	-	-	-			355	0	-
Stage 1	-	-	-	-	-	-			741	0	-
Stage 2	-	-	-	-	-	-			606	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0.3	17.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1308	-	1243	-	-	362
HCM Lane V/C Ratio	0.066	-	0.006	-	-	0.187
HCM Control Delay (s)	7.9	-	7.9	0	-	17.2
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.7

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	38	25	2	186	1	20	0	276
Future Vol, veh/h	0	0	0	0	38	25	2	186	1	20	0	276
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	43	28	2	211	1	23	0	314
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.5	10.3	9.3
HCM LOS	A	B	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	189	38	25	20	276
LT Vol	2	0	0	20	0
Through Vol	186	38	0	0	0
RT Vol	1	0	25	0	276
Lane Flow Rate	215	43	28	23	314
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.302	0.069	0.04	0.034	0.367
Departure Headway (Hd)	5.056	5.765	5.059	5.412	4.207
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	711	621	707	663	856
Service Time	3.082	3.504	2.798	3.133	1.927
HCM Lane V/C Ratio	0.302	0.069	0.04	0.035	0.367
HCM Control Delay	10.3	8.9	8	8.3	9.4
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.3	0.2	0.1	0.1	1.7

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	39	11	2	108	0	14	10	3
Future Vol, veh/h	0	0	0	2	39	11	2	108	0	14	10	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	52	15	3	144	0	19	13	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	257	223	35	223	225	164	27	0	0	154	0	0
Stage 1	63	63	-	160	160	-	-	-	-	-	-	-
Stage 2	194	160	-	63	65	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	696	676	1038	733	674	881	1587	-	-	1426	-	-
Stage 1	948	842	-	842	766	-	-	-	-	-	-	-
Stage 2	808	766	-	948	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	622	652	1018	710	650	864	1572	-	-	1412	-	-
Mov Cap-2 Maneuver	622	652	-	710	650	-	-	-	-	-	-	-
Stage 1	937	822	-	832	757	-	-	-	-	-	-	-
Stage 2	731	757	-	926	821	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.6	0.1	3.9
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	-	653	864	1412	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.084	0.017	0.013	-	-
HCM Control Delay (s)	7.3	0	-	0	11	9.2	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	249	0	7	86	0	2	1	18	0	0	0
Future Vol, veh/h	0	249	0	7	86	0	2	1	18	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	280	0	8	97	0	2	1	20	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	107	0	0	290	0	0	413	413	300	424	413	117
Stage 1	-	-	-	-	-	-	290	290	-	123	123	-
Stage 2	-	-	-	-	-	-	123	123	-	301	290	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1484	-	-	1272	-	-	549	529	740	540	529	935
Stage 1	-	-	-	-	-	-	718	672	-	881	794	-
Stage 2	-	-	-	-	-	-	881	794	-	708	672	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1470	-	-	1260	-	-	536	515	726	511	515	917
Mov Cap-2 Maneuver	-	-	-	-	-	-	536	515	-	511	515	-
Stage 1	-	-	-	-	-	-	711	665	-	872	781	-
Stage 2	-	-	-	-	-	-	867	781	-	681	665	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	10.4	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	689	1470	-	-	1260	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-	0.006	-	-	-
HCM Control Delay (s)	10.4	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	244	73	59	100	0	0	0	0	93	1	33
Future Vol, veh/h	0	244	73	59	100	0	0	0	0	93	1	33
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	294	88	71	120	0	0	0	0	112	1	40

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	304	0	0			566	566	130
Stage 1	-	-	-	-	-	-			262	262	-
Stage 2	-	-	-	-	-	-			304	304	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1257	-	0			486	434	920
Stage 1	0	-	0	-	-	0			782	691	-
Stage 2	0	-	0	-	-	0			748	663	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1257	-	-			456	0	911
Mov Cap-2 Maneuver	-	-	-	-	-	-			456	0	-
Stage 1	-	-	-	-	-	-			782	0	-
Stage 2	-	-	-	-	-	-			702	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	3	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1257	-	456	911
HCM Lane V/C Ratio	-	0.057	-	0.248	0.044
HCM Control Delay (s)	-	8	0	15.5	9.1
HCM Lane LOS	-	A	A	C	A
HCM 95th %tile Q(veh)	-	0.2	-	1	0.1

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	12	325	0	0	126	166	33	0	37	0	0	0
Future Vol, veh/h	12	325	0	0	126	166	33	0	37	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	369	0	0	143	189	38	0	42	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	153	0	-	-	-	0	550	550	379
Stage 1	-	-	-	-	-	-	397	397	-
Stage 2	-	-	-	-	-	-	153	153	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1428	-	0	0	-	0	496	443	668
Stage 1	-	-	0	0	-	0	679	603	-
Stage 2	-	-	0	0	-	0	875	771	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1428	-	-	-	-	-	485	0	662
Mov Cap-2 Maneuver	-	-	-	-	-	-	485	0	-
Stage 1	-	-	-	-	-	-	671	0	-
Stage 2	-	-	-	-	-	-	866	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0	11.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	485	662	1428	-	-
HCM Lane V/C Ratio	0.077	0.064	0.01	-	-
HCM Control Delay (s)	13	10.8	7.5	0	-
HCM Lane LOS	B	B	A	A	-
HCM 95th %tile Q(veh)	0.2	0.2	0	-	-

Intersection	
Int Delay, s/veh	108.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	147	215	0	5	68	184	10	0	5	343	0	228
Future Vol, veh/h	147	215	0	5	68	184	10	0	5	343	0	228
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	160	234	0	5	74	200	11	0	5	373	0	248

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	274	0	0	244	0	0	882	848	137	631	748	184
Stage 1	-	-	-	-	-	-	564	564	-	184	184	-
Stage 2	-	-	-	-	-	-	318	284	-	447	564	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1288	-	-	1321	-	-	253	298	887	379	340	858
Stage 1	-	-	-	-	-	-	478	508	-	817	747	-
Stage 2	-	-	-	-	-	-	693	676	-	561	508	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1288	-	-	1308	-	-	156	252	870	~ 331	287	850
Mov Cap-2 Maneuver	-	-	-	-	-	-	156	252	-	~ 331	287	-
Stage 1	-	-	-	-	-	-	406	431	-	700	744	-
Stage 2	-	-	-	-	-	-	484	673	-	473	431	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.4	0.2	23.1	225.6
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	215	1288	-	-	1308	-	-	438
HCM Lane V/C Ratio	0.076	0.124	-	-	0.004	-	-	1.417
HCM Control Delay (s)	23.1	8.2	0.2	-	7.8	-	-	225.6
HCM Lane LOS	C	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.2	0.4	-	-	0	-	-	30.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	83	20	0	125	0	0	46	8
Future Vol, veh/h	0	0	0	4	83	20	0	125	0	0	46	8
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	6	124	30	0	187	0	0	69	12

Major/Minor	Minor1		Major1			Major2			
Conflicting Flow All	266	266	197	79	0	-	-	-	0
Stage 1	187	187	-	-	-	-	-	-	-
Stage 2	79	79	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	723	640	844	1519	-	0	0	-	0
Stage 1	845	745	-	-	-	0	0	-	0
Stage 2	944	829	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	716	0	836	1519	-	-	-	-	-
Mov Cap-2 Maneuver	716	0	-	-	-	-	-	-	-
Stage 1	845	0	-	-	-	-	-	-	-
Stage 2	935	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1519	-	716	836	-
HCM Lane V/C Ratio	-	-	0.181	0.036	-
HCM Control Delay (s)	0	-	11.1	9.5	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	109	349	0	7	160	16	0	0	0	20	30	0
Future Vol, veh/h	109	349	0	7	160	16	0	0	0	20	30	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	165	529	0	11	242	24	0	0	0	30	45	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	276	0	-	539	0	0	1155	1155	274
Stage 1	-	-	-	-	-	-	286	286	-
Stage 2	-	-	-	-	-	-	869	869	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1287	-	0	1029	-	-	218	197	765
Stage 1	-	-	0	-	-	-	763	675	-
Stage 2	-	-	0	-	-	-	410	369	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1275	-	-	1029	-	-	184	0	750
Mov Cap-2 Maneuver	-	-	-	-	-	-	184	0	-
Stage 1	-	-	-	-	-	-	658	0	-
Stage 2	-	-	-	-	-	-	401	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0.3	37.6
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1275	-	1029	-	-	184
HCM Lane V/C Ratio	0.13	-	0.01	-	-	0.412
HCM Control Delay (s)	8.2	-	8.5	0	-	37.6
HCM Lane LOS	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.4	-	0	-	-	1.8

Intersection	
Intersection Delay, s/veh	11
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	18	15	0	168	3	28	0	341
Future Vol, veh/h	0	0	0	0	18	15	0	168	3	28	0	341
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	25	21	0	230	4	38	0	467
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.7	10.7	11.4
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	171	18	15	28	341
LT Vol	0	0	0	28	0
Through Vol	168	18	0	0	0
RT Vol	3	0	15	0	341
Lane Flow Rate	234	25	21	38	467
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.333	0.042	0.031	0.057	0.539
Departure Headway (Hd)	5.125	6.129	5.421	5.358	4.153
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	703	584	659	670	869
Service Time	3.149	3.872	3.164	3.074	1.869
HCM Lane V/C Ratio	0.333	0.043	0.032	0.057	0.537
HCM Control Delay	10.7	9.1	8.3	8.4	11.6
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.5	0.1	0.1	0.2	3.3

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2703	263
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3594	308
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.58	0.16

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	524.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.314
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1438
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.2
Flow in Lanes 1 and 2 (v12), pc/h	2156	Ramp Junction Speed (S), mi/h	64.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2464	Average Density (D), pc/mi/ln	20.2
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2541	86
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3422	101
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.52	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	443.2	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.301
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1369
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.5
Flow in Lanes 1 and 2 (v12), pc/h	2053	Ramp Junction Speed (S), mi/h	64.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	2154	Average Density (D), pc/mi/ln	18.1
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1869	58
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	2461	68
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.56	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.317
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	2461	Ramp Junction Speed (S), mi/h	62.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2529	Average Density (D), pc/mi/ln	20.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2714	66
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3650	77
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.83	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.430
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3650	Ramp Junction Speed (S), mi/h	58.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	3727	Average Density (D), pc/mi/ln	31.6
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3173	103
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4273	121
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.63	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.462
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1462
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.648	Outer Lanes Freeway Speed (SO), mi/h	76.7
Flow in Lanes 1 and 2 (v12), pc/h	2811	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2703	345
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3640	404
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.54	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	18.9	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.488
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1133
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.650	Outer Lanes Freeway Speed (SO), mi/h	78.0
Flow in Lanes 1 and 2 (v12), pc/h	2507	Ramp Junction Speed (S), mi/h	62.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.4
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2541	129
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3379	151
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.50	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.465
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1068
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.669	Outer Lanes Freeway Speed (SO), mi/h	78.3
Flow in Lanes 1 and 2 (v12), pc/h	2311	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	17.9
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	1869	93
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	2514	109
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.56	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.461
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	2514	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2714	68
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3573	80
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3573	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	30.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3390	321
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4508	376
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.20

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	734.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.353
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1803
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.9
Flow in Lanes 1 and 2 (v12), pc/h	2705	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3081	Average Density (D), pc/mi/ln	25.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2738	316
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3687	370
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.60	0.20

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	557.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.319
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1475
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.1
Flow in Lanes 1 and 2 (v12), pc/h	2212	Ramp Junction Speed (S), mi/h	64.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2582	Average Density (D), pc/mi/ln	21.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2852	107
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3755	125
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.86	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.457
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3755	Ramp Junction Speed (S), mi/h	58.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	3880	Average Density (D), pc/mi/ln	33.4
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3384	117
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4551	137
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	692.5	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	51.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4551	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4688	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	37.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3710	65
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4996	76
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.458
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1811
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.632	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3185	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	28.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3390	127
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4565	149
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.68	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	113.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.465
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1594
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.639	Outer Lanes Freeway Speed (SO), mi/h	76.2
Flow in Lanes 1 and 2 (v12), pc/h	2971	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2738	189
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3641	221
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.54	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.471
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1166
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.659	Outer Lanes Freeway Speed (SO), mi/h	77.9
Flow in Lanes 1 and 2 (v12), pc/h	2475	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2852	123
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3836	144
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.85	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.464
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3836	Ramp Junction Speed (S), mi/h	57.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3384	71
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4455	83
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.99	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4455	Ramp Junction Speed (S), mi/h	58.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	38.4
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4467	404
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5940	473
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.25

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1061.6	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.489
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2376
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	64.6
Flow in Lanes 1 and 2 (v12), pc/h	3564	Ramp Junction Speed (S), mi/h	59.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	4037	Average Density (D), pc/mi/ln	35.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3668	359
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4939	420
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	836.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.383
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1976
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.3
Flow in Lanes 1 and 2 (v12), pc/h	2963	Ramp Junction Speed (S), mi/h	62.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	3383	Average Density (D), pc/mi/ln	28.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3350	133
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4411	156
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.01	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	666.6	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	52.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4411	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4567	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	36.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Ex + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3989	178
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5365	208
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.24	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	881.9	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	33.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5365	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5573	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	43.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4758	52
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6407	61
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.457
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2557
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.597	Outer Lanes Freeway Speed (SO), mi/h	72.5
Flow in Lanes 1 and 2 (v12), pc/h	3850	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4467	107
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6015	125
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.89	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	87.8	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2332
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.604	Outer Lanes Freeway Speed (SO), mi/h	73.4
Flow in Lanes 1 and 2 (v12), pc/h	3683	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3668	171
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4878	200
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.469
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1736
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.629	Outer Lanes Freeway Speed (SO), mi/h	75.7
Flow in Lanes 1 and 2 (v12), pc/h	3142	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3350	127
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4505	149
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.00	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.465
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4505	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	39.0
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3989	70
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5252	82
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.17	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5252	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5252	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	45.8

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX I

WEEKDAY AND SATURDAY INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – OPENING YEAR (2023) + PROJECT PHASE 1 (ALTERNATIVE A2)

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	30	46	35	3	11	0	2	80	12
Future Vol, veh/h	3	0	3	30	46	35	3	11	0	2	80	12
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	4	38	59	45	4	14	0	3	103	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	211	159	131	161	166	34	128	0	0	24	0	0
Stage 1	127	127	-	32	32	-	-	-	-	-	-	-
Stage 2	84	32	-	129	134	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	746	733	919	804	727	1039	1458	-	-	1591	-	-
Stage 1	877	791	-	984	868	-	-	-	-	-	-	-
Stage 2	924	868	-	875	785	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	653	715	902	782	709	1019	1444	-	-	1576	-	-
Mov Cap-2 Maneuver	653	715	-	782	709	-	-	-	-	-	-	-
Stage 1	866	782	-	972	857	-	-	-	-	-	-	-
Stage 2	812	857	-	861	776	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	10	1.6	0.2
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1444	-	-	758	736	1019	1576	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.132	0.044	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.8	10.6	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.5	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	302	4	33	572	0	2	0	3	0	0	0
Future Vol, veh/h	0	302	4	33	572	0	2	0	3	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	343	5	38	650	0	2	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	660	0	0	358	0	0	1092	1092	366	1093	1094	670
Stage 1	-	-	-	-	-	-	356	356	-	736	736	-
Stage 2	-	-	-	-	-	-	736	736	-	357	358	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	928	-	-	1201	-	-	192	215	679	192	214	457
Stage 1	-	-	-	-	-	-	661	629	-	411	425	-
Stage 2	-	-	-	-	-	-	411	425	-	661	628	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	919	-	-	1190	-	-	181	200	666	180	199	448
Mov Cap-2 Maneuver	-	-	-	-	-	-	181	200	-	180	199	-
Stage 1	-	-	-	-	-	-	654	623	-	407	400	-
Stage 2	-	-	-	-	-	-	387	400	-	651	622	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	16.4	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	321	919	-	-	1190	-	-	-
HCM Lane V/C Ratio	0.018	-	-	-	0.032	-	-	-
HCM Control Delay (s)	16.4	0	-	-	8.1	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	200	119	18	564	0	0	0	0	78	2	92
Future Vol, veh/h	0	200	119	18	564	0	0	0	0	78	2	92
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	247	147	22	696	0	0	0	0	96	2	114

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	257	0	0				997	997	706
Stage 1	-	-	-	-	-	-				740	740	-
Stage 2	-	-	-	-	-	-				257	257	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1308	-	0				271	244	436
Stage 1	0	-	0	-	-	0				472	423	-
Stage 2	0	-	0	-	-	0				786	695	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	1308	-	-				264	0	432
Mov Cap-2 Maneuver	-	-	-	-	-	-				264	0	-
Stage 1	-	-	-	-	-	-				472	0	-
Stage 2	-	-	-	-	-	-				765	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.2	21.1
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1308	-	264	432
HCM Lane V/C Ratio	-	0.017	-	0.374	0.263
HCM Control Delay (s)	-	7.8	0	26.6	16.3
HCM Lane LOS	-	A	A	D	C
HCM 95th %tile Q(veh)	-	0.1	-	1.7	1

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	85	193	0	0	462	61	115	0	29	0	0	0
Future Vol, veh/h	85	193	0	0	462	61	115	0	29	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	97	219	0	0	525	69	131	0	33	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	535	0	-	-	-	0	948	948	229
Stage 1	-	-	-	-	-	-	413	413	-
Stage 2	-	-	-	-	-	-	535	535	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1033	-	0	0	-	0	289	261	810
Stage 1	-	-	0	0	-	0	668	594	-
Stage 2	-	-	0	0	-	0	587	524	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1033	-	-	-	-	-	255	0	802
Mov Cap-2 Maneuver	-	-	-	-	-	-	255	0	-
Stage 1	-	-	-	-	-	-	597	0	-
Stage 2	-	-	-	-	-	-	581	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.7	0	28.4
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	255	802	1033	-	-
HCM Lane V/C Ratio	0.512	0.041	0.094	-	-
HCM Control Delay (s)	33.1	9.7	8.8	0	-
HCM Lane LOS	D	A	A	A	-
HCM 95th %tile Q(veh)	2.7	0.1	0.3	-	-

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	113	107	0	11	472	142	11	0	6	101	0	68
Future Vol, veh/h	113	107	0	11	472	142	11	0	6	101	0	68
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	123	116	0	12	513	154	12	0	7	110	0	74

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	667	0	0	126	0	0	1033	1063	78	928	986	600
Stage 1	-	-	-	-	-	-	372	372	-	614	614	-
Stage 2	-	-	-	-	-	-	661	691	-	314	372	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	921	-	-	1459	-	-	198	222	967	235	247	500
Stage 1	-	-	-	-	-	-	621	618	-	478	482	-
Stage 2	-	-	-	-	-	-	451	445	-	672	618	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	921	-	-	1445	-	-	146	187	949	204	208	495
Mov Cap-2 Maneuver	-	-	-	-	-	-	146	187	-	204	208	-
Stage 1	-	-	-	-	-	-	527	524	-	410	478	-
Stage 2	-	-	-	-	-	-	377	441	-	566	524	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	5	0.1	24	43.7
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	208	921	-	-	1445	-	-	267
HCM Lane V/C Ratio	0.089	0.133	-	-	0.008	-	-	0.688
HCM Control Delay (s)	24	9.5	0.2	-	7.5	-	-	43.7
HCM Lane LOS	C	A	A	-	A	-	-	E
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	4.6

Intersection	
Int Delay, s/veh	10.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	12	402	39	0	29	0	0	57	87
Future Vol, veh/h	0	0	0	12	402	39	0	29	0	0	57	87
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	447	43	0	32	0	0	63	97

Major/Minor	Minor1			Major1				Major2		
Conflicting Flow All	105	105	42	73	0	-	-	-	0	
Stage 1	32	32	-	-	-	-	-	-	-	
Stage 2	73	73	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	893	785	1029	1527	-	0	0	-	0	
Stage 1	991	868	-	-	-	0	0	-	0	
Stage 2	950	834	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	884	0	1019	1527	-	-	-	-	-	
Mov Cap-2 Maneuver	884	0	-	-	-	-	-	-	-	
Stage 1	991	0	-	-	-	-	-	-	-	
Stage 2	941	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	13	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1527	-	884	1019	-
HCM Lane V/C Ratio	-	-	0.52	0.043	-
HCM Control Delay (s)	0	-	13.4	8.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	3.1	0.1	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	163	0	2	124	19	0	0	0	28	42	0
Future Vol, veh/h	10	163	0	2	124	19	0	0	0	28	42	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	187	0	2	143	22	0	0	0	32	48	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	175	0	-	197	0	0			387	387	174
Stage 1	-	-	-	-	-	-			168	168	-
Stage 2	-	-	-	-	-	-			219	219	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1401	-	0	1376	-	-			616	547	869
Stage 1	-	-	0	-	-	-			862	759	-
Stage 2	-	-	0	-	-	-			817	722	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1388	-	-	1376	-	-			598	0	853
Mov Cap-2 Maneuver	-	-	-	-	-	-			598	0	-
Stage 1	-	-	-	-	-	-			846	0	-
Stage 2	-	-	-	-	-	-			807	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0.1	12
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1388	-	1376	-	-	598
HCM Lane V/C Ratio	0.008	-	0.002	-	-	0.135
HCM Control Delay (s)	7.6	-	7.6	0	-	12
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.5

Intersection	
Intersection Delay, s/veh	8.5
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	17	1	129	2	25	0	165
Future Vol, veh/h	0	0	0	0	1	17	1	129	2	25	0	165
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	23	1	172	3	33	0	220
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.6	9.3	8
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	132	1	17	25	165
LT Vol	1	0	0	25	0
Through Vol	129	1	0	0	0
RT Vol	2	0	17	0	165
Lane Flow Rate	176	1	23	33	220
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.232	0.002	0.03	0.048	0.242
Departure Headway (Hd)	4.751	5.488	4.784	5.162	3.96
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	750	656	753	689	898
Service Time	2.823	3.188	2.484	2.928	1.725
HCM Lane V/C Ratio	0.235	0.002	0.031	0.048	0.245
HCM Control Delay	9.3	8.2	7.6	8.2	8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.9	0	0.1	0.2	0.9

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	1	0	11	41	15	2	109	0	15	14	3
Future Vol, veh/h	53	1	0	11	41	15	2	109	0	15	14	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	1	0	12	43	16	2	115	0	16	15	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	218	188	37	188	189	135	28	0	0	125	0	0
Stage 1	59	59	-	129	129	-	-	-	-	-	-	-
Stage 2	159	129	-	59	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	738	707	1035	772	706	914	1585	-	-	1462	-	-
Stage 1	953	846	-	875	789	-	-	-	-	-	-	-
Stage 2	843	789	-	953	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	671	684	1015	750	683	897	1570	-	-	1448	-	-
Mov Cap-2 Maneuver	671	684	-	750	683	-	-	-	-	-	-	-
Stage 1	943	828	-	865	780	-	-	-	-	-	-	-
Stage 2	774	780	-	932	827	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.9	10.3	0.1	3.5
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1570	-	-	671	696	897	1448	-	-
HCM Lane V/C Ratio	0.001	-	-	0.085	0.079	0.018	0.011	-	-
HCM Control Delay (s)	7.3	0	-	10.9	10.6	9.1	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	349	3	4	141	0	2	0	22	0	0	0
Future Vol, veh/h	0	349	3	4	141	0	2	0	22	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	388	3	4	157	0	2	0	24	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	167	0	0	401	0	0	575	575	410	587	576	177
Stage 1	-	-	-	-	-	-	400	400	-	175	175	-
Stage 2	-	-	-	-	-	-	175	175	-	412	401	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1411	-	-	1158	-	-	429	429	642	421	428	866
Stage 1	-	-	-	-	-	-	626	602	-	827	754	-
Stage 2	-	-	-	-	-	-	827	754	-	617	601	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1398	-	-	1147	-	-	420	419	630	396	418	850
Mov Cap-2 Maneuver	-	-	-	-	-	-	420	419	-	396	418	-
Stage 1	-	-	-	-	-	-	620	596	-	819	743	-
Stage 2	-	-	-	-	-	-	816	743	-	587	595	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	11.2	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	605	1398	-	-	1147	-	-	-
HCM Lane V/C Ratio	0.044	-	-	-	0.004	-	-	-
HCM Control Delay (s)	11.2	0	-	-	8.2	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	305	98	34	134	0	0	0	0	102	0	41
Future Vol, veh/h	0	305	98	34	134	0	0	0	0	102	0	41
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	351	113	39	154	0	0	0	0	117	0	47

Major/Minor	Major1			Major2						Minor2		
Conflicting Flow All	-	0	-	361	0	0				593	593	164
Stage 1	-	-	-	-	-	-				232	232	-
Stage 2	-	-	-	-	-	-				361	361	-
Critical Hdwy	-	-	-	4.12	-	-				6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-				5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-				3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1198	-	0				468	418	881
Stage 1	0	-	0	-	-	0				807	713	-
Stage 2	0	-	0	-	-	0				705	626	-
Platoon blocked, %		-			-							
Mov Cap-1 Maneuver	-	-	-	1198	-	-				451	0	873
Mov Cap-2 Maneuver	-	-	-	-	-	-				451	0	-
Stage 1	-	-	-	-	-	-				807	0	-
Stage 2	-	-	-	-	-	-				680	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	1.6	14
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1198	-	451	873
HCM Lane V/C Ratio	-	0.033	-	0.26	0.054
HCM Control Delay (s)	-	8.1	0	15.8	9.4
HCM Lane LOS	-	A	A	C	A
HCM 95th %tile Q(veh)	-	0.1	-	1	0.2

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	28	378	0	0	118	109	50	1	41	0	0	0
Future Vol, veh/h	28	378	0	0	118	109	50	1	41	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	425	0	0	133	122	56	1	46	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	143	0	-	-	-	0	630	630	435
Stage 1	-	-	-	-	-	-	487	487	-
Stage 2	-	-	-	-	-	-	143	143	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1440	-	0	0	-	0	446	399	621
Stage 1	-	-	0	0	-	0	618	550	-
Stage 2	-	-	0	0	-	0	884	779	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1440	-	-	-	-	-	429	0	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	429	0	-
Stage 1	-	-	-	-	-	-	601	0	-
Stage 2	-	-	-	-	-	-	875	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	429	615	1440	-	-
HCM Lane V/C Ratio	0.134	0.075	0.022	-	-
HCM Control Delay (s)	14.7	11.3	7.6	0	-
HCM Lane LOS	B	B	A	A	-
HCM 95th %tile Q(veh)	0.5	0.2	0.1	-	-

Intersection	
Int Delay, s/veh	24.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	160	259	0	6	101	200	11	0	6	200	0	133
Future Vol, veh/h	160	259	0	6	101	200	11	0	6	200	0	133
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	174	282	0	7	110	217	12	0	7	217	0	145

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	327	0	0	292	0	0	955	981	161	732	873	229
Stage 1	-	-	-	-	-	-	640	640	-	233	233	-
Stage 2	-	-	-	-	-	-	315	341	-	499	640	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1231	-	-	1268	-	-	225	249	856	323	288	810
Stage 1	-	-	-	-	-	-	431	469	-	769	711	-
Stage 2	-	-	-	-	-	-	695	638	-	523	469	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1231	-	-	1256	-	-	157	204	840	275	236	802
Mov Cap-2 Maneuver	-	-	-	-	-	-	157	204	-	275	236	-
Stage 1	-	-	-	-	-	-	355	386	-	640	707	-
Stage 2	-	-	-	-	-	-	561	634	-	428	386	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.4	0.2	22.9	73.3
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	220	1231	-	-	1256	-	-	373
HCM Lane V/C Ratio	0.084	0.141	-	-	0.005	-	-	0.97
HCM Control Delay (s)	22.9	8.4	0.3	-	7.9	-	-	73.3
HCM Lane LOS	C	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	0.5	-	-	0	-	-	11

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	112	35	0	125	0	0	61	22
Future Vol, veh/h	0	0	0	4	112	35	0	125	0	0	61	22
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	120	38	0	134	0	0	66	24

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	210	210	144	76	0	-	-	-	0
Stage 1	134	134	-	-	-	-	-	-	-
Stage 2	76	76	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	778	687	903	1523	-	0	0	-	0
Stage 1	892	785	-	-	-	0	0	-	0
Stage 2	947	832	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	770	0	894	1523	-	-	-	-	-
Mov Cap-2 Maneuver	770	0	-	-	-	-	-	-	-
Stage 1	892	0	-	-	-	-	-	-	-
Stage 2	938	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1523	-	770	894	-
HCM Lane V/C Ratio	-	-	0.162	0.042	-
HCM Control Delay (s)	0	-	10.6	9.2	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.6	0.1	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	83	303	0	8	168	43	0	0	0	32	32	1
Future Vol, veh/h	83	303	0	8	168	43	0	0	0	32	32	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	348	0	9	193	49	0	0	0	37	37	1

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	252	0	-	358	0	0	794	794	238
Stage 1	-	-	-	-	-	-	246	246	-
Stage 2	-	-	-	-	-	-	548	548	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1313	-	0	1201	-	-	357	321	801
Stage 1	-	-	0	-	-	-	795	703	-
Stage 2	-	-	0	-	-	-	579	517	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1300	-	-	1201	-	-	321	0	786
Mov Cap-2 Maneuver	-	-	-	-	-	-	321	0	-
Stage 1	-	-	-	-	-	-	730	0	-
Stage 2	-	-	-	-	-	-	569	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0.3	19.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1300	-	1201	-	-	327
HCM Lane V/C Ratio	0.073	-	0.008	-	-	0.228
HCM Control Delay (s)	8	-	8	0	-	19.2
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.9

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	42	28	2	191	1	22	0	313
Future Vol, veh/h	0	0	0	0	42	28	2	191	1	22	0	313
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	48	32	2	217	1	25	0	356
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.7	10.5	9.9
HCM LOS	A	B	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	194	42	28	22	313
LT Vol	2	0	0	22	0
Through Vol	191	42	0	0	0
RT Vol	1	0	28	0	313
Lane Flow Rate	220	48	32	25	356
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.314	0.078	0.046	0.038	0.419
Departure Headway (Hd)	5.128	5.871	5.164	5.448	4.242
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	701	609	691	658	850
Service Time	3.158	3.618	2.911	3.172	1.966
HCM Lane V/C Ratio	0.314	0.079	0.046	0.038	0.419
HCM Control Delay	10.5	9.1	8.2	8.4	10
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.3	0.3	0.1	0.1	2.1

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	39	12	2	119	0	15	11	3
Future Vol, veh/h	0	0	0	2	39	12	2	119	0	15	11	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	52	16	3	159	0	20	15	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	276	242	37	242	244	179	29	0	0	169	0	0
Stage 1	67	67	-	175	175	-	-	-	-	-	-	-
Stage 2	209	175	-	67	69	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	676	660	1035	712	658	864	1584	-	-	1409	-	-
Stage 1	943	839	-	827	754	-	-	-	-	-	-	-
Stage 2	793	754	-	943	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	602	636	1015	690	634	848	1569	-	-	1396	-	-
Mov Cap-2 Maneuver	602	636	-	690	634	-	-	-	-	-	-	-
Stage 1	932	819	-	817	745	-	-	-	-	-	-	-
Stage 2	715	745	-	921	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	10.8	0.1	3.9
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1569	-	-	-	637	848	1396	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.086	0.019	0.014	-	-
HCM Control Delay (s)	7.3	0	-	0	11.2	9.3	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	272	0	8	92	0	2	1	20	0	0	0
Future Vol, veh/h	0	272	0	8	92	0	2	1	20	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	306	0	9	103	0	2	1	22	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	113	0	0	316	0	0	447	447	326	459	447	123
Stage 1	-	-	-	-	-	-	316	316	-	131	131	-
Stage 2	-	-	-	-	-	-	131	131	-	328	316	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1476	-	-	1244	-	-	522	506	715	512	506	928
Stage 1	-	-	-	-	-	-	695	655	-	873	788	-
Stage 2	-	-	-	-	-	-	873	788	-	685	655	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1462	-	-	1232	-	-	509	492	701	482	492	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	509	492	-	482	492	-
Stage 1	-	-	-	-	-	-	688	648	-	864	774	-
Stage 2	-	-	-	-	-	-	858	774	-	656	648	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	10.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	667	1462	-	-	1232	-	-	-
HCM Lane V/C Ratio	0.039	-	-	-	0.007	-	-	-
HCM Control Delay (s)	10.6	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	267	80	59	107	0	0	0	0	93	1	36
Future Vol, veh/h	0	267	80	59	107	0	0	0	0	93	1	36
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	322	96	71	129	0	0	0	0	112	1	43

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	332	0	0			603	603	139
Stage 1	-	-	-	-	-	-			271	271	-
Stage 2	-	-	-	-	-	-			332	332	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1227	-	0			462	413	909
Stage 1	0	-	0	-	-	0			775	685	-
Stage 2	0	-	0	-	-	0			727	644	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1227	-	-			433	0	900
Mov Cap-2 Maneuver	-	-	-	-	-	-			433	0	-
Stage 1	-	-	-	-	-	-			775	0	-
Stage 2	-	-	-	-	-	-			682	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.9	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1227	-	433	900
HCM Lane V/C Ratio	-	0.058	-	0.262	0.048
HCM Control Delay (s)	-	8.1	0	16.2	9.2
HCM Lane LOS	-	A	A	C	A
HCM 95th %tile Q(veh)	-	0.2	-	1	0.2

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	13	347	0	0	130	168	36	0	37	0	0	0
Future Vol, veh/h	13	347	0	0	130	168	36	0	37	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	394	0	0	148	191	41	0	42	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	158	0	-	-	-	0	582	582	404
Stage 1	-	-	-	-	-	-	424	424	-
Stage 2	-	-	-	-	-	-	158	158	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1422	-	0	0	-	0	475	425	647
Stage 1	-	-	0	0	-	0	660	587	-
Stage 2	-	-	0	0	-	0	871	767	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1422	-	-	-	-	-	464	0	641
Mov Cap-2 Maneuver	-	-	-	-	-	-	464	0	-
Stage 1	-	-	-	-	-	-	651	0	-
Stage 2	-	-	-	-	-	-	862	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.3	0	12.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	464	641	1422	-	-
HCM Lane V/C Ratio	0.088	0.066	0.01	-	-
HCM Control Delay (s)	13.5	11	7.6	0	-
HCM Lane LOS	B	B	A	A	-
HCM 95th %tile Q(veh)	0.3	0.2	0	-	-

Intersection	
Int Delay, s/veh	116.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	147	237	0	6	75	184	11	0	6	343	0	228
Future Vol, veh/h	147	237	0	6	75	184	11	0	6	343	0	228
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	160	258	0	7	82	200	12	0	7	373	0	248

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	282	0	0	268	0	0	918	884	149	655	784	192
Stage 1	-	-	-	-	-	-	588	588	-	196	196	-
Stage 2	-	-	-	-	-	-	330	296	-	459	588	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1279	-	-	1294	-	-	239	284	871	~ 365	324	849
Stage 1	-	-	-	-	-	-	463	495	-	805	738	-
Stage 2	-	-	-	-	-	-	682	668	-	552	495	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1279	-	-	1282	-	-	146	239	854	~ 317	272	841
Mov Cap-2 Maneuver	-	-	-	-	-	-	146	239	-	~ 317	272	-
Stage 1	-	-	-	-	-	-	392	418	-	687	734	-
Stage 2	-	-	-	-	-	-	474	665	-	463	418	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	3.3	0.2	24.2	249.3
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	206	1279	-	-	1282	-	-	422
HCM Lane V/C Ratio	0.09	0.125	-	-	0.005	-	-	1.471
HCM Control Delay (s)	24.2	8.2	0.3	-	7.8	-	-	249.3
HCM Lane LOS	C	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.3	0.4	-	-	0	-	-	32.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	86	22	0	138	0	0	51	9
Future Vol, veh/h	0	0	0	4	86	22	0	138	0	0	51	9
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	6	128	33	0	206	0	0	76	13

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	292	292	216	86	0	-	-	-	0
Stage 1	206	206	-	-	-	-	-	-	-
Stage 2	86	86	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	699	619	824	1510	-	0	0	-	0
Stage 1	829	731	-	-	-	0	0	-	0
Stage 2	937	824	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	692	0	816	1510	-	-	-	-	-
Mov Cap-2 Maneuver	692	0	-	-	-	-	-	-	-
Stage 1	829	0	-	-	-	-	-	-	-
Stage 2	928	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.1	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1510	-	692	816	-
HCM Lane V/C Ratio	-	-	0.194	0.04	-
HCM Control Delay (s)	0	-	11.5	9.6	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	370	0	8	163	18	0	0	0	22	33	0
Future Vol, veh/h	120	370	0	8	163	18	0	0	0	22	33	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	182	561	0	12	247	27	0	0	0	33	50	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	284	0	-	571	0	0	1230	1230	281
Stage 1	-	-	-	-	-	-	295	295	-
Stage 2	-	-	-	-	-	-	935	935	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1278	-	0	1002	-	-	196	178	758
Stage 1	-	-	0	-	-	-	755	669	-
Stage 2	-	-	0	-	-	-	382	344	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1266	-	-	1002	-	-	162	0	744
Mov Cap-2 Maneuver	-	-	-	-	-	-	162	0	-
Stage 1	-	-	-	-	-	-	639	0	-
Stage 2	-	-	-	-	-	-	373	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0.4	48.7
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1266	-	1002	-	-	162
HCM Lane V/C Ratio	0.144	-	0.012	-	-	0.514
HCM Control Delay (s)	8.3	-	8.6	0	-	48.7
HCM Lane LOS	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.5	-	0	-	-	2.5

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	20	17	0	172	3	31	0	361
Future Vol, veh/h	0	0	0	0	20	17	0	172	3	31	0	361
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	27	23	0	236	4	42	0	495
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.9	10.9	12.1
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	175	20	17	31	361
LT Vol	0	0	0	31	0
Through Vol	172	20	0	0	0
RT Vol	3	0	17	0	361
Lane Flow Rate	240	27	23	42	495
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.344	0.047	0.036	0.063	0.574
Departure Headway (Hd)	5.173	6.205	5.496	5.383	4.178
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	695	576	649	667	865
Service Time	3.201	3.954	3.245	3.103	1.897
HCM Lane V/C Ratio	0.345	0.047	0.035	0.063	0.572
HCM Control Delay	10.9	9.3	8.5	8.5	12.4
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.5	0.1	0.1	0.2	3.7

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2970	279
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3949	327
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.63	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	604.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.326
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1580
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.7
Flow in Lanes 1 and 2 (v12), pc/h	2369	Ramp Junction Speed (S), mi/h	64.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	2696	Average Density (D), pc/mi/ln	22.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2800	169
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3771	198
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	538.6	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.314
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1508
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.0
Flow in Lanes 1 and 2 (v12), pc/h	2263	Ramp Junction Speed (S), mi/h	64.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	2461	Average Density (D), pc/mi/ln	20.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2060	144
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	2712	169
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.64	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.337
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	2712	Ramp Junction Speed (S), mi/h	61.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2881	Average Density (D), pc/mi/ln	23.4
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2990	149
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4021	174
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.93	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.527
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	4021	Ramp Junction Speed (S), mi/h	56.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	4195	Average Density (D), pc/mi/ln	37.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3490	108
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4700	126
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.70	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1660
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.637	Outer Lanes Freeway Speed (SO), mi/h	76.0
Flow in Lanes 1 and 2 (v12), pc/h	3040	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2980	449
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4013	525
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.28

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	19.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.499
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1270
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	56.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.636	Outer Lanes Freeway Speed (SO), mi/h	77.5
Flow in Lanes 1 and 2 (v12), pc/h	2743	Ramp Junction Speed (S), mi/h	62.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2800	206
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3723	241
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.55	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.473
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1198
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.656	Outer Lanes Freeway Speed (SO), mi/h	77.8
Flow in Lanes 1 and 2 (v12), pc/h	2525	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2060	168
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	2771	197
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.61	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.469
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	2771	Ramp Junction Speed (S), mi/h	57.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2990	145
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3937	170
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.467
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3937	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3730	337
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4960	394
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.21

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	835.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.381
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1984
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.3
Flow in Lanes 1 and 2 (v12), pc/h	2976	Ramp Junction Speed (S), mi/h	62.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	3370	Average Density (D), pc/mi/ln	28.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3010	361
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4053	422
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.66	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	646.9	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.336
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1621
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.6
Flow in Lanes 1 and 2 (v12), pc/h	2432	Ramp Junction Speed (S), mi/h	63.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	2854	Average Density (D), pc/mi/ln	23.4
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3140	131
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4134	153
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.552
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	55.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	4134	Ramp Junction Speed (S), mi/h	55.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	4287	Average Density (D), pc/mi/ln	38.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3720	141
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5003	165
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.15	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	795.2	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	43.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5003	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5168	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	40.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4080	70
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5494	82
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.81	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2062
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.619	Outer Lanes Freeway Speed (SO), mi/h	74.4
Flow in Lanes 1 and 2 (v12), pc/h	3432	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	29.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3730	148
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5023	173
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	108.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.467
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1814
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.626	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3209	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3020	208
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4016	243
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.473
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1328
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.648	Outer Lanes Freeway Speed (SO), mi/h	77.3
Flow in Lanes 1 and 2 (v12), pc/h	2688	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3130	148
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4210	173
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.93	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.467
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4210	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	36.4
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	36.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3730	88
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4911	103
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.09	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4911	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4911	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	42.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4910	420
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	6529	492
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.26

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1191.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2612
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	3917	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4409	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	34.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4030	383
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5427	448
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.24

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	946.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.426
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2171
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	59.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	65.6
Flow in Lanes 1 and 2 (v12), pc/h	3256	Ramp Junction Speed (S), mi/h	61.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3704	Average Density (D), pc/mi/ln	31.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3690	137
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4858	160
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.11	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	763.1	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	46.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4858	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5018	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	39.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	NT + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4390	183
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5904	214
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.36	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	998.5	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	11.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5904	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	6118	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	48.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5230	57
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	7043	67
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	19.5	Flow Outer Lanes (vOA), pc/h/ln	2700
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.581	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4343	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4343	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4910	115
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6612	135
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.98	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	82.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.464
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2669
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.588	Outer Lanes Freeway Speed (SO), mi/h	72.0
Flow in Lanes 1 and 2 (v12), pc/h	3943	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	35.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4030	178
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5359	208
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.470
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1978
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.616	Outer Lanes Freeway Speed (SO), mi/h	74.7
Flow in Lanes 1 and 2 (v12), pc/h	3381	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.4
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3680	132
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4949	154
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.10	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4949	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4949	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	43.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt A2 P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4380	77
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5767	90
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.28	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5767	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5767	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	50.2

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX J

INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – YEAR 2040 WITH ENTIRE PROJECT (ALTERNATIVE A2)

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	4	35	65	41	4	13	0	2	94	14
Future Vol, veh/h	4	0	4	35	65	41	4	13	0	2	94	14
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	5	45	83	53	5	17	0	3	121	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	251	183	150	186	192	37	149	0	0	27	0	0
Stage 1	146	146	-	37	37	-	-	-	-	-	-	-
Stage 2	105	37	-	149	155	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	702	711	896	775	703	1035	1432	-	-	1587	-	-
Stage 1	857	776	-	978	864	-	-	-	-	-	-	-
Stage 2	901	864	-	854	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	590	693	879	753	685	1015	1418	-	-	1572	-	-
Mov Cap-2 Maneuver	590	693	-	753	685	-	-	-	-	-	-	-
Stage 1	846	767	-	965	852	-	-	-	-	-	-	-
Stage 2	760	852	-	839	760	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10.5	1.8	0.1
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	706	707	1015	1572	-	-
HCM Lane V/C Ratio	0.004	-	-	0.015	0.181	0.052	0.002	-	-
HCM Control Delay (s)	7.5	0	-	10.2	11.2	8.7	7.3	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.7	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	359	5	39	673	0	2	0	4	0	0	0
Future Vol, veh/h	0	359	5	39	673	0	2	0	4	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	408	6	44	765	0	2	0	5	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	775	0	0	424	0	0	1284	1284	431	1287	1287	785
Stage 1	-	-	-	-	-	-	421	421	-	863	863	-
Stage 2	-	-	-	-	-	-	863	863	-	424	424	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	841	-	-	1135	-	-	142	165	624	141	164	393
Stage 1	-	-	-	-	-	-	610	589	-	349	372	-
Stage 2	-	-	-	-	-	-	349	372	-	608	587	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	833	-	-	1124	-	-	132	151	612	130	150	386
Mov Cap-2 Maneuver	-	-	-	-	-	-	132	151	-	130	150	-
Stage 1	-	-	-	-	-	-	604	583	-	346	343	-
Stage 2	-	-	-	-	-	-	322	343	-	598	581	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	18.3	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	277	833	-	-	1124	-	-	-
HCM Lane V/C Ratio	0.025	-	-	-	0.039	-	-	-
HCM Control Delay (s)	18.3	0	-	-	8.3	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	240	139	28	664	0	0	0	0	117	2	108
Future Vol, veh/h	0	240	139	28	664	0	0	0	0	117	2	108
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	296	172	35	820	0	0	0	0	144	2	133

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	306	0	0			1196	1196	830
Stage 1	-	-	-	-	-	-			890	890	-
Stage 2	-	-	-	-	-	-			306	306	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1255	-	0			206	186	370
Stage 1	0	-	0	-	-	0			401	361	-
Stage 2	0	-	0	-	-	0			747	662	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1255	-	-			195	0	366
Mov Cap-2 Maneuver	-	-	-	-	-	-			195	0	-
Stage 1	-	-	-	-	-	-			401	0	-
Stage 2	-	-	-	-	-	-			709	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.3	43.6
HCM LOS			E

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1255	-	195	366
HCM Lane V/C Ratio	-	0.028	-	0.753	0.364
HCM Control Delay (s)	-	8	0	64.6	20.4
HCM Lane LOS	-	A	A	F	C
HCM 95th %tile Q(veh)	-	0.1	-	5	1.6

Intersection	
Int Delay, s/veh	12.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	99	257	0	0	551	88	140	0	45	0	0	0
Future Vol, veh/h	99	257	0	0	551	88	140	0	45	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	113	292	0	0	626	100	159	0	51	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	636	0	-	-	-	0	1154	1154	302
Stage 1	-	-	-	-	-	-	518	518	-
Stage 2	-	-	-	-	-	-	636	636	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	947	-	0	0	-	0	218	197	738
Stage 1	-	-	0	0	-	0	598	533	-
Stage 2	-	-	0	0	-	0	527	472	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	947	-	-	-	-	-	185	0	731
Mov Cap-2 Maneuver	-	-	-	-	-	-	185	0	-
Stage 1	-	-	-	-	-	-	513	0	-
Stage 2	-	-	-	-	-	-	522	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.6	0	67.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	185	731	947	-	-
HCM Lane V/C Ratio	0.86	0.07	0.119	-	-
HCM Control Delay (s)	85.3	10.3	9.3	0	-
HCM Lane LOS	F	B	A	A	-
HCM 95th %tile Q(veh)	6.3	0.2	0.4	-	-

Intersection	
Int Delay, s/veh	82

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	175	125	0	13	552	219	13	0	7	159	0	106
Future Vol, veh/h	175	125	0	13	552	219	13	0	7	159	0	106
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	190	136	0	14	600	238	14	0	8	173	0	115

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	838	0	0	146	0	0	1341	1392	88	1205	1273	729
Stage 1	-	-	-	-	-	-	526	526	-	747	747	-
Stage 2	-	-	-	-	-	-	815	866	-	458	526	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	794	-	-	1435	-	-	120	141	953	~ 150	167	422
Stage 1	-	-	-	-	-	-	504	528	-	404	419	-
Stage 2	-	-	-	-	-	-	370	369	-	553	528	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	794	-	-	1421	-	-	68	102	935	~ 117	121	418
Mov Cap-2 Maneuver	-	-	-	-	-	-	68	102	-	~ 117	121	-
Stage 1	-	-	-	-	-	-	370	388	-	299	415	-
Stage 2	-	-	-	-	-	-	263	365	-	403	388	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	6.6	0.1	50.2	$ 412.3
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	101	794	-	-	1421	-	-	164
HCM Lane V/C Ratio	0.215	0.24	-	-	0.01	-	-	1.756
HCM Control Delay (s)	50.2	11	0.4	-	7.6	-	-	$ 412.3
HCM Lane LOS	F	B	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.8	0.9	-	-	0	-	-	20.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	13.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	14	487	46	0	34	0	0	67	102
Future Vol, veh/h	0	0	0	14	487	46	0	34	0	0	67	102
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	541	51	0	38	0	0	74	113

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	122	122	48	84	0	-	-	-	0
Stage 1	38	38	-	-	-	-	-	-	-
Stage 2	84	84	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	873	768	1021	1513	-	0	0	-	0
Stage 1	984	863	-	-	-	0	0	-	0
Stage 2	939	825	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	864	0	1011	1513	-	-	-	-	-
Mov Cap-2 Maneuver	864	0	-	-	-	-	-	-	-
Stage 1	984	0	-	-	-	-	-	-	-
Stage 2	930	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.8	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1513	-	864	1011	-
HCM Lane V/C Ratio	-	-	0.644	0.051	-
HCM Control Delay (s)	0	-	16.4	8.8	-
HCM Lane LOS	A	-	C	A	-
HCM 95th %tile Q(veh)	0	-	4.8	0.2	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	208	0	2	182	22	0	0	0	33	49	0
Future Vol, veh/h	12	208	0	2	182	22	0	0	0	33	49	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	239	0	2	209	25	0	0	0	38	56	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	244	0	-	249	0	0	513	513	242
Stage 1	-	-	-	-	-	-	236	236	-
Stage 2	-	-	-	-	-	-	277	277	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1322	-	0	1317	-	-	521	465	797
Stage 1	-	-	0	-	-	-	803	710	-
Stage 2	-	-	0	-	-	-	770	681	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1309	-	-	1317	-	-	504	0	782
Mov Cap-2 Maneuver	-	-	-	-	-	-	504	0	-
Stage 1	-	-	-	-	-	-	786	0	-
Stage 2	-	-	-	-	-	-	761	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0.1	13.8
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1309	-	1317	-	-	504
HCM Lane V/C Ratio	0.011	-	0.002	-	-	0.187
HCM Control Delay (s)	7.8	-	7.7	0	-	13.8
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.7

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	20	1	188	2	29	0	210
Future Vol, veh/h	0	0	0	0	1	20	1	188	2	29	0	210
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	27	1	251	3	39	0	280
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8	10.4	8.7
HCM LOS	A	B	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	191	1	20	29	210
LT Vol	1	0	0	29	0
Through Vol	188	1	0	0	0
RT Vol	2	0	20	0	210
Lane Flow Rate	255	1	27	39	280
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.34	0.002	0.038	0.056	0.312
Departure Headway (Hd)	4.807	5.806	5.099	5.21	4.007
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	739	620	706	679	882
Service Time	2.902	3.506	2.799	3.007	1.803
HCM Lane V/C Ratio	0.345	0.002	0.038	0.057	0.317
HCM Control Delay	10.4	8.5	8	8.3	8.7
HCM Lane LOS	B	A	A	A	A
HCM 95th-tile Q	1.5	0	0.1	0.2	1.3

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	1	0	13	57	18	2	128	0	18	16	4
Future Vol, veh/h	62	1	0	13	57	18	2	128	0	18	16	4
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	1	0	14	60	19	2	135	0	19	17	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	256	216	39	217	218	155	31	0	0	145	0	0
Stage 1	67	67	-	149	149	-	-	-	-	-	-	-
Stage 2	189	149	-	68	69	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	697	682	1033	739	680	891	1582	-	-	1437	-	-
Stage 1	943	839	-	854	774	-	-	-	-	-	-	-
Stage 2	813	774	-	942	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	615	658	1013	716	656	874	1567	-	-	1423	-	-
Mov Cap-2 Maneuver	615	658	-	716	656	-	-	-	-	-	-	-
Stage 1	933	819	-	845	765	-	-	-	-	-	-	-
Stage 2	725	765	-	919	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.5	10.7	0.1	3.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	616	666	874	1423	-	-
HCM Lane V/C Ratio	0.001	-	-	0.108	0.111	0.022	0.013	-	-
HCM Control Delay (s)	7.3	0	-	11.5	11.1	9.2	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.4	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	413	4	5	172	0	2	0	26	0	0	0
Future Vol, veh/h	0	413	4	5	172	0	2	0	26	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	459	4	6	191	0	2	0	29	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	201	0	0	473	0	0	684	684	481	699	686	211
Stage 1	-	-	-	-	-	-	471	471	-	213	213	-
Stage 2	-	-	-	-	-	-	213	213	-	486	473	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1371	-	-	1089	-	-	363	371	585	354	370	829
Stage 1	-	-	-	-	-	-	573	560	-	789	726	-
Stage 2	-	-	-	-	-	-	789	726	-	563	558	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1358	-	-	1079	-	-	355	361	574	328	360	813
Mov Cap-2 Maneuver	-	-	-	-	-	-	355	361	-	328	360	-
Stage 1	-	-	-	-	-	-	567	554	-	781	714	-
Stage 2	-	-	-	-	-	-	777	714	-	530	552	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	11.9	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	550	1358	-	-	1079	-	-	-
HCM Lane V/C Ratio	0.057	-	-	-	0.005	-	-	-
HCM Control Delay (s)	11.9	0	-	-	8.4	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	361	115	55	164	0	0	0	0	141	0	48
Future Vol, veh/h	0	361	115	55	164	0	0	0	0	141	0	48
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	415	132	63	189	0	0	0	0	162	0	55

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	425	0	0			740	740	199
Stage 1	-	-	-	-	-	-			315	315	-
Stage 2	-	-	-	-	-	-			425	425	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1134	-	0			384	345	842
Stage 1	0	-	0	-	-	0			740	656	-
Stage 2	0	-	0	-	-	0			659	586	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1134	-	-			360	0	834
Mov Cap-2 Maneuver	-	-	-	-	-	-			360	0	-
Stage 1	-	-	-	-	-	-			740	0	-
Stage 2	-	-	-	-	-	-			618	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	2.1	19.5
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1134	-	360	834
HCM Lane V/C Ratio	-	0.056	-	0.45	0.066
HCM Control Delay (s)	-	8.4	0	22.9	9.6
HCM Lane LOS	-	A	A	C	A
HCM 95th %tile Q(veh)	-	0.2	-	2.3	0.2

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	33	469	0	0	161	166	59	1	57	0	0	0
Future Vol, veh/h	33	469	0	0	161	166	59	1	57	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	527	0	0	181	187	66	1	64	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	191	0	-	-	-	0	792	792	537
Stage 1	-	-	-	-	-	-	601	601	-
Stage 2	-	-	-	-	-	-	191	191	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1383	-	0	0	-	0	358	322	544
Stage 1	-	-	0	0	-	0	547	489	-
Stage 2	-	-	0	0	-	0	841	742	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1383	-	-	-	-	-	341	0	539
Mov Cap-2 Maneuver	-	-	-	-	-	-	341	0	-
Stage 1	-	-	-	-	-	-	526	0	-
Stage 2	-	-	-	-	-	-	833	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.5	0	15.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	341	539	1383	-	-
HCM Lane V/C Ratio	0.198	0.119	0.027	-	-
HCM Control Delay (s)	18.1	12.6	7.7	0	-
HCM Lane LOS	C	B	A	A	-
HCM 95th %tile Q(veh)	0.7	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	235.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	222	303	0	7	118	278	13	0	7	325	0	217
Future Vol, veh/h	222	303	0	7	118	278	13	0	7	325	0	217
Conflicting Peds, #/hr	0	0	10	10	0	0	10	0	10	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	160	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	241	329	0	8	128	302	14	0	8	353	0	236

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	430	0	0	339	0	0	1244	1267	185	952	1116	289
Stage 1	-	-	-	-	-	-	821	821	-	295	295	-
Stage 2	-	-	-	-	-	-	423	446	-	657	821	-
Critical Hdwy	4.13	-	-	4.13	-	-	7.33	6.53	6.93	7.33	6.53	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.53	5.53	-	6.13	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.13	5.53	-	6.53	5.53	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	3.519	4.019	3.319	3.519	4.019	3.319
Pot Cap-1 Maneuver	1128	-	-	1219	-	-	140	168	826	~ 226	207	749
Stage 1	-	-	-	-	-	-	336	388	-	713	668	-
Stage 2	-	-	-	-	-	-	608	573	-	421	388	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1128	-	-	1207	-	-	74	122	810	~ 176	150	742
Mov Cap-2 Maneuver	-	-	-	-	-	-	74	122	-	~ 176	150	-
Stage 1	-	-	-	-	-	-	246	284	-	527	663	-
Stage 2	-	-	-	-	-	-	408	569	-	~ 305	284	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	4.1	0.1	46.1	$ 641.1
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	109	1128	-	-	1207	-	-	253
HCM Lane V/C Ratio	0.199	0.214	-	-	0.006	-	-	2.329
HCM Control Delay (s)	46.1	9.1	0.5	-	8	-	-	$ 641.1
HCM Lane LOS	E	A	A	-	A	-	-	F
HCM 95th %tile Q(veh)	0.7	0.8	-	-	0	-	-	46.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	144	41	0	146	0	0	71	26
Future Vol, veh/h	0	0	0	5	144	41	0	146	0	0	71	26
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	155	44	0	157	0	0	76	28

Major/Minor	Minor1		Major1			Major2			
Conflicting Flow All	243	243	167	86	0	-	-	-	0
Stage 1	157	157	-	-	-	-	-	-	-
Stage 2	86	86	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	745	659	877	1510	-	0	0	-	0
Stage 1	871	768	-	-	-	0	0	-	0
Stage 2	937	824	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	738	0	869	1510	-	-	-	-	-
Mov Cap-2 Maneuver	738	0	-	-	-	-	-	-	-
Stage 1	871	0	-	-	-	-	-	-	-
Stage 2	928	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1510	-	738	869	-
HCM Lane V/C Ratio	-	-	0.217	0.051	-
HCM Control Delay (s)	0	-	11.2	9.4	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.8	0.2	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	97	393	0	9	228	50	0	0	0	37	37	1
Future Vol, veh/h	97	393	0	9	228	50	0	0	0	37	37	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	452	0	10	262	57	0	0	0	43	43	1

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	329	0	-	462	0	0	1005	1005	311
Stage 1	-	-	-	-	-	-	321	321	-
Stage 2	-	-	-	-	-	-	684	684	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1231	-	0	1099	-	-	268	241	729
Stage 1	-	-	0	-	-	-	735	652	-
Stage 2	-	-	0	-	-	-	501	449	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1219	-	-	1099	-	-	236	0	715
Mov Cap-2 Maneuver	-	-	-	-	-	-	236	0	-
Stage 1	-	-	-	-	-	-	662	0	-
Stage 2	-	-	-	-	-	-	491	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.6	0.3	28.2
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1219	-	1099	-	-	240
HCM Lane V/C Ratio	0.091	-	0.009	-	-	0.359
HCM Control Delay (s)	8.2	-	8.3	0	-	28.2
HCM Lane LOS	A	-	A	A	-	D
HCM 95th %tile Q(veh)	0.3	-	0	-	-	1.6

Intersection	
Intersection Delay, s/veh	12
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	49	33	2	255	1	26	0	405
Future Vol, veh/h	0	0	0	0	49	33	2	255	1	26	0	405
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	56	38	2	290	1	30	0	460
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	9.3	12.3	12.3
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	99%	100%	0%	0%	0%
Vol Right, %	0%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	258	49	33	26	405
LT Vol	2	0	0	26	0
Through Vol	255	49	0	0	0
RT Vol	1	0	33	0	405
Lane Flow Rate	293	56	38	30	460
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.431	0.097	0.058	0.046	0.558
Departure Headway (Hd)	5.295	6.267	5.558	5.575	4.368
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	677	568	639	642	824
Service Time	3.344	4.045	3.335	3.313	2.105
HCM Lane V/C Ratio	0.433	0.099	0.059	0.047	0.558
HCM Control Delay	12.3	9.7	8.7	8.6	12.5
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	2.2	0.3	0.2	0.1	3.5

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3470	353
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4614	413
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	765.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.362
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1846
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.8
Flow in Lanes 1 and 2 (v12), pc/h	2768	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	3181	Average Density (D), pc/mi/ln	26.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3280	216
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4417	253
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	688.6	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.339
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1767
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.0
Flow in Lanes 1 and 2 (v12), pc/h	2650	Ramp Junction Speed (S), mi/h	63.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2903	Average Density (D), pc/mi/ln	24.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2410	177
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3173	207
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.75	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.382
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3173	Ramp Junction Speed (S), mi/h	60.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3380	Average Density (D), pc/mi/ln	28.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3500	196
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4707	229
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.10	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	745.5	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	47.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4707	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4936	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4090	134
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5508	157
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.81	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2060
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.615	Outer Lanes Freeway Speed (SO), mi/h	74.4
Flow in Lanes 1 and 2 (v12), pc/h	3448	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	29.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3480	546
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4686	639
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.34

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	18.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.509
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1566
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	56.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.613	Outer Lanes Freeway Speed (SO), mi/h	76.3
Flow in Lanes 1 and 2 (v12), pc/h	3120	Ramp Junction Speed (S), mi/h	61.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3270	283
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4348	331
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.64	0.18

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.481
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1462
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.636	Outer Lanes Freeway Speed (SO), mi/h	76.7
Flow in Lanes 1 and 2 (v12), pc/h	2886	Ramp Junction Speed (S), mi/h	62.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2410	219
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3241	256
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.14

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.474
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3241	Ramp Junction Speed (S), mi/h	57.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3500	184
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4608	215
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.02	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4608	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4608	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	40.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4360	450
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5798	527
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.94	0.28

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1042.8	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.482
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2319
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow in Lanes 1 and 2 (v12), pc/h	3479	Ramp Junction Speed (S), mi/h	59.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	4006	Average Density (D), pc/mi/ln	35.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3520	466
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4740	545
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.78	0.29

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	820.2	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.383
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1896
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.6
Flow in Lanes 1 and 2 (v12), pc/h	2844	Ramp Junction Speed (S), mi/h	62.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	3389	Average Density (D), pc/mi/ln	28.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3670	164
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4832	192
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.11	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	764.4	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	46.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4832	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5024	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	39.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4350	206
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5850	241
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.35	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	992.7	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	12.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5850	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	6091	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	47.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4770	96
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6423	112
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.461
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2562
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.594	Outer Lanes Freeway Speed (SO), mi/h	72.5
Flow in Lanes 1 and 2 (v12), pc/h	3861	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4370	183
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5885	214
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	117.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.471
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2251
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.603	Outer Lanes Freeway Speed (SO), mi/h	73.7
Flow in Lanes 1 and 2 (v12), pc/h	3634	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3530	275
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4694	322
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.480
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1626
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.628	Outer Lanes Freeway Speed (SO), mi/h	76.1
Flow in Lanes 1 and 2 (v12), pc/h	3068	Ramp Junction Speed (S), mi/h	62.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3660	199
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4922	233
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.09	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4922	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4922	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	43.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt A2 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4360	116
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5740	136
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.27	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5740	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5740	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	50.0

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX K

WEEKDAY AND SATURDAY INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – EXISTING + PROJECT PHASE 1 (ALTERNATIVE B)

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	27	16	32	3	10	0	2	73	11
Future Vol, veh/h	3	0	3	27	16	32	3	10	0	2	73	11
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	4	35	21	41	4	13	0	3	94	14

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	179	148	121	150	155	33	118	0	0	23	0	0
Stage 1	117	117	-	31	31	-	-	-	-	-	-	-
Stage 2	62	31	-	119	124	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	783	743	930	818	737	1041	1470	-	-	1592	-	-
Stage 1	888	799	-	986	869	-	-	-	-	-	-	-
Stage 2	949	869	-	885	793	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	719	724	912	796	719	1021	1456	-	-	1577	-	-
Mov Cap-2 Maneuver	719	724	-	796	719	-	-	-	-	-	-	-
Stage 1	877	789	-	974	858	-	-	-	-	-	-	-
Stage 2	878	858	-	871	783	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	9.5	1.7	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1456	-	-	804	765	1021	1577	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.072	0.04	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.5	10.1	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	67	4	30	312	0	2	0	3	0	0	0
Future Vol, veh/h	0	67	4	30	312	0	2	0	3	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	76	5	34	355	0	2	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	365	0	0	91	0	0	522	522	99	523	524	375
Stage 1	-	-	-	-	-	-	89	89	-	433	433	-
Stage 2	-	-	-	-	-	-	433	433	-	90	91	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1194	-	-	1504	-	-	465	459	957	465	458	671
Stage 1	-	-	-	-	-	-	918	821	-	601	582	-
Stage 2	-	-	-	-	-	-	601	582	-	917	820	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1183	-	-	1490	-	-	446	437	939	445	436	658
Mov Cap-2 Maneuver	-	-	-	-	-	-	446	437	-	445	436	-
Stage 1	-	-	-	-	-	-	909	813	-	595	560	-
Stage 2	-	-	-	-	-	-	579	560	-	905	812	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.7	10.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	651	1183	-	-	1490	-	-	-
HCM Lane V/C Ratio	0.009	-	-	-	0.023	-	-	-
HCM Control Delay (s)	10.6	0	-	-	7.5	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	168	75	1	581	0	0	0	0	6	2	91
Future Vol, veh/h	0	168	75	1	581	0	0	0	0	6	2	91
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	207	93	1	717	0	0	0	0	7	2	112

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	217	0	0			936	936	727
Stage 1	-	-	-	-	-	-			719	719	-
Stage 2	-	-	-	-	-	-			217	217	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1353	-	0			294	265	424
Stage 1	0	-	0	-	-	0			483	433	-
Stage 2	0	-	0	-	-	0			819	723	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1353	-	-			294	0	420
Mov Cap-2 Maneuver	-	-	-	-	-	-			294	0	-
Stage 1	-	-	-	-	-	-			483	0	-
Stage 2	-	-	-	-	-	-			818	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.8
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1353	-	294	420
HCM Lane V/C Ratio	-	0.001	-	0.034	0.267
HCM Control Delay (s)	-	7.7	0	17.7	16.7
HCM Lane LOS	-	A	A	C	C
HCM 95th %tile Q(veh)	-	0	-	0.1	1.1

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	53	121	0	0	481	17	101	0	1	0	0	0
Future Vol, veh/h	53	121	0	0	481	17	101	0	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	60	138	0	0	547	19	115	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	557	0	-	-	-	0	815	815	148
Stage 1	-	-	-	-	-	-	258	258	-
Stage 2	-	-	-	-	-	-	557	557	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1014	-	0	0	-	0	347	312	899
Stage 1	-	-	0	0	-	0	785	694	-
Stage 2	-	-	0	0	-	0	574	512	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1014	-	-	-	-	-	322	0	890
Mov Cap-2 Maneuver	-	-	-	-	-	-	322	0	-
Stage 1	-	-	-	-	-	-	735	0	-
Stage 2	-	-	-	-	-	-	568	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.7	0	22.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	322	890	1014	-	-
HCM Lane V/C Ratio	0.356	0.001	0.059	-	-
HCM Control Delay (s)	22.2	9.1	8.8	0	-
HCM Lane LOS	C	A	A	A	-
HCM 95th %tile Q(veh)	1.6	0	0.2	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	120	0	10	513	10	5
Future Vol, veh/h	120	0	10	513	10	5
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	130	0	11	558	11	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	140	0	730	85
Stage 1	-	-	-	-	140	-
Stage 2	-	-	-	-	590	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1442	-	373	958
Stage 1	-	-	-	-	873	-
Stage 2	-	-	-	-	553	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1428	-	363	940
Mov Cap-2 Maneuver	-	-	-	-	363	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	544	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	456	-	-	1428	-
HCM Lane V/C Ratio	0.036	-	-	0.008	-
HCM Control Delay (s)	13.2	-	-	7.5	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	11	334	35	0	26	0	0	52	79
Future Vol, veh/h	0	0	0	11	334	35	0	26	0	0	52	79
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	12	371	39	0	29	0	0	58	88

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	97	97	39	68	0	-	-	-	0	
Stage 1	29	29	-	-	-	-	-	-	-	
Stage 2	68	68	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	902	793	1033	1533	-	0	0	-	0	
Stage 1	994	871	-	-	-	0	0	-	0	
Stage 2	955	838	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	893	0	1023	1533	-	-	-	-	-	
Mov Cap-2 Maneuver	893	0	-	-	-	-	-	-	-	
Stage 1	994	0	-	-	-	-	-	-	-	
Stage 2	945	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1533	-	893	1023	-
HCM Lane V/C Ratio	-	-	0.429	0.038	-
HCM Control Delay (s)	0	-	12	8.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	2.2	0.1	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	86	0	2	100	17	0	0	0	25	38	0
Future Vol, veh/h	9	86	0	2	100	17	0	0	0	25	38	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	99	0	2	115	20	0	0	0	29	44	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	145	0	-	109	0	0	268	268	145
Stage 1	-	-	-	-	-	-	139	139	-
Stage 2	-	-	-	-	-	-	129	129	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1437	-	0	1481	-	-	721	638	902
Stage 1	-	-	0	-	-	-	888	782	-
Stage 2	-	-	0	-	-	-	897	789	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1423	-	-	1481	-	-	701	0	885
Mov Cap-2 Maneuver	-	-	-	-	-	-	701	0	-
Stage 1	-	-	-	-	-	-	873	0	-
Stage 2	-	-	-	-	-	-	887	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0.1	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1423	-	1481	-	-	701
HCM Lane V/C Ratio	0.007	-	0.002	-	-	0.103
HCM Control Delay (s)	7.5	-	7.4	0	-	10.7
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.3

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	15	1	104	2	23	0	88
Future Vol, veh/h	0	0	0	0	1	15	1	104	2	23	0	88
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	20	1	139	3	31	0	117
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.3	8.8	7.5
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	97%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	107	1	15	23	88
LT Vol	1	0	0	23	0
Through Vol	104	1	0	0	0
RT Vol	2	0	15	0	88
Lane Flow Rate	143	1	20	31	117
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.185	0.002	0.025	0.044	0.128
Departure Headway (Hd)	4.669	5.198	4.495	5.142	3.94
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	765	693	801	694	905
Service Time	2.717	2.898	2.195	2.891	1.689
HCM Lane V/C Ratio	0.187	0.001	0.025	0.045	0.129
HCM Control Delay	8.8	7.9	7.3	8.1	7.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.7	0	0.1	0.1	0.4

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	1	0	10	1	14	2	99	0	14	13	3
Future Vol, veh/h	48	1	0	10	1	14	2	99	0	14	13	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	51	1	0	11	1	15	2	104	0	15	14	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	182	174	36	174	175	124	27	0	0	114	0	0
Stage 1	56	56	-	118	118	-	-	-	-	-	-	-
Stage 2	126	118	-	56	57	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	779	719	1037	789	718	927	1587	-	-	1475	-	-
Stage 1	956	848	-	887	798	-	-	-	-	-	-	-
Stage 2	878	798	-	956	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	745	697	1017	767	696	909	1572	-	-	1461	-	-
Mov Cap-2 Maneuver	745	697	-	767	696	-	-	-	-	-	-	-
Stage 1	945	831	-	877	789	-	-	-	-	-	-	-
Stage 2	854	789	-	936	830	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	9.4	0.1	3.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	744	760	909	1461	-	-
HCM Lane V/C Ratio	0.001	-	-	0.069	0.015	0.016	0.01	-	-
HCM Control Delay (s)	7.3	0	-	10.2	9.8	9	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0	0	0	-	-

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	271	3	4	81	0	2	0	20	0	0	0
Future Vol, veh/h	0	271	3	4	81	0	2	0	20	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	301	3	4	90	0	2	0	22	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	100	0	0	314	0	0	421	421	323	432	422	110
Stage 1	-	-	-	-	-	-	313	313	-	108	108	-
Stage 2	-	-	-	-	-	-	108	108	-	324	314	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1493	-	-	1246	-	-	543	524	718	534	523	943
Stage 1	-	-	-	-	-	-	698	657	-	897	806	-
Stage 2	-	-	-	-	-	-	897	806	-	688	656	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1479	-	-	1234	-	-	532	512	704	506	511	925
Mov Cap-2 Maneuver	-	-	-	-	-	-	532	512	-	506	511	-
Stage 1	-	-	-	-	-	-	691	650	-	888	796	-
Stage 2	-	-	-	-	-	-	886	796	-	660	649	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	10.5	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	684	1479	-	-	1234	-	-	-
HCM Lane V/C Ratio	0.036	-	-	-	0.004	-	-	-
HCM Control Delay (s)	10.5	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	497	145	1	378	0	0	0	0	2	0	130
Future Vol, veh/h	0	497	145	1	378	0	0	0	0	2	0	130
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	571	167	1	434	0	0	0	0	2	0	149

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	581	0	0			1017	1017	444
Stage 1	-	-	-	-	-	-			436	436	-
Stage 2	-	-	-	-	-	-			581	581	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	993	-	0			263	238	614
Stage 1	0	-	0	-	-	0			652	580	-
Stage 2	0	-	0	-	-	0			559	500	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	993	-	-			263	0	608
Mov Cap-2 Maneuver	-	-	-	-	-	-			263	0	-
Stage 1	-	-	-	-	-	-			652	0	-
Stage 2	-	-	-	-	-	-			558	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	12.9
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	993	-	263	608
HCM Lane V/C Ratio	-	0.001	-	0.009	0.246
HCM Control Delay (s)	-	8.6	0	18.8	12.8
HCM Lane LOS	-	A	A	C	B
HCM 95th %tile Q(veh)	-	0	-	0	1

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↩			↑	↱		↩	↱			
Traffic Vol, veh/h	100	399	0	0	263	24	116	1	1	0	0	0
Future Vol, veh/h	100	399	0	0	263	24	116	1	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	112	448	0	0	296	27	130	1	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	306	0	-	-	-	0	978	978	458
Stage 1	-	-	-	-	-	-	672	672	-
Stage 2	-	-	-	-	-	-	306	306	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1255	-	0	0	-	0	278	250	603
Stage 1	-	-	0	0	-	0	508	454	-
Stage 2	-	-	0	0	-	0	747	662	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1255	-	-	-	-	-	242	0	597
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	0	-
Stage 1	-	-	-	-	-	-	448	0	-
Stage 2	-	-	-	-	-	-	740	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.6	0	36.1
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	242	597	1255	-	-
HCM Lane V/C Ratio	0.543	0.002	0.09	-	-
HCM Control Delay (s)	36.3	11	8.2	0	-
HCM Lane LOS	E	B	A	A	-
HCM 95th %tile Q(veh)	2.9	0	0.3	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	400	0	5	293	10	5
Future Vol, veh/h	400	0	5	293	10	5
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	435	0	5	318	11	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	445	0	783	238
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	338	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1113	-	346	764
Stage 1	-	-	-	-	614	-
Stage 2	-	-	-	-	722	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1102	-	337	750
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	608	-
Stage 2	-	-	-	-	712	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	14.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	413	-	-	1102	-
HCM Lane V/C Ratio	0.039	-	-	0.005	-
HCM Control Delay (s)	14.1	-	-	8.3	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	140	32	0	114	0	0	55	20
Future Vol, veh/h	0	0	0	4	140	32	0	114	0	0	55	20
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	151	34	0	123	0	0	59	22

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	192	192	133	69	0	-	-	-	0	
Stage 1	123	123	-	-	-	-	-	-	-	
Stage 2	69	69	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	797	703	916	1532	-	0	0	-	0	
Stage 1	902	794	-	-	-	0	0	-	0	
Stage 2	954	837	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	789	0	907	1532	-	-	-	-	-	
Mov Cap-2 Maneuver	789	0	-	-	-	-	-	-	-	
Stage 1	902	0	-	-	-	-	-	-	-	
Stage 2	944	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1532	-	789	907	-
HCM Lane V/C Ratio	-	-	0.196	0.038	-
HCM Control Delay (s)	0	-	10.7	9.1	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.7	0.1	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	75	275	0	7	134	39	0	0	0	29	29	1
Future Vol, veh/h	75	275	0	7	134	39	0	0	0	29	29	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	316	0	8	154	45	0	0	0	33	33	1

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	209	0	-	326	0	0			701	701	197
Stage 1	-	-	-	-	-	-			203	203	-
Stage 2	-	-	-	-	-	-			498	498	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1362	-	0	1234	-	-			405	363	844
Stage 1	-	-	0	-	-	-			831	733	-
Stage 2	-	-	0	-	-	-			611	544	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1349	-	-	1234	-	-			369	0	828
Mov Cap-2 Maneuver	-	-	-	-	-	-			369	0	-
Stage 1	-	-	-	-	-	-			770	0	-
Stage 2	-	-	-	-	-	-			601	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0.3	16.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1349	-	1234	-	-	376
HCM Lane V/C Ratio	0.064	-	0.007	-	-	0.18
HCM Control Delay (s)	7.9	-	7.9	0	-	16.7
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.6

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	38	25	2	155	1	20	0	284
Future Vol, veh/h	0	0	0	0	38	25	2	155	1	20	0	284
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	43	28	2	176	1	23	0	323
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.5	9.8	9.3
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	158	38	25	20	284
LT Vol	2	0	0	20	0
Through Vol	155	38	0	0	0
RT Vol	1	0	25	0	284
Lane Flow Rate	180	43	28	23	323
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.253	0.068	0.039	0.034	0.375
Departure Headway (Hd)	5.063	5.7	4.994	5.383	4.178
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	711	628	716	667	865
Service Time	3.084	3.435	2.73	3.098	1.893
HCM Lane V/C Ratio	0.253	0.068	0.039	0.034	0.373
HCM Control Delay	9.8	8.9	7.9	8.3	9.4
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	1	0.2	0.1	0.1	1.8

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	2	11	2	108	0	14	10	3
Future Vol, veh/h	0	0	0	2	2	11	2	108	0	14	10	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	3	15	3	144	0	19	13	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	232	223	35	223	225	164	27	0	0	154	0	0
Stage 1	63	63	-	160	160	-	-	-	-	-	-	-
Stage 2	169	160	-	63	65	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	723	676	1038	733	674	881	1587	-	-	1426	-	-
Stage 1	948	842	-	842	766	-	-	-	-	-	-	-
Stage 2	833	766	-	948	841	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	687	652	1018	710	650	864	1572	-	-	1412	-	-
Mov Cap-2 Maneuver	687	652	-	710	650	-	-	-	-	-	-	-
Stage 1	937	822	-	832	757	-	-	-	-	-	-	-
Stage 2	807	757	-	926	821	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.5	0.1	3.9
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	-	679	864	1412	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.008	0.017	0.013	-	-
HCM Control Delay (s)	7.3	0	-	0	10.3	9.2	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	251	0	7	88	0	2	1	18	0	0	0
Future Vol, veh/h	0	251	0	7	88	0	2	1	18	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	282	0	8	99	0	2	1	20	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	109	0	0	292	0	0	417	417	302	428	417	119
Stage 1	-	-	-	-	-	-	292	292	-	125	125	-
Stage 2	-	-	-	-	-	-	125	125	-	303	292	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1481	-	-	1270	-	-	546	527	738	537	527	933
Stage 1	-	-	-	-	-	-	716	671	-	879	792	-
Stage 2	-	-	-	-	-	-	879	792	-	706	671	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1467	-	-	1258	-	-	533	513	724	509	513	915
Mov Cap-2 Maneuver	-	-	-	-	-	-	533	513	-	509	513	-
Stage 1	-	-	-	-	-	-	709	664	-	870	779	-
Stage 2	-	-	-	-	-	-	865	779	-	679	664	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	10.4	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	687	1467	-	-	1258	-	-	-
HCM Lane V/C Ratio	0.034	-	-	-	0.006	-	-	-
HCM Control Delay (s)	10.4	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	691	197	2	354	0	0	0	0	1	1	134
Future Vol, veh/h	0	691	197	2	354	0	0	0	0	1	1	134
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	833	237	2	427	0	0	0	0	1	1	161

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	843	0	0			1274	1274	437
Stage 1	-	-	-	-	-	-			431	431	-
Stage 2	-	-	-	-	-	-			843	843	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	793	-	0			184	167	620
Stage 1	0	-	0	-	-	0			655	583	-
Stage 2	0	-	0	-	-	0			422	380	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	793	-	-			183	0	614
Mov Cap-2 Maneuver	-	-	-	-	-	-			183	0	-
Stage 1	-	-	-	-	-	-			655	0	-
Stage 2	-	-	-	-	-	-			421	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	793	-	183	614
HCM Lane V/C Ratio	-	0.003	-	0.013	0.263
HCM Control Delay (s)	-	9.6	0	24.9	12.9
HCM Lane LOS	-	A	A	C	B
HCM 95th %tile Q(veh)	-	0	-	0	1.1

Intersection	
Int Delay, s/veh	13.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	167	525	0	0	242	23	114	0	0	0	0	0
Future Vol, veh/h	167	525	0	0	242	23	114	0	0	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	190	597	0	0	275	26	130	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	285	0	-	-	-	0	1262	1262	607
Stage 1	-	-	-	-	-	-	977	977	-
Stage 2	-	-	-	-	-	-	285	285	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1277	-	0	0	-	0	188	170	496
Stage 1	-	-	0	0	-	0	365	329	-
Stage 2	-	-	0	0	-	0	763	676	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1277	-	-	-	-	-	145	0	491
Mov Cap-2 Maneuver	-	-	-	-	-	-	145	0	-
Stage 1	-	-	-	-	-	-	284	0	-
Stage 2	-	-	-	-	-	-	755	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2	0	108.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	145	-	1277	-	-
HCM Lane V/C Ratio	0.893	-	0.149	-	-
HCM Control Delay (s)	108.6	0	8.3	0	-
HCM Lane LOS	F	A	A	A	-
HCM 95th %tile Q(veh)	6.1	-	0.5	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	525	0	5	270	10	5
Future Vol, veh/h	525	0	5	270	10	5
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	571	0	5	293	11	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	581	0	894	306
Stage 1	-	-	-	-	581	-
Stage 2	-	-	-	-	313	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	991	-	296	691
Stage 1	-	-	-	-	523	-
Stage 2	-	-	-	-	741	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	982	-	289	678
Mov Cap-2 Maneuver	-	-	-	-	289	-
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	731	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	15.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	357	-	-	982	-
HCM Lane V/C Ratio	0.046	-	-	0.006	-
HCM Control Delay (s)	15.6	-	-	8.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	129	20	0	125	0	0	46	8
Future Vol, veh/h	0	0	0	4	129	20	0	125	0	0	46	8
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	6	193	30	0	187	0	0	69	12

Major/Minor	Minor1		Major1			Major2			
Conflicting Flow All	266	266	197	79	0	-	-	-	0
Stage 1	187	187	-	-	-	-	-	-	-
Stage 2	79	79	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	723	640	844	1519	-	0	0	-	0
Stage 1	845	745	-	-	-	0	0	-	0
Stage 2	944	829	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	716	0	836	1519	-	-	-	-	-
Mov Cap-2 Maneuver	716	0	-	-	-	-	-	-	-
Stage 1	845	0	-	-	-	-	-	-	-
Stage 2	935	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.6	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1519	-	716	836	-
HCM Lane V/C Ratio	-	-	0.277	0.036	-
HCM Control Delay (s)	0	-	11.9	9.5	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	1.1	0.1	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	109	361	0	7	133	16	0	0	0	20	30	0
Future Vol, veh/h	109	361	0	7	133	16	0	0	0	20	30	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	165	547	0	11	202	24	0	0	0	30	45	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	236	0	-	557	0	0	1133	1133	234
Stage 1	-	-	-	-	-	-	246	246	-
Stage 2	-	-	-	-	-	-	887	887	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1331	-	0	1014	-	-	224	203	805
Stage 1	-	-	0	-	-	-	795	703	-
Stage 2	-	-	0	-	-	-	402	362	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1318	-	-	1014	-	-	190	0	790
Mov Cap-2 Maneuver	-	-	-	-	-	-	190	0	-
Stage 1	-	-	-	-	-	-	688	0	-
Stage 2	-	-	-	-	-	-	394	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0.4	36
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1318	-	1014	-	-	190
HCM Lane V/C Ratio	0.125	-	0.01	-	-	0.399
HCM Control Delay (s)	8.1	-	8.6	0	-	36
HCM Lane LOS	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.4	-	0	-	-	1.8

Intersection	
Intersection Delay, s/veh	11.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	18	15	0	141	3	28	0	353
Future Vol, veh/h	0	0	0	0	18	15	0	141	3	28	0	353
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	25	21	0	193	4	38	0	484
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.7	10.2	11.6
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	144	18	15	28	353
LT Vol	0	0	0	28	0
Through Vol	141	18	0	0	0
RT Vol	3	0	15	0	353
Lane Flow Rate	197	25	21	38	484
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.281	0.042	0.031	0.057	0.554
Departure Headway (Hd)	5.136	6.077	5.37	5.328	4.124
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	700	589	666	674	875
Service Time	3.159	3.817	3.109	3.043	1.839
HCM Lane V/C Ratio	0.281	0.042	0.032	0.056	0.553
HCM Control Delay	10.2	9.1	8.3	8.4	11.9
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.2	0.1	0.1	0.2	3.5

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2703	251
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3594	294
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.58	0.16

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	521.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.313
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1438
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.2
Flow in Lanes 1 and 2 (v12), pc/h	2156	Ramp Junction Speed (S), mi/h	64.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	2450	Average Density (D), pc/mi/ln	20.1
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2541	90
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3422	105
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.52	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	444.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.302
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1369
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.5
Flow in Lanes 1 and 2 (v12), pc/h	2053	Ramp Junction Speed (S), mi/h	64.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	2158	Average Density (D), pc/mi/ln	18.1
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	17.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1869	78
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	2461	91
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.57	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.318
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	2461	Ramp Junction Speed (S), mi/h	62.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2552	Average Density (D), pc/mi/ln	20.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2714	70
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3650	82
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.83	0.04

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.431
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3650	Ramp Junction Speed (S), mi/h	58.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3732	Average Density (D), pc/mi/ln	31.7
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3173	75
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4273	88
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.63	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.459
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1469
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.649	Outer Lanes Freeway Speed (SO), mi/h	76.7
Flow in Lanes 1 and 2 (v12), pc/h	2804	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	22.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2703	380
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3640	445
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.54	0.24

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	19.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.491
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1121
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.649	Outer Lanes Freeway Speed (SO), mi/h	78.1
Flow in Lanes 1 and 2 (v12), pc/h	2519	Ramp Junction Speed (S), mi/h	62.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2541	107
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3379	125
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.50	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.463
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1074
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.670	Outer Lanes Freeway Speed (SO), mi/h	78.3
Flow in Lanes 1 and 2 (v12), pc/h	2305	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	17.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	1869	99
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	2514	116
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.56	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.462
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	2514	Ramp Junction Speed (S), mi/h	57.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2714	102
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3573	119
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.462
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3573	Ramp Junction Speed (S), mi/h	57.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	30.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3390	294
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4508	344
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.18

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	727.6	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.350
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1803
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.9
Flow in Lanes 1 and 2 (v12), pc/h	2705	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3049	Average Density (D), pc/mi/ln	25.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2738	324
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3687	379
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.60	0.20

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	559.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.320
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1475
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.1
Flow in Lanes 1 and 2 (v12), pc/h	2212	Ramp Junction Speed (S), mi/h	64.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	2591	Average Density (D), pc/mi/ln	21.1
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	20.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2852	146
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3755	171
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3755	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	3926	Average Density (D), pc/mi/ln	34.0
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3384	125
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4551	146
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	694.4	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	51.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4551	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4697	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	37.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3710	25
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4996	29
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.454
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1818
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.634	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3178	Ramp Junction Speed (S), mi/h	63.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	28.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3390	176
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4565	206
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.68	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	109.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.470
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1587
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.636	Outer Lanes Freeway Speed (SO), mi/h	76.3
Flow in Lanes 1 and 2 (v12), pc/h	2978	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2738	158
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3641	185
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.54	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.468
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1175
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.660	Outer Lanes Freeway Speed (SO), mi/h	77.9
Flow in Lanes 1 and 2 (v12), pc/h	2466	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2852	132
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3836	154
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.85	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.465
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3836	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3384	118
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4455	138
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.99	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.464
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4455	Ramp Junction Speed (S), mi/h	57.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	38.5
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4467	359
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5940	420
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.94	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1050.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.477
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2376
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	57.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	64.6
Flow in Lanes 1 and 2 (v12), pc/h	3564	Ramp Junction Speed (S), mi/h	60.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3984	Average Density (D), pc/mi/ln	35.3
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3668	371
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4939	434
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.23

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	839.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.384
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1976
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.3
Flow in Lanes 1 and 2 (v12), pc/h	2963	Ramp Junction Speed (S), mi/h	62.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	3397	Average Density (D), pc/mi/ln	28.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3350	200
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4411	234
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.03	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	683.3	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	51.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4411	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4645	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	36.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Ex + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3989	190
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5365	222
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.24	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	884.8	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	32.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5365	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5587	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	44.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4758	15
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6407	18
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.453
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2562
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.599	Outer Lanes Freeway Speed (SO), mi/h	72.5
Flow in Lanes 1 and 2 (v12), pc/h	3845	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.8
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4467	153
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6015	179
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.89	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	83.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.468
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2329
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.601	Outer Lanes Freeway Speed (SO), mi/h	73.4
Flow in Lanes 1 and 2 (v12), pc/h	3686	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	32.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3668	144
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4878	169
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.467
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1742
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.630	Outer Lanes Freeway Speed (SO), mi/h	75.7
Flow in Lanes 1 and 2 (v12), pc/h	3136	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.8
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3350	136
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4505	159
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.00	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.466
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4505	Ramp Junction Speed (S), mi/h	57.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	39.0
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	39.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Ex + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3989	114
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5252	133
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.17	0.07

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5252	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5252	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	45.8

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX L

WEEKDAY AND SATURDAY INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – OPENING YEAR (2023) + PROJECT PHASE 1 (ALTERNATIVE B)

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	0	3	30	18	35	3	11	0	2	80	12
Future Vol, veh/h	3	0	3	30	18	35	3	11	0	2	80	12
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	4	0	4	38	23	45	4	14	0	3	103	15

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	193	159	131	161	166	34	128	0	0	24	0	0
Stage 1	127	127	-	32	32	-	-	-	-	-	-	-
Stage 2	66	32	-	129	134	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	767	733	919	804	727	1039	1458	-	-	1591	-	-
Stage 1	877	791	-	984	868	-	-	-	-	-	-	-
Stage 2	945	868	-	875	785	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	699	715	902	782	709	1019	1444	-	-	1576	-	-
Mov Cap-2 Maneuver	699	715	-	782	709	-	-	-	-	-	-	-
Stage 1	866	782	-	972	857	-	-	-	-	-	-	-
Stage 2	868	857	-	861	776	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9.6	1.6	0.2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1444	-	-	788	753	1019	1576	-	-
HCM Lane V/C Ratio	0.003	-	-	0.01	0.082	0.044	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.6	10.2	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	303	4	33	573	0	2	0	3	0	0	0
Future Vol, veh/h	0	303	4	33	573	0	2	0	3	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	344	5	38	651	0	2	0	3	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	661	0	0	359	0	0	1094	1094	367	1095	1096	671
Stage 1	-	-	-	-	-	-	357	357	-	737	737	-
Stage 2	-	-	-	-	-	-	737	737	-	358	359	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	927	-	-	1200	-	-	191	214	678	191	213	456
Stage 1	-	-	-	-	-	-	661	628	-	410	425	-
Stage 2	-	-	-	-	-	-	410	425	-	660	627	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	918	-	-	1189	-	-	180	199	665	179	198	447
Mov Cap-2 Maneuver	-	-	-	-	-	-	180	199	-	179	198	-
Stage 1	-	-	-	-	-	-	654	622	-	406	400	-
Stage 2	-	-	-	-	-	-	386	400	-	650	621	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	16.5	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	320	918	-	-	1189	-	-	-
HCM Lane V/C Ratio	0.018	-	-	-	0.032	-	-	-
HCM Control Delay (s)	16.5	0	-	-	8.1	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	325	156	1	772	0	0	0	0	7	2	169
Future Vol, veh/h	0	325	156	1	772	0	0	0	0	7	2	169
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	401	193	1	953	0	0	0	0	9	2	209

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	411	0	0			1366	1366	963
Stage 1	-	-	-	-	-	-			955	955	-
Stage 2	-	-	-	-	-	-			411	411	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1148	-	0			162	147	310
Stage 1	0	-	0	-	-	0			374	337	-
Stage 2	0	-	0	-	-	0			669	595	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1148	-	-			162	0	307
Mov Cap-2 Maneuver	-	-	-	-	-	-			162	0	-
Stage 1	-	-	-	-	-	-			374	0	-
Stage 2	-	-	-	-	-	-			668	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	37.9
HCM LOS			E

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1148	-	162	307
HCM Lane V/C Ratio	-	0.001	-	0.069	0.68
HCM Control Delay (s)	-	8.1	0	28.9	38.4
HCM Lane LOS	-	A	A	D	E
HCM 95th %tile Q(veh)	-	0	-	0.2	4.6

Intersection	
Int Delay, s/veh	33.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	131	201	0	0	591	19	177	0	1	0	0	0
Future Vol, veh/h	131	201	0	0	591	19	177	0	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	149	228	0	0	672	22	201	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	682	0	-	-	-	0	1208	1208	238
Stage 1	-	-	-	-	-	-	526	526	-
Stage 2	-	-	-	-	-	-	682	682	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	911	-	0	0	-	0	202	183	801
Stage 1	-	-	0	0	-	0	593	529	-
Stage 2	-	-	0	0	-	0	502	450	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	911	-	-	-	-	-	~ 163	0	793
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 163	0	-
Stage 1	-	-	-	-	-	-	482	0	-
Stage 2	-	-	-	-	-	-	497	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.8	0	201.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	163	793	911	-	-
HCM Lane V/C Ratio	1.234	0.001	0.163	-	-
HCM Control Delay (s)	202.3	9.5	9.7	0	-
HCM Lane LOS	F	A	A	A	-
HCM 95th %tile Q(veh)	11.4	0	0.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	200	0	11	626	11	6
Future Vol, veh/h	200	0	11	626	11	6
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	217	0	12	680	12	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	227	0	941	129
Stage 1	-	-	-	-	227	-
Stage 2	-	-	-	-	714	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1340	-	277	897
Stage 1	-	-	-	-	790	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1327	-	269	880
Mov Cap-2 Maneuver	-	-	-	-	269	-
Stage 1	-	-	-	-	782	-
Stage 2	-	-	-	-	475	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	15.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	356	-	-	1327	-
HCM Lane V/C Ratio	0.052	-	-	0.009	-
HCM Control Delay (s)	15.7	-	-	7.7	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	11.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	12	437	39	0	29	0	0	57	87
Future Vol, veh/h	0	0	0	12	437	39	0	29	0	0	57	87
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	13	486	43	0	32	0	0	63	97

Major/Minor	Minor1		Major1			Major2			
Conflicting Flow All	105	105	42	73	0	-	-	-	0
Stage 1	32	32	-	-	-	-	-	-	-
Stage 2	73	73	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	893	785	1029	1527	-	0	0	-	0
Stage 1	991	868	-	-	-	0	0	-	0
Stage 2	950	834	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	884	0	1019	1527	-	-	-	-	-
Mov Cap-2 Maneuver	884	0	-	-	-	-	-	-	-
Stage 1	991	0	-	-	-	-	-	-	-
Stage 2	941	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1527	-	884	1019	-
HCM Lane V/C Ratio	-	-	0.564	0.043	-
HCM Control Delay (s)	0	-	14.2	8.7	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	3.6	0.1	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	10	167	0	2	102	19	0	0	0	28	42	0
Future Vol, veh/h	10	167	0	2	102	19	0	0	0	28	42	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	192	0	2	117	22	0	0	0	32	48	0

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	149	0	-	202	0	0			366	366	148
Stage 1	-	-	-	-	-	-			142	142	-
Stage 2	-	-	-	-	-	-			224	224	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1432	-	0	1370	-	-			634	562	899
Stage 1	-	-	0	-	-	-			885	779	-
Stage 2	-	-	0	-	-	-			813	718	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1418	-	-	1370	-	-			615	0	882
Mov Cap-2 Maneuver	-	-	-	-	-	-			615	0	-
Stage 1	-	-	-	-	-	-			869	0	-
Stage 2	-	-	-	-	-	-			803	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0.1	11.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1418	-	1370	-	-	615
HCM Lane V/C Ratio	0.008	-	0.002	-	-	0.131
HCM Control Delay (s)	7.6	-	7.6	0	-	11.7
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.4

Intersection	
Intersection Delay, s/veh	8.3
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	17	1	107	2	25	0	169
Future Vol, veh/h	0	0	0	0	1	17	1	107	2	25	0	169
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	23	1	143	3	33	0	225
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.6	9	8
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	97%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	110	1	17	25	169
LT Vol	1	0	0	25	0
Through Vol	107	1	0	0	0
RT Vol	2	0	17	0	169
Lane Flow Rate	147	1	23	33	225
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.194	0.002	0.03	0.048	0.247
Departure Headway (Hd)	4.753	5.431	4.726	5.148	3.946
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	748	663	762	692	904
Service Time	2.825	3.131	2.426	2.907	1.704
HCM Lane V/C Ratio	0.197	0.002	0.03	0.048	0.249
HCM Control Delay	9	8.1	7.6	8.2	8
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.7	0	0.1	0.2	1

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	1	0	11	1	15	2	109	0	15	14	3
Future Vol, veh/h	53	1	0	11	1	15	2	109	0	15	14	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	56	1	0	12	1	16	2	115	0	16	15	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	197	188	37	188	189	135	28	0	0	125	0	0
Stage 1	59	59	-	129	129	-	-	-	-	-	-	-
Stage 2	138	129	-	59	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	762	707	1035	772	706	914	1585	-	-	1462	-	-
Stage 1	953	846	-	875	789	-	-	-	-	-	-	-
Stage 2	865	789	-	953	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	727	684	1015	750	683	897	1570	-	-	1448	-	-
Mov Cap-2 Maneuver	727	684	-	750	683	-	-	-	-	-	-	-
Stage 1	943	828	-	865	780	-	-	-	-	-	-	-
Stage 2	840	780	-	932	827	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.4	9.5	0.1	3.5
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1570	-	-	726	744	897	1448	-	-
HCM Lane V/C Ratio	0.001	-	-	0.078	0.017	0.018	0.011	-	-
HCM Control Delay (s)	7.3	0	-	10.4	9.9	9.1	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	351	3	4	142	0	2	0	22	0	0	0
Future Vol, veh/h	0	351	3	4	142	0	2	0	22	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	390	3	4	158	0	2	0	24	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	168	0	0	403	0	0	578	578	412	590	579	178
Stage 1	-	-	-	-	-	-	402	402	-	176	176	-
Stage 2	-	-	-	-	-	-	176	176	-	414	403	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1410	-	-	1156	-	-	427	427	640	419	426	865
Stage 1	-	-	-	-	-	-	625	600	-	826	753	-
Stage 2	-	-	-	-	-	-	826	753	-	616	600	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1397	-	-	1145	-	-	418	417	628	394	416	849
Mov Cap-2 Maneuver	-	-	-	-	-	-	418	417	-	394	416	-
Stage 1	-	-	-	-	-	-	619	594	-	818	742	-
Stage 2	-	-	-	-	-	-	815	742	-	586	594	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	11.2	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	603	1397	-	-	1145	-	-	-
HCM Lane V/C Ratio	0.044	-	-	-	0.004	-	-	-
HCM Control Delay (s)	11.2	0	-	-	8.2	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	557	170	1	422	0	0	0	0	2	0	150
Future Vol, veh/h	0	557	170	1	422	0	0	0	0	2	0	150
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	640	195	1	485	0	0	0	0	2	0	172

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	650	0	0			1137	1137	495
Stage 1	-	-	-	-	-	-			487	487	-
Stage 2	-	-	-	-	-	-			650	650	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	936	-	0			223	202	575
Stage 1	0	-	0	-	-	0			618	550	-
Stage 2	0	-	0	-	-	0			520	465	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	936	-	-			223	0	570
Mov Cap-2 Maneuver	-	-	-	-	-	-			223	0	-
Stage 1	-	-	-	-	-	-			618	0	-
Stage 2	-	-	-	-	-	-			519	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	14.1
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	936	-	223	570
HCM Lane V/C Ratio	-	0.001	-	0.01	0.302
HCM Control Delay (s)	-	8.9	0	21.3	14
HCM Lane LOS	-	A	A	C	B
HCM 95th %tile Q(veh)	-	0	-	0	1.3

Intersection	
Int Delay, s/veh	10.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	119	439	0	0	286	26	137	1	1	0	0	0
Future Vol, veh/h	119	439	0	0	286	26	137	1	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	134	493	0	0	321	29	154	1	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	331	0	-	-	-	0	1092	1092	503
Stage 1	-	-	-	-	-	-	761	761	-
Stage 2	-	-	-	-	-	-	331	331	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1228	-	0	0	-	0	237	215	569
Stage 1	-	-	0	0	-	0	461	414	-
Stage 2	-	-	0	0	-	0	728	645	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1228	-	-	-	-	-	200	0	564
Mov Cap-2 Maneuver	-	-	-	-	-	-	200	0	-
Stage 1	-	-	-	-	-	-	392	0	-
Stage 2	-	-	-	-	-	-	721	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.8	0	66
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	200	564	1228	-	-
HCM Lane V/C Ratio	0.775	0.002	0.109	-	-
HCM Control Delay (s)	66.4	11.4	8.3	0	-
HCM Lane LOS	F	B	A	A	-
HCM 95th %tile Q(veh)	5.3	0	0.4	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	440	0	6	319	11	6
Future Vol, veh/h	440	0	6	319	11	6
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	478	0	7	347	12	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	488	0	859	259
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	371	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1073	-	311	741
Stage 1	-	-	-	-	584	-
Stage 2	-	-	-	-	697	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1063	-	303	727
Mov Cap-2 Maneuver	-	-	-	-	303	-
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	686	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	382	-	-	1063	-
HCM Lane V/C Ratio	0.048	-	-	0.006	-
HCM Control Delay (s)	14.9	-	-	8.4	-
HCM Lane LOS	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	161	35	0	125	0	0	61	22
Future Vol, veh/h	0	0	0	4	161	35	0	125	0	0	61	22
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	4	173	38	0	134	0	0	66	24

Major/Minor	Minor1		Major1		Major2				
Conflicting Flow All	210	210	144	76	0	-	-	-	0
Stage 1	134	134	-	-	-	-	-	-	-
Stage 2	76	76	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	778	687	903	1523	-	0	0	-	0
Stage 1	892	785	-	-	-	0	0	-	0
Stage 2	947	832	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	770	0	894	1523	-	-	-	-	-
Mov Cap-2 Maneuver	770	0	-	-	-	-	-	-	-
Stage 1	892	0	-	-	-	-	-	-	-
Stage 2	938	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1523	-	770	894	-
HCM Lane V/C Ratio	-	-	0.23	0.042	-
HCM Control Delay (s)	0	-	11.1	9.2	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	0.9	0.1	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	83	311	0	8	137	43	0	0	0	32	32	1
Future Vol, veh/h	83	311	0	8	137	43	0	0	0	32	32	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	357	0	9	157	49	0	0	0	37	37	1

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	216	0	-	367	0	0			767	767	202
Stage 1	-	-	-	-	-	-			210	210	-
Stage 2	-	-	-	-	-	-			557	557	-
Critical Hdwy	4.12	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	1354	-	0	1192	-	-			370	332	839
Stage 1	-	-	0	-	-	-			825	728	-
Stage 2	-	-	0	-	-	-			574	512	-
Platoon blocked, %		-			-	-					
Mov Cap-1 Maneuver	1341	-	-	1192	-	-			334	0	823
Mov Cap-2 Maneuver	-	-	-	-	-	-			334	0	-
Stage 1	-	-	-	-	-	-			759	0	-
Stage 2	-	-	-	-	-	-			564	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0.3	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1341	-	1192	-	-	340
HCM Lane V/C Ratio	0.071	-	0.008	-	-	0.22
HCM Control Delay (s)	7.9	-	8	0	-	18.5
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.2	-	0	-	-	0.8

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	42	28	2	160	1	22	0	321
Future Vol, veh/h	0	0	0	0	42	28	2	160	1	22	0	321
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	48	32	2	182	1	25	0	365
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.6	10	9.9
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	163	42	28	22	321
LT Vol	2	0	0	22	0
Through Vol	160	42	0	0	0
RT Vol	1	0	28	0	321
Lane Flow Rate	185	48	32	25	365
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.264	0.077	0.045	0.038	0.427
Departure Headway (Hd)	5.133	5.807	5.101	5.416	4.211
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	700	616	700	663	857
Service Time	3.161	3.549	2.843	3.136	1.931
HCM Lane V/C Ratio	0.264	0.078	0.046	0.038	0.426
HCM Control Delay	10	9	8.1	8.4	10
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	1.1	0.2	0.1	0.1	2.2

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	2	2	12	2	119	0	15	11	3
Future Vol, veh/h	0	0	0	2	2	12	2	119	0	15	11	3
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	3	3	16	3	159	0	20	15	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	252	242	37	242	244	179	29	0	0	169	0	0
Stage 1	67	67	-	175	175	-	-	-	-	-	-	-
Stage 2	185	175	-	67	69	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	701	660	1035	712	658	864	1584	-	-	1409	-	-
Stage 1	943	839	-	827	754	-	-	-	-	-	-	-
Stage 2	817	754	-	943	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	665	636	1015	690	634	848	1569	-	-	1396	-	-
Mov Cap-2 Maneuver	665	636	-	690	634	-	-	-	-	-	-	-
Stage 1	932	819	-	817	745	-	-	-	-	-	-	-
Stage 2	790	745	-	921	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	9.6	0.1	3.9
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1569	-	-	-	661	848	1396	-	-
HCM Lane V/C Ratio	0.002	-	-	-	0.008	0.019	0.014	-	-
HCM Control Delay (s)	7.3	0	-	0	10.5	9.3	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	-	0	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	274	0	8	94	0	2	1	20	0	0	0
Future Vol, veh/h	0	274	0	8	94	0	2	1	20	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	308	0	9	106	0	2	1	22	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	116	0	0	318	0	0	452	452	328	464	452	126
Stage 1	-	-	-	-	-	-	318	318	-	134	134	-
Stage 2	-	-	-	-	-	-	134	134	-	330	318	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1473	-	-	1242	-	-	518	503	713	508	503	924
Stage 1	-	-	-	-	-	-	693	654	-	869	785	-
Stage 2	-	-	-	-	-	-	869	785	-	683	654	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1459	-	-	1230	-	-	505	489	699	479	489	906
Mov Cap-2 Maneuver	-	-	-	-	-	-	505	489	-	479	489	-
Stage 1	-	-	-	-	-	-	686	647	-	860	771	-
Stage 2	-	-	-	-	-	-	854	771	-	654	647	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.6	10.6	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	664	1459	-	-	1230	-	-	-
HCM Lane V/C Ratio	0.039	-	-	-	0.007	-	-	-
HCM Control Delay (s)	10.6	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	714	204	2	361	0	0	0	0	1	1	137
Future Vol, veh/h	0	714	204	2	361	0	0	0	0	1	1	137
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	860	246	2	435	0	0	0	0	1	1	165

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	870	0	0			1309	1309	445
Stage 1	-	-	-	-	-	-			439	439	-
Stage 2	-	-	-	-	-	-			870	870	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	775	-	0			176	159	613
Stage 1	0	-	0	-	-	0			650	578	-
Stage 2	0	-	0	-	-	0			410	369	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	775	-	-			175	0	607
Mov Cap-2 Maneuver	-	-	-	-	-	-			175	0	-
Stage 1	-	-	-	-	-	-			650	0	-
Stage 2	-	-	-	-	-	-			409	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0.1	13.3
HCM LOS			B

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	775	-	175	607
HCM Lane V/C Ratio	-	0.003	-	0.014	0.272
HCM Control Delay (s)	-	9.7	0	25.9	13.1
HCM Lane LOS	-	A	A	D	B
HCM 95th %tile Q(veh)	-	0	-	0	1.1

Intersection	
Int Delay, s/veh	15.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↰			↑	↱		↰	↱			
Traffic Vol, veh/h	168	547	0	0	246	25	117	0	0	0	0	0
Future Vol, veh/h	168	547	0	0	246	25	117	0	0	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	191	622	0	0	280	28	133	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	290	0	-	-	-	0	1294	1294	632
Stage 1	-	-	-	-	-	-	1004	1004	-
Stage 2	-	-	-	-	-	-	290	290	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1272	-	0	0	-	0	179	163	480
Stage 1	-	-	0	0	-	0	354	320	-
Stage 2	-	-	0	0	-	0	759	672	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1272	-	-	-	-	-	137	0	475
Mov Cap-2 Maneuver	-	-	-	-	-	-	137	0	-
Stage 1	-	-	-	-	-	-	273	0	-
Stage 2	-	-	-	-	-	-	751	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2	0	132
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	137	-	1272	-	-
HCM Lane V/C Ratio	0.97	-	0.15	-	-
HCM Control Delay (s)	132	0	8.3	0	-
HCM Lane LOS	F	A	A	A	-
HCM 95th %tile Q(veh)	6.8	-	0.5	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	547	0	6	277	11	6
Future Vol, veh/h	547	0	6	277	11	6
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	595	0	7	301	12	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	605	0	930	318
Stage 1	-	-	-	-	605	-
Stage 2	-	-	-	-	325	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	971	-	281	679
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	731	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	962	-	273	666
Mov Cap-2 Maneuver	-	-	-	-	273	-
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	719	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	16
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	345	-	-	962	-
HCM Lane V/C Ratio	0.054	-	-	0.007	-
HCM Control Delay (s)	16	-	-	8.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	4	132	22	0	138	0	0	51	9
Future Vol, veh/h	0	0	0	4	132	22	0	138	0	0	51	9
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	67	67	67	67	67	67	67	67	67	67	67	67
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	6	197	33	0	206	0	0	76	13

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	292	292	216	86	0	-	-	-	0	
Stage 1	206	206	-	-	-	-	-	-	-	
Stage 2	86	86	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	699	619	824	1510	-	0	0	-	0	
Stage 1	829	731	-	-	-	0	0	-	0	
Stage 2	937	824	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	692	0	816	1510	-	-	-	-	-	
Mov Cap-2 Maneuver	692	0	-	-	-	-	-	-	-	
Stage 1	829	0	-	-	-	-	-	-	-	
Stage 2	928	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	11.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1510	-	692	816	-
HCM Lane V/C Ratio	-	-	0.293	0.04	-
HCM Control Delay (s)	0	-	12.3	9.6	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	1.2	0.1	-

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	120	382	0	8	136	18	0	0	0	22	33	0
Future Vol, veh/h	120	382	0	8	136	18	0	0	0	22	33	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	66	66	66	66	66	66	66	66	66	66	66	66
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	182	579	0	12	206	27	0	0	0	33	50	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	243	0	-	589	0	0	1207	1207	240
Stage 1	-	-	-	-	-	-	254	254	-
Stage 2	-	-	-	-	-	-	953	953	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1323	-	0	986	-	-	203	183	799
Stage 1	-	-	0	-	-	-	788	697	-
Stage 2	-	-	0	-	-	-	375	338	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1310	-	-	986	-	-	169	0	784
Mov Cap-2 Maneuver	-	-	-	-	-	-	169	0	-
Stage 1	-	-	-	-	-	-	671	0	-
Stage 2	-	-	-	-	-	-	366	0	-

Approach	EB	WB	SB
HCM Control Delay, s	2	0.4	45.4
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1310	-	986	-	-	169
HCM Lane V/C Ratio	0.139	-	0.012	-	-	0.493
HCM Control Delay (s)	8.2	-	8.7	0	-	45.4
HCM Lane LOS	A	-	A	A	-	E
HCM 95th %tile Q(veh)	0.5	-	0	-	-	2.4

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	20	17	0	145	3	31	0	373
Future Vol, veh/h	0	0	0	0	20	17	0	145	3	31	0	373
Peak Hour Factor	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73	0.73
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	27	23	0	199	4	42	0	511
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.8	10.3	12.4
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	0%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	148	20	17	31	373
LT Vol	0	0	0	31	0
Through Vol	145	20	0	0	0
RT Vol	3	0	17	0	373
Lane Flow Rate	203	27	23	42	511
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.292	0.047	0.035	0.063	0.589
Departure Headway (Hd)	5.184	6.152	5.444	5.352	4.148
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	693	581	656	671	874
Service Time	3.209	3.899	3.191	3.069	1.864
HCM Lane V/C Ratio	0.293	0.046	0.035	0.063	0.585
HCM Control Delay	10.3	9.2	8.4	8.4	12.7
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.2	0.1	0.1	0.2	3.9

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	NT + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2970	267
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3949	312
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.63	0.17

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	601.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.325
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1580
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.7
Flow in Lanes 1 and 2 (v12), pc/h	2369	Ramp Junction Speed (S), mi/h	64.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	2681	Average Density (D), pc/mi/ln	22.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	21.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	NT + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2800	173
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	3771	202
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	539.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.314
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1508
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	62.3
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	68.0
Flow in Lanes 1 and 2 (v12), pc/h	2263	Ramp Junction Speed (S), mi/h	64.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	2465	Average Density (D), pc/mi/ln	20.6
Level of Service (LOS)	B	Density in Ramp Influence Area (DR), pc/mi/ln	19.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	NT + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2060	164
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	2712	192
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.64	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.339
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	2712	Ramp Junction Speed (S), mi/h	61.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	2904	Average Density (D), pc/mi/ln	23.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	NT + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2990	153
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4021	179
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.93	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.528
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	56.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	4021	Ramp Junction Speed (S), mi/h	56.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	4200	Average Density (D), pc/mi/ln	37.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3490	80
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4700	94
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.70	0.05

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.460
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1667
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.638	Outer Lanes Freeway Speed (SO), mi/h	75.9
Flow in Lanes 1 and 2 (v12), pc/h	3033	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2980	484
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4013	566
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.30

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	19.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.502
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1262
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	56.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.634	Outer Lanes Freeway Speed (SO), mi/h	77.5
Flow in Lanes 1 and 2 (v12), pc/h	2751	Ramp Junction Speed (S), mi/h	61.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.6
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2800	184
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	3723	215
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.55	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.471
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1203
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.657	Outer Lanes Freeway Speed (SO), mi/h	77.8
Flow in Lanes 1 and 2 (v12), pc/h	2520	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	19.7
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2060	174
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	2771	204
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.61	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.470
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	2771	Ramp Junction Speed (S), mi/h	57.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	2990	179
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3937	209
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.470
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3937	Ramp Junction Speed (S), mi/h	57.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	34.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	NT + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3730	310
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4960	363
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.19

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	828.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.378
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1984
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.3
Flow in Lanes 1 and 2 (v12), pc/h	2976	Ramp Junction Speed (S), mi/h	62.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	3339	Average Density (D), pc/mi/ln	28.4
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	NT + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3010	369
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4053	432
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.66	0.23

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	649.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.336
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1621
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.6
Flow in Lanes 1 and 2 (v12), pc/h	2432	Ramp Junction Speed (S), mi/h	63.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	2864	Average Density (D), pc/mi/ln	23.5
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	NT + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3140	170
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4134	199
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.96	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.565
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	4134	Ramp Junction Speed (S), mi/h	54.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	4333	Average Density (D), pc/mi/ln	39.5
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	NT + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3720	149
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5003	174
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.15	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	797.1	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	43.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5003	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5177	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	40.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4080	30
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5494	35
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.81	0.02

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.455
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2069
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.621	Outer Lanes Freeway Speed (SO), mi/h	74.4
Flow in Lanes 1 and 2 (v12), pc/h	3425	Ramp Junction Speed (S), mi/h	63.3
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.1

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3730	197
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5023	231
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	110.8	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.472
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1802
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.624	Outer Lanes Freeway Speed (SO), mi/h	75.4
Flow in Lanes 1 and 2 (v12), pc/h	3221	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	26.6
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3020	177
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4016	207
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.59	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.470
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1333
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.650	Outer Lanes Freeway Speed (SO), mi/h	77.2
Flow in Lanes 1 and 2 (v12), pc/h	2683	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	21.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	23.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3130	157
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4210	184
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.93	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.468
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	4210	Ramp Junction Speed (S), mi/h	57.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	36.5
Level of Service (LOS)	E	Density in Ramp Influence Area (DR), pc/mi/ln	36.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3730	135
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4911	158
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.09	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4911	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4911	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	42.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	NT + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4910	375
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	6529	439
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	1.03	0.23

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1180.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	2612
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	54.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	3917	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4356	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	34.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	NT + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4030	395
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5427	462
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.25

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	949.5	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.428
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2171
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	65.6
Flow in Lanes 1 and 2 (v12), pc/h	3256	Ramp Junction Speed (S), mi/h	61.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3718	Average Density (D), pc/mi/ln	32.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	NT + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3690	204
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4858	239
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.13	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	780.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	44.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4858	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5097	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	40.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	NT + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4390	195
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5904	228
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.36	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1001.5	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	10.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5904	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	6132	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	48.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	NT + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	5230	20
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	7043	23
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	1.04	0.01

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	19.2	Flow Outer Lanes (vOA), pc/h/ln	2700
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.583	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4343	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4343	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4910	161
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6612	188
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.98	0.10

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	84.1	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.468
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2660
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.586	Outer Lanes Freeway Speed (SO), mi/h	72.1
Flow in Lanes 1 and 2 (v12), pc/h	3952	Ramp Junction Speed (S), mi/h	62.7
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	35.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	34.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4030	151
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5359	177
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.79	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.467
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1980
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.618	Outer Lanes Freeway Speed (SO), mi/h	74.7
Flow in Lanes 1 and 2 (v12), pc/h	3379	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.3
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	29.7

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3680	141
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4949	165
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.10	0.09

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4949	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4949	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	43.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	NT + P Alt B P1 Weekend PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4380	121
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5767	142
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.28	0.08

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5767	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5767	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	50.2

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX M

INTERSECTION AND RAMP MERGE / DIVERGE ANALYSIS WORKSHEETS – YEAR 2040 WITH ENTIRE PROJECT (ALTERNATIVE B)

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	0	4	35	21	41	4	13	0	2	94	14
Future Vol, veh/h	4	0	4	35	21	41	4	13	0	2	94	14
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	78	78	78	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	0	5	45	27	53	5	17	0	3	121	18

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	223	183	150	186	192	37	149	0	0	27	0	0
Stage 1	146	146	-	37	37	-	-	-	-	-	-	-
Stage 2	77	37	-	149	155	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	733	711	896	775	703	1035	1432	-	-	1587	-	-
Stage 1	857	776	-	978	864	-	-	-	-	-	-	-
Stage 2	932	864	-	854	769	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	658	693	879	753	685	1015	1418	-	-	1572	-	-
Mov Cap-2 Maneuver	658	693	-	753	685	-	-	-	-	-	-	-
Stage 1	846	767	-	965	852	-	-	-	-	-	-	-
Stage 2	844	852	-	839	760	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.8	9.7	1.8	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1418	-	-	753	726	1015	1572	-	-
HCM Lane V/C Ratio	0.004	-	-	0.014	0.099	0.052	0.002	-	-
HCM Control Delay (s)	7.5	0	-	9.8	10.5	8.7	7.3	0	-
HCM Lane LOS	A	A	-	A	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0.3	0.2	0	-	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	354	5	39	670	0	2	0	4	0	0	0
Future Vol, veh/h	0	354	5	39	670	0	2	0	4	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	402	6	44	761	0	2	0	5	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	771	0	0	418	0	0	1274	1274	425	1277	1277	781
Stage 1	-	-	-	-	-	-	415	415	-	859	859	-
Stage 2	-	-	-	-	-	-	859	859	-	418	418	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	844	-	-	1141	-	-	144	167	629	143	166	395
Stage 1	-	-	-	-	-	-	615	592	-	351	373	-
Stage 2	-	-	-	-	-	-	351	373	-	612	591	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	836	-	-	1130	-	-	134	153	617	132	152	388
Mov Cap-2 Maneuver	-	-	-	-	-	-	134	153	-	132	152	-
Stage 1	-	-	-	-	-	-	609	586	-	347	345	-
Stage 2	-	-	-	-	-	-	324	345	-	602	585	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	18.2	0
HCM LOS			C	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	280	836	-	-	1130	-	-	-
HCM Lane V/C Ratio	0.024	-	-	-	0.039	-	-	-
HCM Control Delay (s)	18.2	0	-	-	8.3	0	-	0
HCM Lane LOS	C	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

Intersection	
Int Delay, s/veh	11.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	372	180	1	891	0	0	0	0	8	2	194
Future Vol, veh/h	0	372	180	1	891	0	0	0	0	8	2	194
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	81	81	81	81	81	81	81	81	81	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	459	222	1	1100	0	0	0	0	10	2	240

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	-	469	0	0			1571	1571	1110
Stage 1	-	-	-	-	-	-			1102	1102	-
Stage 2	-	-	-	-	-	-			469	469	-
Critical Hdwy	-	-	-	4.12	-	-			6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-			5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	1093	-	0			122	110	255
Stage 1	0	-	0	-	-	0			318	287	-
Stage 2	0	-	0	-	-	0			630	561	-
Platoon blocked, %		-			-						
Mov Cap-1 Maneuver	-	-	-	1093	-	-			122	0	253
Mov Cap-2 Maneuver	-	-	-	-	-	-			122	0	-
Stage 1	-	-	-	-	-	-			318	0	-
Stage 2	-	-	-	-	-	-			629	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	83.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	1093	-	122	253
HCM Lane V/C Ratio	-	0.001	-	0.101	0.947
HCM Control Delay (s)	-	8.3	0	37.8	86
HCM Lane LOS	-	A	A	E	F
HCM 95th %tile Q(veh)	-	0	-	0.3	8.7

Intersection	
Int Delay, s/veh	89.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	150	229	0	0	683	22	209	0	1	0	0	0
Future Vol, veh/h	150	229	0	0	683	22	209	0	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	88	88	88	88	88	88	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	260	0	0	776	25	238	0	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	786	0	-	-	-	0	1386	1386	270
Stage 1	-	-	-	-	-	-	600	600	-
Stage 2	-	-	-	-	-	-	786	786	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	833	-	0	0	-	0	~ 158	143	769
Stage 1	-	-	0	0	-	0	548	490	-
Stage 2	-	-	0	0	-	0	449	403	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	833	-	-	-	-	-	~ 119	0	762
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 119	0	-
Stage 1	-	-	-	-	-	-	417	0	-
Stage 2	-	-	-	-	-	-	445	0	-

Approach	EB	WB	NB
HCM Control Delay, s	4.1	0	$ 535
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	119	762	833	-	-
HCM Lane V/C Ratio	1.996	0.001	0.205	-	-
HCM Control Delay (s)	$ 537.5	9.7	10.4	0	-
HCM Lane LOS	F	A	B	A	-
HCM 95th %tile Q(veh)	19.4	0	0.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	228	0	13	724	13	7
Future Vol, veh/h	228	0	13	724	13	7
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	248	0	14	787	14	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	258	0	1083	144
Stage 1	-	-	-	-	258	-
Stage 2	-	-	-	-	825	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1305	-	226	878
Stage 1	-	-	-	-	762	-
Stage 2	-	-	-	-	429	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1293	-	219	861
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	754	-
Stage 2	-	-	-	-	420	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	296	-	-	1293	-
HCM Lane V/C Ratio	0.073	-	-	0.011	-
HCM Control Delay (s)	18.1	-	-	7.8	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	14

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	14	507	46	0	34	0	0	67	102
Future Vol, veh/h	0	0	0	14	507	46	0	34	0	0	67	102
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	16	563	51	0	38	0	0	74	113

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	122	122	48	84	0	-	-	-	0	
Stage 1	38	38	-	-	-	-	-	-	-	
Stage 2	84	84	-	-	-	-	-	-	-	
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-	
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-	
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-	
Pot Cap-1 Maneuver	873	768	1021	1513	-	0	0	-	0	
Stage 1	984	863	-	-	-	0	0	-	0	
Stage 2	939	825	-	-	-	0	0	-	0	
Platoon blocked, %					-			-		
Mov Cap-1 Maneuver	864	0	1011	1513	-	-	-	-	-	
Mov Cap-2 Maneuver	864	0	-	-	-	-	-	-	-	
Stage 1	984	0	-	-	-	-	-	-	-	
Stage 2	930	0	-	-	-	-	-	-	-	

Approach	WB	NB	SB
HCM Control Delay, s	16.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1513	-	864	1011	-
HCM Lane V/C Ratio	-	-	0.67	0.051	-
HCM Control Delay (s)	0	-	17.2	8.8	-
HCM Lane LOS	A	-	C	A	-
HCM 95th %tile Q(veh)	0	-	5.3	0.2	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	193	0	2	115	22	0	0	0	33	49	0
Future Vol, veh/h	12	193	0	2	115	22	0	0	0	33	49	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	222	0	2	132	25	0	0	0	38	56	0

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	167	0	-	232	0	0	419	419	165
Stage 1	-	-	-	-	-	-	159	159	-
Stage 2	-	-	-	-	-	-	260	260	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1411	-	0	1336	-	-	591	525	879
Stage 1	-	-	0	-	-	-	870	766	-
Stage 2	-	-	0	-	-	-	783	693	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1398	-	-	1336	-	-	572	0	862
Mov Cap-2 Maneuver	-	-	-	-	-	-	572	0	-
Stage 1	-	-	-	-	-	-	853	0	-
Stage 2	-	-	-	-	-	-	774	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0.4	0.1	12.5
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1398	-	1336	-	-	572
HCM Lane V/C Ratio	0.01	-	0.002	-	-	0.165
HCM Control Delay (s)	7.6	-	7.7	0	-	12.5
HCM Lane LOS	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0	-	0	-	-	0.6

Intersection	
Intersection Delay, s/veh	8.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	1	20	1	121	2	29	0	195
Future Vol, veh/h	0	0	0	0	1	20	1	121	2	29	0	195
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	1	27	1	161	3	39	0	260
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	7.7	9.2	8.3
HCM LOS	A	A	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	2%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	124	1	20	29	195
LT Vol	1	0	0	29	0
Through Vol	121	1	0	0	0
RT Vol	2	0	20	0	195
Lane Flow Rate	165	1	27	39	260
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.22	0.002	0.036	0.055	0.286
Departure Headway (Hd)	4.79	5.554	4.85	5.166	3.964
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	741	648	743	688	897
Service Time	2.874	3.254	2.55	2.934	1.731
HCM Lane V/C Ratio	0.223	0.002	0.036	0.057	0.29
HCM Control Delay	9.2	8.3	7.7	8.2	8.3
HCM Lane LOS	A	A	A	A	A
HCM 95th-tile Q	0.8	0	0.1	0.2	1.2

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	62	1	0	13	1	18	2	128	0	18	16	4
Future Vol, veh/h	62	1	0	13	1	18	2	128	0	18	16	4
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	60	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	65	1	0	14	1	19	2	135	0	19	17	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	226	216	39	217	218	155	31	0	0	145	0	0
Stage 1	67	67	-	149	149	-	-	-	-	-	-	-
Stage 2	159	149	-	68	69	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	729	682	1033	739	680	891	1582	-	-	1437	-	-
Stage 1	943	839	-	854	774	-	-	-	-	-	-	-
Stage 2	843	774	-	942	837	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	691	658	1013	716	656	874	1567	-	-	1423	-	-
Mov Cap-2 Maneuver	691	658	-	716	656	-	-	-	-	-	-	-
Stage 1	933	819	-	845	765	-	-	-	-	-	-	-
Stage 2	815	765	-	919	817	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	9.6	0.1	3.6
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1567	-	-	690	711	874	1423	-	-
HCM Lane V/C Ratio	0.001	-	-	0.096	0.021	0.022	0.013	-	-
HCM Control Delay (s)	7.3	0	-	10.8	10.2	9.2	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.3	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	408	4	5	165	0	2	0	26	0	0	0
Future Vol, veh/h	0	408	4	5	165	0	2	0	26	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	453	4	6	183	0	2	0	29	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	193	0	0	467	0	0	670	670	475	685	672	203
Stage 1	-	-	-	-	-	-	465	465	-	205	205	-
Stage 2	-	-	-	-	-	-	205	205	-	480	467	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1380	-	-	1094	-	-	371	378	590	362	377	838
Stage 1	-	-	-	-	-	-	578	563	-	797	732	-
Stage 2	-	-	-	-	-	-	797	732	-	567	562	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1367	-	-	1084	-	-	362	368	579	336	367	822
Mov Cap-2 Maneuver	-	-	-	-	-	-	362	368	-	336	367	-
Stage 1	-	-	-	-	-	-	572	557	-	789	720	-
Stage 2	-	-	-	-	-	-	785	720	-	534	556	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.2	11.9	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	555	1367	-	-	1084	-	-	-
HCM Lane V/C Ratio	0.056	-	-	-	0.005	-	-	-
HCM Control Delay (s)	11.9	0	-	-	8.3	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.2	0	-	-	0	-	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑	↱		↰						↰	↱
Traffic Vol, veh/h	0	635	196	1	460	0	0	0	0	2	0	163
Future Vol, veh/h	0	635	196	1	460	0	0	0	0	2	0	163
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	Free	-	-	None	-	-	None	-	-	None
Storage Length	-	-	70	-	-	-	-	-	-	-	-	50
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	730	225	1	529	0	0	0	0	2	0	187

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	-	740	0	0	1271	1271	539
Stage 1	-	-	-	-	-	-	531	531	-
Stage 2	-	-	-	-	-	-	740	740	-
Critical Hdwy	-	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	-	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	0	-	0	867	-	0	185	168	542
Stage 1	0	-	0	-	-	0	590	526	-
Stage 2	0	-	0	-	-	0	472	423	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	-	-	-	867	-	-	185	0	537
Mov Cap-2 Maneuver	-	-	-	-	-	-	185	0	-
Stage 1	-	-	-	-	-	-	590	0	-
Stage 2	-	-	-	-	-	-	471	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	867	-	185	537
HCM Lane V/C Ratio	-	0.001	-	0.012	0.349
HCM Control Delay (s)	-	9.2	0	24.7	15.3
HCM Lane LOS	-	A	A	C	C
HCM 95th %tile Q(veh)	-	0	-	0	1.6

Intersection	
Int Delay, s/veh	21.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↵			↑	↱		↵	↱			
Traffic Vol, veh/h	134	504	0	0	311	30	151	1	1	0	0	0
Future Vol, veh/h	134	504	0	0	311	30	151	1	1	0	0	0
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	None
Storage Length	-	-	-	-	-	85	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	151	566	0	0	349	34	170	1	1	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	359	0	-	-	-	0	1227	1227	576
Stage 1	-	-	-	-	-	-	868	868	-
Stage 2	-	-	-	-	-	-	359	359	-
Critical Hdwy	4.12	-	-	-	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	-	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1200	-	0	0	-	0	197	178	517
Stage 1	-	-	0	0	-	0	411	370	-
Stage 2	-	-	0	0	-	0	707	627	-
Platoon blocked, %		-			-				
Mov Cap-1 Maneuver	1200	-	-	-	-	-	~ 159	0	512
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 159	0	-
Stage 1	-	-	-	-	-	-	335	0	-
Stage 2	-	-	-	-	-	-	700	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.8	0	149.4
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT
Capacity (veh/h)	159	512	1200	-	-
HCM Lane V/C Ratio	1.074	0.002	0.125	-	-
HCM Control Delay (s)	150.3	12	8.4	0	-
HCM Lane LOS	F	B	A	A	-
HCM 95th %tile Q(veh)	8.8	0	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	0.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	505	0	7	349	13	7
Future Vol, veh/h	505	0	7	349	13	7
Conflicting Peds, #/hr	0	10	10	0	10	10
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	160	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	549	0	8	379	14	8

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	559	0	964	295
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	405	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1010	-	268	702
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	673	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1000	-	260	689
Mov Cap-2 Maneuver	-	-	-	-	260	-
Stage 1	-	-	-	-	532	-
Stage 2	-	-	-	-	662	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	16.6
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	332	-	-	1000	-
HCM Lane V/C Ratio	0.065	-	-	0.008	-
HCM Control Delay (s)	16.6	-	-	8.6	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	5	176	41	0	146	0	0	71	26
Future Vol, veh/h	0	0	0	5	176	41	0	146	0	0	71	26
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	Yield	-	-	None	-	-	Free
Storage Length	-	-	-	-	-	100	-	-	-	-	-	-
Veh in Median Storage, #	-	2	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	5	189	44	0	157	0	0	76	28

Major/Minor	Minor1			Major1			Major2			
Conflicting Flow All	243	243	167	86	0	-	-	-	0
Stage 1	157	157	-	-	-	-	-	-	-
Stage 2	86	86	-	-	-	-	-	-	-
Critical Hdwy	6.42	6.52	6.22	4.12	-	-	-	-	-
Critical Hdwy Stg 1	5.42	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	5.42	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	2.218	-	-	-	-	-
Pot Cap-1 Maneuver	745	659	877	1510	-	0	0	-	0
Stage 1	871	768	-	-	-	0	0	-	0
Stage 2	937	824	-	-	-	0	0	-	0
Platoon blocked, %					-			-	
Mov Cap-1 Maneuver	738	0	869	1510	-	-	-	-	-
Mov Cap-2 Maneuver	738	0	-	-	-	-	-	-	-
Stage 1	871	0	-	-	-	-	-	-	-
Stage 2	928	0	-	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.2	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	WBLn1	WBLn2	SBT
Capacity (veh/h)	1510	-	738	869	-
HCM Lane V/C Ratio	-	-	0.264	0.051	-
HCM Control Delay (s)	0	-	11.6	9.4	-
HCM Lane LOS	A	-	B	A	-
HCM 95th %tile Q(veh)	0	-	1.1	0.2	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	97	358	0	9	148	50	0	0	0	37	37	1
Future Vol, veh/h	97	358	0	9	148	50	0	0	0	37	37	1
Conflicting Peds, #/hr	10	0	10	10	0	10	10	0	10	10	0	10
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	150	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	111	411	0	10	170	57	0	0	0	43	43	1

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	237	0	-	421	0	0	872	872	219
Stage 1	-	-	-	-	-	-	229	229	-
Stage 2	-	-	-	-	-	-	643	643	-
Critical Hdwy	4.12	-	-	4.12	-	-	6.42	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	5.42	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.42	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318
Pot Cap-1 Maneuver	1330	-	0	1138	-	-	321	289	821
Stage 1	-	-	0	-	-	-	809	715	-
Stage 2	-	-	0	-	-	-	523	468	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1317	-	-	1138	-	-	285	0	805
Mov Cap-2 Maneuver	-	-	-	-	-	-	285	0	-
Stage 1	-	-	-	-	-	-	734	0	-
Stage 2	-	-	-	-	-	-	513	0	-

Approach	EB	WB	SB
HCM Control Delay, s	1.7	0.4	22.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1317	-	1138	-	-	290
HCM Lane V/C Ratio	0.085	-	0.009	-	-	0.297
HCM Control Delay (s)	8	-	8.2	0	-	22.6
HCM Lane LOS	A	-	A	A	-	C
HCM 95th %tile Q(veh)	0.3	-	0	-	-	1.2

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	0	49	33	2	175	1	26	0	370
Future Vol, veh/h	0	0	0	0	49	33	2	175	1	26	0	370
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	56	38	2	199	1	30	0	420
Number of Lanes	0	0	0	0	1	1	0	1	0	1	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	2	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	2	2	0
HCM Control Delay	8.9	10.5	11
HCM LOS	A	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	1%	0%	0%	100%	0%
Vol Thru, %	98%	100%	0%	0%	0%
Vol Right, %	1%	0%	100%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	178	49	33	26	370
LT Vol	2	0	0	26	0
Through Vol	175	49	0	0	0
RT Vol	1	0	33	0	370
Lane Flow Rate	202	56	38	30	420
Geometry Grp	6	7	7	7	7
Degree of Util (X)	0.294	0.092	0.055	0.045	0.499
Departure Headway (Hd)	5.241	5.975	5.268	5.481	4.275
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	686	598	677	654	845
Service Time	3.277	3.73	3.022	3.207	2.001
HCM Lane V/C Ratio	0.294	0.094	0.056	0.046	0.497
HCM Control Delay	10.5	9.3	8.3	8.5	11.2
HCM Lane LOS	B	A	A	A	B
HCM 95th-tile Q	1.2	0.3	0.2	0.1	2.8

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3470	312
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4614	365
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.74	0.19

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	754.7	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.357
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1846
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.8
Flow in Lanes 1 and 2 (v12), pc/h	2768	Ramp Junction Speed (S), mi/h	63.0
Flow Entering Ramp-Infl. Area (vR12), pc/h	3133	Average Density (D), pc/mi/ln	26.3
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	24.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3280	201
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4417	235
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	684.8	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.338
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1767
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	61.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	67.0
Flow in Lanes 1 and 2 (v12), pc/h	2650	Ramp Junction Speed (S), mi/h	63.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	2885	Average Density (D), pc/mi/ln	24.4
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	22.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2410	191
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	3173	224
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.75	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	0.384
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.2
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	71.6
Flow in Lanes 1 and 2 (v12), pc/h	3173	Ramp Junction Speed (S), mi/h	60.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	3397	Average Density (D), pc/mi/ln	28.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3500	181
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4707	212
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.09	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	741.9	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	47.9
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4707	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4919	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	38.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4090	90
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5508	105
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.81	0.06

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.461
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2069
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.617	Outer Lanes Freeway Speed (SO), mi/h	74.4
Flow in Lanes 1 and 2 (v12), pc/h	3439	Ramp Junction Speed (S), mi/h	63.2
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	29.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.2

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3480	566
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4686	662
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.35

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	18.2	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.511
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1561
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	56.5
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.612	Outer Lanes Freeway Speed (SO), mi/h	76.4
Flow in Lanes 1 and 2 (v12), pc/h	3125	Ramp Junction Speed (S), mi/h	61.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	25.2
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	27.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3270	216
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4348	253
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.64	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.474
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1474
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.640	Outer Lanes Freeway Speed (SO), mi/h	76.7
Flow in Lanes 1 and 2 (v12), pc/h	2874	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	23.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	25.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	2410	196
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	3241	229
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	0.72	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.472
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	78.5
Flow in Lanes 1 and 2 (v12), pc/h	3241	Ramp Junction Speed (S), mi/h	57.6
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	28.1
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	28.5

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday AM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3500	209
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4608	245
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.02	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4608	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4608	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	40.3

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4360	361
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	5798	422
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.92	0.22

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	1020.3	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1780	Speed Index (MS)	0.461
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2319
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	58.0
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	65.0
Flow in Lanes 1 and 2 (v12), pc/h	3479	Ramp Junction Speed (S), mi/h	60.4
Flow Entering Ramp-Infl. Area (vR12), pc/h	3901	Average Density (D), pc/mi/ln	34.3
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	30.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB SR 99 Merge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3520	431
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	4740	504
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.78	0.27

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	811.4	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	1300	Speed Index (MS)	0.379
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1896
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	60.4
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	0.600	Outer Lanes Freeway Speed (SO), mi/h	66.6
Flow in Lanes 1 and 2 (v12), pc/h	2844	Ramp Junction Speed (S), mi/h	62.5
Flow Entering Ramp-Infl. Area (vR12), pc/h	3348	Average Density (D), pc/mi/ln	28.0
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.4

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to SB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3670	191
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	4832	224
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.12	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	771.2	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	45.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4832	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5056	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	39.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Merge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SR 166 to NB I-5 Merge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (LA),ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4350	171
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	5850	200
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.34	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	983.9	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (MS)	-
Downstream Equilibrium Distance (LEQ), ft	1816.5	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	On-Ramp Influence Area Speed (SR), mi/h	14.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFM)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5850	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	6050	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	47.6

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to Valpredo Avenue Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4770	40
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	6423	47
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.95	0.03

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.456
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2570
Distance to Downstream Ramp (LDOWN), ft	1160	Off-Ramp Influence Area Speed (SR), mi/h	58.1
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.597	Outer Lanes Freeway Speed (SO), mi/h	72.4
Flow in Lanes 1 and 2 (v12), pc/h	3853	Ramp Junction Speed (S), mi/h	63.1
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	33.9
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	33.8

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	4370	215
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.61	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.790	0.909
Flow Rate (vi),pc/h	5885	252
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.87	0.13

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	118.8	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	5700	Speed Index (DS)	0.474
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	2248
Distance to Downstream Ramp (LDOWN), ft	1780	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.601	Outer Lanes Freeway Speed (SO), mi/h	73.7
Flow in Lanes 1 and 2 (v12), pc/h	3637	Ramp Junction Speed (S), mi/h	62.8
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	31.2
Level of Service (LOS)	D	Density in Ramp Influence Area (DR), pc/mi/ln	31.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB SR 99 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	3530	195
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	25.00	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.800	0.909
Flow Rate (vi),pc/h	4694	228
Capacity (c), pc/h	6761	1878
Volume-to-Capacity Ratio (v/c)	0.69	0.12

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	-	Number of Outer Lanes on Freeway (NO)	1
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	0.472
Downstream Equilibrium Distance (LEQ), ft	-	Flow Outer Lanes (vOA), pc/h/ln	1643
Distance to Downstream Ramp (LDOWN), ft	1300	Off-Ramp Influence Area Speed (SR), mi/h	57.6
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	0.632	Outer Lanes Freeway Speed (SO), mi/h	76.0
Flow in Lanes 1 and 2 (v12), pc/h	3051	Ramp Junction Speed (S), mi/h	62.9
Flow Entering Ramp-Infl. Area (vR12), pc/h	-	Average Density (D), pc/mi/ln	24.9
Level of Service (LOS)	C	Density in Ramp Influence Area (DR), pc/mi/ln	26.9

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – SB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

	Freeway	Ramp
Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

	Freeway	Ramp
Demand Volume (Vi)	3660	175
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	26.48	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.791	0.909
Flow Rate (vi),pc/h	4922	205
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.09	0.11

Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.7
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	4922	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	4922	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	43.0

Copyright © 2019 University of Florida. All Rights Reserved.

HCS7 Freeway Diverge Report

Project Information

Analyst	RE	Date	4/24/2019
Agency	Caltrans	Analysis Year	2019
Jurisdiction	Kern County – NB I-5 to SR 166 Diverge	Time Period Analyzed	Year 2040 + Total P Alt B Weekday PM
Project Description	Tejon Casino	Unit	United States Customary

Geometric Data

	Freeway	Ramp
Number of Lanes (N), ln	2	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (LA),ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	Balanced Mix	Balanced Mix
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	0.950	0.950
Final Capacity Adjustment Factor (CAF)	0.939	0.939
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Demand Volume (Vi)	4360	152
Peak Hour Factor (PHF)	0.94	0.94
Total Trucks, %	23.76	10.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Heavy Vehicle Adjustment Factor (fHV)	0.808	0.909
Flow Rate (vi),pc/h	5740	178
Capacity (c), pc/h	4507	1878
Volume-to-Capacity Ratio (v/c)	1.27	0.09

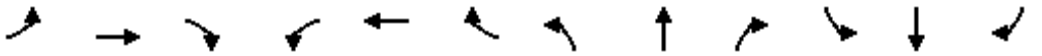
Speed and Density

Upstream Equilibrium Distance (LEQ), ft	0.0	Number of Outer Lanes on Freeway (NO)	0
Distance to Upstream Ramp (LUP), ft	-	Speed Index (DS)	-
Downstream Equilibrium Distance (LEQ), ft	0.0	Flow Outer Lanes (vOA), pc/h/ln	-
Distance to Downstream Ramp (LDOWN), ft	-	Off-Ramp Influence Area Speed (SR), mi/h	57.8
Prop. Freeway Vehicles in Lane 1 and 2 (PFD)	1.000	Outer Lanes Freeway Speed (SO), mi/h	-
Flow in Lanes 1 and 2 (v12), pc/h	5740	Ramp Junction Speed (S), mi/h	-
Flow Entering Ramp-Infl. Area (vR12), pc/h	5740	Average Density (D), pc/mi/ln	-
Level of Service (LOS)	F	Density in Ramp Influence Area (DR), pc/mi/ln	50.0

Copyright © 2019 University of Florida. All Rights Reserved.

APPENDIX N

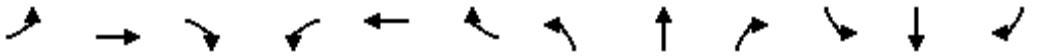
MITIGATION ANALYSIS WORKSHEETS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	219	0	5	75	224	10	0	5	220	0	147
Future Volume (veh/h)	179	219	0	5	75	224	10	0	5	220	0	147
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.91	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	195	238	0	5	82	243	11	0	5	239	0	160
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	1265	0	12	411	340	25	0	175	307	0	444
Arrive On Green	0.14	0.36	0.00	0.01	0.22	0.22	0.01	0.00	0.12	0.17	0.00	0.28
Sat Flow, veh/h	1781	3647	0	1781	1870	1549	1781	0	1443	1781	0	1585
Grp Volume(v), veh/h	195	238	0	5	82	243	11	0	5	239	0	160
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1549	1781	0	1443	1781	0	1585
Q Serve(g_s), s	5.5	2.4	0.0	0.1	1.9	7.6	0.3	0.0	0.2	6.7	0.0	4.2
Cycle Q Clear(g_c), s	5.5	2.4	0.0	0.1	1.9	7.6	0.3	0.0	0.2	6.7	0.0	4.2
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	255	1265	0	12	411	340	25	0	175	307	0	444
V/C Ratio(X)	0.77	0.19	0.00	0.42	0.20	0.71	0.44	0.00	0.03	0.78	0.00	0.36
Avail Cap(c_a), veh/h	731	2373	0	170	660	547	170	0	730	867	0	1421
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.6	11.7	0.0	25.9	16.7	18.9	25.6	0.0	20.3	20.7	0.0	15.1
Incr Delay (d2), s/veh	4.8	0.1	0.0	21.7	0.2	2.8	11.5	0.0	0.1	4.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	0.8	0.0	0.1	0.8	2.7	0.2	0.0	0.1	2.9	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.4	11.7	0.0	47.6	16.9	21.7	37.1	0.0	20.4	25.0	0.0	15.6
LnGrp LOS	C	B	A	D	B	C	D	A	C	C	A	B
Approach Vol, veh/h		433			330			16			399	
Approach Delay, s/veh		18.3			20.9			31.9			21.2	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.5	10.9	4.9	23.2	5.2	19.2	12.0	16.0
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	25.5	26.5	5.0	35.0	5.0	47.0	21.5	18.5
Max Q Clear Time (g_c+I1), s	8.7	2.2	2.1	4.4	2.3	6.2	7.5	9.6
Green Ext Time (p_c), s	0.6	0.0	0.0	1.6	0.0	1.1	0.4	0.9

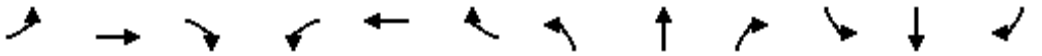
Intersection Summary	
HCM 6th Ctrl Delay	20.2
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	215	0	5	68	208	10	0	5	375	0	250
Future Volume (veh/h)	166	215	0	5	68	208	10	0	5	375	0	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	234	0	5	74	226	11	0	5	408	0	272
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	230	1144	0	12	373	308	25	0	154	479	0	575
Arrive On Green	0.13	0.32	0.00	0.01	0.20	0.20	0.01	0.00	0.11	0.27	0.00	0.36
Sat Flow, veh/h	1781	3647	0	1781	1870	1545	1781	0	1429	1781	0	1585
Grp Volume(v), veh/h	180	234	0	5	74	226	11	0	5	408	0	272
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1545	1781	0	1429	1781	0	1585
Q Serve(g_s), s	6.0	2.9	0.0	0.2	2.0	8.4	0.4	0.0	0.2	13.3	0.0	8.1
Cycle Q Clear(g_c), s	6.0	2.9	0.0	0.2	2.0	8.4	0.4	0.0	0.2	13.3	0.0	8.1
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	1144	0	12	373	308	25	0	154	479	0	575
V/C Ratio(X)	0.78	0.20	0.00	0.42	0.20	0.73	0.44	0.00	0.03	0.85	0.00	0.47
Avail Cap(c_a), veh/h	481	1716	0	146	551	455	146	0	585	948	0	1362
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.8	15.0	0.0	30.2	20.4	22.9	29.9	0.0	24.4	21.2	0.0	15.0
Incr Delay (d2), s/veh	5.7	0.1	0.0	22.0	0.3	3.4	11.9	0.0	0.1	4.4	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	1.1	0.0	0.1	0.9	3.1	0.2	0.0	0.1	5.6	0.0	2.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	31.5	15.1	0.0	52.3	20.6	26.3	41.8	0.0	24.5	25.5	0.0	15.6
LnGrp LOS	C	B	A	D	C	C	D	A	C	C	A	B
Approach Vol, veh/h		414			305			16			680	
Approach Delay, s/veh		22.2			25.4			36.4			21.5	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.9	11.1	4.9	24.2	5.4	26.7	12.4	16.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	32.5	25.0	5.0	29.5	5.0	52.5	16.5	18.0
Max Q Clear Time (g_c+I1), s	15.3	2.2	2.2	4.9	2.4	10.1	8.0	10.4
Green Ext Time (p_c), s	1.2	0.0	0.0	1.5	0.0	2.0	0.3	0.7

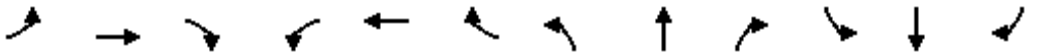
Intersection Summary	
HCM 6th Ctrl Delay	22.7
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	362	0	7	178	16	0	0	0	20	30	0
Future Volume (veh/h)	109	362	0	7	178	16	0	0	0	20	30	0
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	165	548	0	11	270	24				30	45	0
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66				0.66	0.66	0.66
Percent Heavy Veh, %	2	2	0	2	2	2				0	2	0
Cap, veh/h	226	800	0	26	532	47				120	180	0
Arrive On Green	0.13	0.43	0.00	0.01	0.32	0.32				0.16	0.16	0.00
Sat Flow, veh/h	1781	1870	0	1781	1685	150				733	1100	0
Grp Volume(v), veh/h	165	548	0	11	0	294				75	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1835				1834	0	0
Q Serve(g_s), s	3.1	8.1	0.0	0.2	0.0	4.5				1.2	0.0	0.0
Cycle Q Clear(g_c), s	3.1	8.1	0.0	0.2	0.0	4.5				1.2	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.08				0.40		0.00
Lane Grp Cap(c), veh/h	226	800	0	26	0	579				301	0	0
V/C Ratio(X)	0.73	0.69	0.00	0.43	0.00	0.51				0.25	0.00	0.00
Avail Cap(c_a), veh/h	1378	3575	0	390	0	2490				1258	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	14.4	7.9	0.0	16.7	0.0	9.6				12.5	0.0	0.0
Incr Delay (d2), s/veh	4.5	1.1	0.0	10.7	0.0	0.7				0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.2	0.0	0.1	0.0	1.4				0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.9	9.0	0.0	27.5	0.0	10.3				12.9	0.0	0.0
LnGrp LOS	B	A	A	C	A	B				B	A	A
Approach Vol, veh/h		713			305						75	
Approach Delay, s/veh		11.3			10.9						12.9	
Approach LOS		B			B						B	

Timer - Assigned Phs			3	4		6	7	8				
Phs Duration (G+Y+Rc), s			5.0	19.2		10.1	8.8	15.3				
Change Period (Y+Rc), s			4.5	4.5		4.5	4.5	4.5				
Max Green Setting (Gmax), s			7.5	65.5		23.5	26.5	46.5				
Max Q Clear Time (g_c+I1), s			2.2	10.1		3.2	5.1	6.5				
Green Ext Time (p_c), s			0.0	4.2		0.3	0.4	1.9				

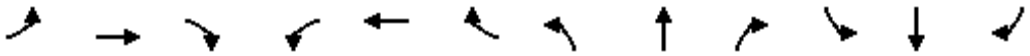
Intersection Summary	
HCM 6th Ctrl Delay	11.3
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	125	107	0	11	472	156	11	0	6	114	0	76
Future Volume (veh/h)	125	107	0	11	472	156	11	0	6	114	0	76
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.91	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	136	116	0	12	513	170	12	0	7	124	0	83
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	178	1567	0	27	667	557	27	0	171	162	0	308
Arrive On Green	0.10	0.44	0.00	0.02	0.36	0.36	0.02	0.00	0.12	0.09	0.00	0.19
Sat Flow, veh/h	1781	3647	0	1781	1870	1563	1781	0	1441	1781	0	1585
Grp Volume(v), veh/h	136	116	0	12	513	170	12	0	7	124	0	83
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1563	1781	0	1441	1781	0	1585
Q Serve(g_s), s	4.0	1.0	0.0	0.4	13.1	4.2	0.4	0.0	0.2	3.7	0.0	2.4
Cycle Q Clear(g_c), s	4.0	1.0	0.0	0.4	13.1	4.2	0.4	0.0	0.2	3.7	0.0	2.4
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	178	1567	0	27	667	557	27	0	171	162	0	308
V/C Ratio(X)	0.76	0.07	0.00	0.44	0.77	0.31	0.44	0.00	0.04	0.76	0.00	0.27
Avail Cap(c_a), veh/h	446	3165	0	165	1371	1145	165	0	708	413	0	1000
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.6	8.7	0.0	26.3	15.4	12.5	26.3	0.0	21.0	23.9	0.0	18.5
Incr Delay (d2), s/veh	6.7	0.0	0.0	10.8	1.9	0.3	10.8	0.0	0.1	7.3	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.3	0.0	0.2	5.1	1.3	0.2	0.0	0.1	1.8	0.0	0.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	8.7	0.0	37.2	17.3	12.8	37.2	0.0	21.1	31.2	0.0	18.9
LnGrp LOS	C	A	A	D	B	B	D	A	C	C	A	B
Approach Vol, veh/h		252			695			19			207	
Approach Delay, s/veh		20.4			16.5			31.3			26.3	
Approach LOS		C			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.4	10.9	5.3	28.3	5.3	15.0	9.9	23.7
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	12.5	26.5	5.0	48.0	5.0	34.0	13.5	39.5
Max Q Clear Time (g_c+I1), s	5.7	2.2	2.4	3.0	2.4	4.4	6.0	15.1
Green Ext Time (p_c), s	0.2	0.0	0.0	0.8	0.0	0.5	0.2	4.1

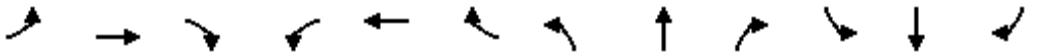
Intersection Summary	
HCM 6th Ctrl Delay	19.3
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	179	259	0	6	101	224	11	0	6	220	0	147
Future Volume (veh/h)	179	259	0	6	101	224	11	0	6	220	0	147
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.91	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	195	282	0	7	110	243	12	0	7	239	0	160
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	255	1261	0	16	413	342	27	0	175	307	0	441
Arrive On Green	0.14	0.35	0.00	0.01	0.22	0.22	0.02	0.00	0.12	0.17	0.00	0.28
Sat Flow, veh/h	1781	3647	0	1781	1870	1549	1781	0	1443	1781	0	1585
Grp Volume(v), veh/h	195	282	0	7	110	243	12	0	7	239	0	160
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1549	1781	0	1443	1781	0	1585
Q Serve(g_s), s	5.5	2.9	0.0	0.2	2.6	7.6	0.4	0.0	0.2	6.7	0.0	4.3
Cycle Q Clear(g_c), s	5.5	2.9	0.0	0.2	2.6	7.6	0.4	0.0	0.2	6.7	0.0	4.3
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	255	1261	0	16	413	342	27	0	175	307	0	441
V/C Ratio(X)	0.77	0.22	0.00	0.43	0.27	0.71	0.44	0.00	0.04	0.78	0.00	0.36
Avail Cap(c_a), veh/h	729	2366	0	169	658	545	169	0	727	864	0	1417
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	21.7	11.9	0.0	25.9	16.9	18.9	25.7	0.0	20.4	20.8	0.0	15.2
Incr Delay (d2), s/veh	4.8	0.1	0.0	16.4	0.3	2.7	10.8	0.0	0.1	4.3	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	1.0	0.0	0.2	1.0	2.7	0.2	0.0	0.1	2.9	0.0	1.4
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.5	12.0	0.0	42.3	17.3	21.6	36.4	0.0	20.5	25.0	0.0	15.7
LnGrp LOS	C	B	A	D	B	C	D	A	C	C	A	B
Approach Vol, veh/h		477			360			19			399	
Approach Delay, s/veh		17.9			20.7			30.6			21.3	
Approach LOS		B			C			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.6	10.9	5.0	23.1	5.3	19.1	12.0	16.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	25.5	26.5	5.0	35.0	5.0	47.0	21.5	18.5
Max Q Clear Time (g_c+I1), s	8.7	2.2	2.2	4.9	2.4	6.3	7.5	9.6
Green Ext Time (p_c), s	0.6	0.0	0.0	1.9	0.0	1.1	0.4	1.0

Intersection Summary	
HCM 6th Ctrl Delay	20.0
HCM 6th LOS	B



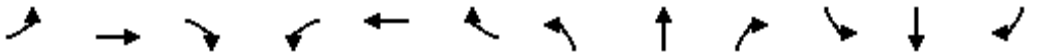
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	166	237	0	6	75	208	11	0	6	375	0	250
Future Volume (veh/h)	166	237	0	6	75	208	11	0	6	375	0	250
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.94	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	180	258	0	7	82	226	12	0	7	408	0	272
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	218	955	0	16	290	640	26	0	360	452	0	760
Arrive On Green	0.12	0.27	0.00	0.01	0.16	0.16	0.01	0.00	0.24	0.25	0.00	0.48
Sat Flow, veh/h	1781	3647	0	1781	1870	1534	1781	0	1497	1781	0	1585
Grp Volume(v), veh/h	180	258	0	7	82	226	12	0	7	408	0	272
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1534	1781	0	1497	1781	0	1585
Q Serve(g_s), s	7.8	4.5	0.0	0.3	3.1	8.1	0.5	0.0	0.3	17.5	0.0	8.5
Cycle Q Clear(g_c), s	7.8	4.5	0.0	0.3	3.1	8.1	0.5	0.0	0.3	17.5	0.0	8.5
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	218	955	0	16	290	640	26	0	360	452	0	760
V/C Ratio(X)	0.82	0.27	0.00	0.44	0.28	0.35	0.46	0.00	0.02	0.90	0.00	0.36
Avail Cap(c_a), veh/h	259	1102	0	113	426	752	113	0	360	530	0	760
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	33.8	22.8	0.0	38.9	29.5	16.2	38.6	0.0	22.9	28.5	0.0	12.9
Incr Delay (d2), s/veh	16.6	0.2	0.0	17.5	0.5	0.3	12.1	0.0	0.1	17.0	0.0	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.3	1.9	0.0	0.2	1.4	2.7	0.3	0.0	0.1	9.3	0.0	3.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.5	22.9	0.0	56.5	30.0	16.5	50.7	0.0	23.0	45.5	0.0	14.2
LnGrp LOS	D	C	A	E	C	B	D	A	C	D	A	B
Approach Vol, veh/h		438			315			19			680	
Approach Delay, s/veh		34.2			20.9			40.5			33.0	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.5	23.5	5.2	25.7	5.7	42.4	14.2	16.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	23.5	19.0	5.0	24.5	5.0	37.5	11.5	18.0
Max Q Clear Time (g_c+I1), s	19.5	2.3	2.3	6.5	2.5	10.5	9.8	10.1
Green Ext Time (p_c), s	0.5	0.0	0.0	1.5	0.0	1.9	0.1	0.8

Intersection Summary	
HCM 6th Ctrl Delay	30.9
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	383	0	8	181	18	0	0	0	22	33	0
Future Volume (veh/h)	120	383	0	8	181	18	0	0	0	22	33	0
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	0.99		1.00	1.00		0.96				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	182	580	0	12	274	27				33	50	0
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66				0.66	0.66	0.66
Percent Heavy Veh, %	2	2	0	2	2	2				0	2	0
Cap, veh/h	477	771	0	283	687	68				283	429	0
Arrive On Green	0.41	0.41	0.00	0.41	0.41	0.41				0.39	0.39	0.00
Sat Flow, veh/h	1071	1870	0	831	1668	164				729	1105	0
Grp Volume(v), veh/h	182	580	0	12	0	301				83	0	0
Grp Sat Flow(s),veh/h/ln	1071	1870	0	831	0	1833				1834	0	0
Q Serve(g_s), s	6.5	11.9	0.0	0.6	0.0	5.2				1.3	0.0	0.0
Cycle Q Clear(g_c), s	11.7	11.9	0.0	12.5	0.0	5.2				1.3	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.09				0.40		0.00
Lane Grp Cap(c), veh/h	477	771	0	283	0	755				712	0	0
V/C Ratio(X)	0.38	0.75	0.00	0.04	0.00	0.40				0.12	0.00	0.00
Avail Cap(c_a), veh/h	832	1390	0	558	0	1362				712	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	13.4	11.3	0.0	16.6	0.0	9.3				8.8	0.0	0.0
Incr Delay (d2), s/veh	0.5	1.5	0.0	0.1	0.0	0.3				0.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.1	0.0	0.1	0.0	1.7				0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	13.9	12.8	0.0	16.7	0.0	9.7				9.2	0.0	0.0
LnGrp LOS	B	B	A	B	A	A				A	A	A
Approach Vol, veh/h		762			313						83	
Approach Delay, s/veh		13.1			9.9						9.2	
Approach LOS		B			A						A	

Timer - Assigned Phs		4		6		8						
Phs Duration (G+Y+Rc), s		23.1		22.0		23.1						
Change Period (Y+Rc), s		4.5		4.5		4.5						
Max Green Setting (Gmax), s		33.5		17.5		33.5						
Max Q Clear Time (g_c+I1), s		13.9		3.3		14.5						
Green Ext Time (p_c), s		4.7		0.3		1.8						

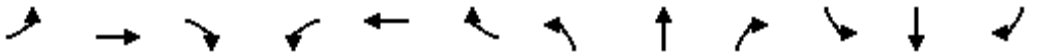
Intersection Summary												
HCM 6th Ctrl Delay		11.9										
HCM 6th LOS		B										

Notes

User approved pedestrian interval to be less than phase max green.

HCM 6th Signalized Intersection Summary
5: Sabodan Street

01/14/2020



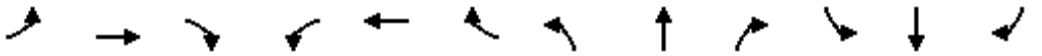
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	219	0	5	75	200	10	0	5	200	0	133
Future Volume (veh/h)	160	219	0	5	75	200	10	0	5	200	0	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.91	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	174	238	0	5	82	217	11	0	5	217	0	145
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	1188	0	12	395	327	25	0	187	285	0	435
Arrive On Green	0.13	0.33	0.00	0.01	0.21	0.21	0.01	0.00	0.13	0.16	0.00	0.27
Sat Flow, veh/h	1781	3647	0	1781	1870	1548	1781	0	1449	1781	0	1585
Grp Volume(v), veh/h	174	238	0	5	82	217	11	0	5	217	0	145
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1548	1781	0	1449	1781	0	1585
Q Serve(g_s), s	4.6	2.3	0.0	0.1	1.8	6.3	0.3	0.0	0.1	5.7	0.0	3.6
Cycle Q Clear(g_c), s	4.6	2.3	0.0	0.1	1.8	6.3	0.3	0.0	0.1	5.7	0.0	3.6
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	231	1188	0	12	395	327	25	0	187	285	0	435
V/C Ratio(X)	0.75	0.20	0.00	0.42	0.21	0.66	0.43	0.00	0.03	0.76	0.00	0.33
Avail Cap(c_a), veh/h	787	2593	0	201	750	620	201	0	760	934	0	1483
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.4	11.5	0.0	24.1	15.8	17.6	23.8	0.0	18.5	19.5	0.0	14.1
Incr Delay (d2), s/veh	4.9	0.1	0.0	21.6	0.3	2.3	11.3	0.0	0.1	4.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.8	0.0	0.1	0.7	2.2	0.2	0.0	0.0	2.4	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.3	11.6	0.0	45.6	16.1	19.9	35.1	0.0	18.6	23.7	0.0	14.5
LnGrp LOS	C	B	A	D	B	B	D	A	B	C	A	B
Approach Vol, veh/h		412			304			16			362	
Approach Delay, s/veh		17.4			19.3			30.0			20.0	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	10.8	4.8	20.8	5.2	17.9	10.8	14.8
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	25.5	25.5	5.5	35.5	5.5	45.5	21.5	19.5
Max Q Clear Time (g_c+I1), s	7.7	2.1	2.1	4.3	2.3	5.6	6.6	8.3
Green Ext Time (p_c), s	0.6	0.0	0.0	1.6	0.0	1.0	0.4	0.9

Intersection Summary	
HCM 6th Ctrl Delay	19.0
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
5: Sabodan Street

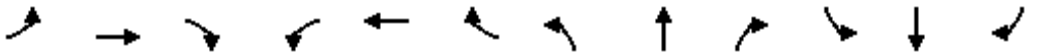
01/14/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	147	215	0	5	68	184	10	0	5	343	0	228
Future Volume (veh/h)	147	215	0	5	68	184	10	0	5	343	0	228
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.91	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	234	0	5	74	200	11	0	5	373	0	248
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	1073	0	12	358	296	25	0	166	450	0	562
Arrive On Green	0.12	0.30	0.00	0.01	0.19	0.19	0.01	0.00	0.12	0.25	0.00	0.35
Sat Flow, veh/h	1781	3647	0	1781	1870	1544	1781	0	1438	1781	0	1585
Grp Volume(v), veh/h	160	234	0	5	74	200	11	0	5	373	0	248
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1544	1781	0	1438	1781	0	1585
Q Serve(g_s), s	4.9	2.7	0.0	0.2	1.9	6.7	0.3	0.0	0.2	11.0	0.0	6.7
Cycle Q Clear(g_c), s	4.9	2.7	0.0	0.2	1.9	6.7	0.3	0.0	0.2	11.0	0.0	6.7
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	209	1073	0	12	358	296	25	0	166	450	0	562
V/C Ratio(X)	0.77	0.22	0.00	0.42	0.21	0.68	0.44	0.00	0.03	0.83	0.00	0.44
Avail Cap(c_a), veh/h	527	1881	0	160	604	498	160	0	645	1039	0	1493
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	14.5	0.0	27.6	19.0	20.9	27.3	0.0	21.9	19.7	0.0	13.8
Incr Delay (d2), s/veh	5.8	0.1	0.0	21.8	0.3	2.7	11.7	0.0	0.1	4.0	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.0	0.0	0.1	0.8	2.4	0.2	0.0	0.1	4.6	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	14.6	0.0	49.4	19.2	23.6	38.9	0.0	21.9	23.7	0.0	14.3
LnGrp LOS	C	B	A	D	B	C	D	A	C	C	A	B
Approach Vol, veh/h		394			279			16			621	
Approach Delay, s/veh		20.7			22.9			33.6			19.9	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.6	10.9	4.9	21.3	5.3	24.2	11.0	15.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	32.5	25.0	5.0	29.5	5.0	52.5	16.5	18.0
Max Q Clear Time (g_c+I1), s	13.0	2.2	2.2	4.7	2.3	8.7	6.9	8.7
Green Ext Time (p_c), s	1.1	0.0	0.0	1.5	0.0	1.8	0.3	0.7

Intersection Summary	
HCM 6th Ctrl Delay	21.0
HCM 6th LOS	C



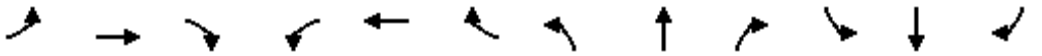
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	349	0	7	160	16	0	0	0	20	30	0
Future Volume (veh/h)	109	349	0	7	160	16	0	0	0	20	30	0
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	165	529	0	11	242	24				30	45	0
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66				0.66	0.66	0.66
Percent Heavy Veh, %	2	2	0	2	2	2				0	2	0
Cap, veh/h	226	783	0	26	510	51				122	183	0
Arrive On Green	0.13	0.42	0.00	0.01	0.31	0.31				0.17	0.17	0.00
Sat Flow, veh/h	1781	1870	0	1781	1666	165				733	1100	0
Grp Volume(v), veh/h	165	529	0	11	0	266				75	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1831				1834	0	0
Q Serve(g_s), s	3.0	7.7	0.0	0.2	0.0	4.0				1.2	0.0	0.0
Cycle Q Clear(g_c), s	3.0	7.7	0.0	0.2	0.0	4.0				1.2	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.09				0.40		0.00
Lane Grp Cap(c), veh/h	226	783	0	26	0	561				305	0	0
V/C Ratio(X)	0.73	0.68	0.00	0.43	0.00	0.47				0.25	0.00	0.00
Avail Cap(c_a), veh/h	1454	3580	0	396	0	2418				1333	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	14.2	7.9	0.0	16.5	0.0	9.5				12.2	0.0	0.0
Incr Delay (d2), s/veh	4.5	1.0	0.0	10.7	0.0	0.6				0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	2.1	0.0	0.1	0.0	1.2				0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.7	9.0	0.0	27.2	0.0	10.1				12.6	0.0	0.0
LnGrp LOS	B	A	A	C	A	B				B	A	A
Approach Vol, veh/h		694			277						75	
Approach Delay, s/veh		11.3			10.8						12.6	
Approach LOS		B			B						B	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		5.0	18.6		10.1	8.8	14.8					
Change Period (Y+Rc), s		4.5	4.5		4.5	4.5	4.5					
Max Green Setting (Gmax), s		7.5	64.5		24.5	27.5	44.5					
Max Q Clear Time (g_c+I1), s		2.2	9.7		3.2	5.0	6.0					
Green Ext Time (p_c), s		0.0	4.0		0.3	0.4	1.7					

Intersection Summary	
HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
5: Sabodan Street

01/14/2020



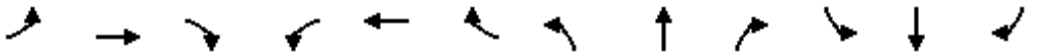
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	107	0	11	472	142	11	0	6	101	0	68
Future Volume (veh/h)	113	107	0	11	472	142	11	0	6	101	0	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.91	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	123	116	0	12	513	154	12	0	7	110	0	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	161	1546	0	27	673	562	27	0	176	144	0	297
Arrive On Green	0.09	0.44	0.00	0.02	0.36	0.36	0.02	0.00	0.12	0.08	0.00	0.19
Sat Flow, veh/h	1781	3647	0	1781	1870	1563	1781	0	1444	1781	0	1585
Grp Volume(v), veh/h	123	116	0	12	513	154	12	0	7	110	0	74
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1563	1781	0	1444	1781	0	1585
Q Serve(g_s), s	3.5	1.0	0.0	0.3	12.6	3.6	0.3	0.0	0.2	3.1	0.0	2.1
Cycle Q Clear(g_c), s	3.5	1.0	0.0	0.3	12.6	3.6	0.3	0.0	0.2	3.1	0.0	2.1
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	161	1546	0	27	673	562	27	0	176	144	0	297
V/C Ratio(X)	0.76	0.08	0.00	0.44	0.76	0.27	0.44	0.00	0.04	0.77	0.00	0.25
Avail Cap(c_a), veh/h	463	3422	0	172	1495	1249	172	0	709	395	0	977
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.1	8.6	0.0	25.3	14.7	11.8	25.3	0.0	20.1	23.4	0.0	18.0
Incr Delay (d2), s/veh	7.2	0.0	0.0	10.8	1.8	0.3	10.8	0.0	0.1	8.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.3	0.0	0.2	4.8	1.1	0.2	0.0	0.1	1.5	0.0	0.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	8.6	0.0	36.1	16.5	12.1	36.1	0.0	20.2	31.6	0.0	18.4
LnGrp LOS	C	A	A	D	B	B	D	A	C	C	A	B
Approach Vol, veh/h		239			679			19			184	
Approach Delay, s/veh		19.7			15.8			30.2			26.3	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	10.8	5.3	27.1	5.3	14.2	9.2	23.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	11.5	25.5	5.0	50.0	5.0	32.0	13.5	41.5
Max Q Clear Time (g_c+I1), s	5.1	2.2	2.3	3.0	2.3	4.1	5.5	14.6
Green Ext Time (p_c), s	0.1	0.0	0.0	0.8	0.0	0.4	0.2	4.1

Intersection Summary	
HCM 6th Ctrl Delay	18.6
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
5: Sabodan Street

01/14/2020



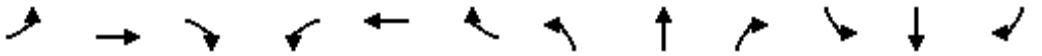
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	259	0	6	101	200	11	0	6	200	0	133
Future Volume (veh/h)	160	259	0	6	101	200	11	0	6	200	0	133
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.91	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	174	282	0	7	110	217	12	0	7	217	0	145
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	231	1186	0	17	399	330	27	0	186	285	0	433
Arrive On Green	0.13	0.33	0.00	0.01	0.21	0.21	0.02	0.00	0.13	0.16	0.00	0.27
Sat Flow, veh/h	1781	3647	0	1781	1870	1548	1781	0	1449	1781	0	1585
Grp Volume(v), veh/h	174	282	0	7	110	217	12	0	7	217	0	145
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1548	1781	0	1449	1781	0	1585
Q Serve(g_s), s	4.6	2.8	0.0	0.2	2.4	6.3	0.3	0.0	0.2	5.7	0.0	3.6
Cycle Q Clear(g_c), s	4.6	2.8	0.0	0.2	2.4	6.3	0.3	0.0	0.2	5.7	0.0	3.6
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	231	1186	0	17	399	330	27	0	186	285	0	433
V/C Ratio(X)	0.75	0.24	0.00	0.42	0.28	0.66	0.44	0.00	0.04	0.76	0.00	0.34
Avail Cap(c_a), veh/h	784	2584	0	201	747	618	201	0	757	930	0	1477
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	20.5	11.8	0.0	24.1	16.1	17.6	23.8	0.0	18.6	19.6	0.0	14.2
Incr Delay (d2), s/veh	4.9	0.1	0.0	16.3	0.4	2.2	10.6	0.0	0.1	4.2	0.0	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	1.0	0.0	0.1	1.0	2.2	0.2	0.0	0.1	2.4	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	25.4	11.9	0.0	40.3	16.4	19.8	34.4	0.0	18.7	23.8	0.0	14.7
LnGrp LOS	C	B	A	D	B	B	C	A	B	C	A	B
Approach Vol, veh/h		456			334			19			362	
Approach Delay, s/veh		17.0			19.1			28.6			20.1	
Approach LOS		B			B			C			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	10.8	5.0	20.8	5.3	17.8	10.8	14.9
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	25.5	25.5	5.5	35.5	5.5	45.5	21.5	19.5
Max Q Clear Time (g_c+I1), s	7.7	2.2	2.2	4.8	2.3	5.6	6.6	8.3
Green Ext Time (p_c), s	0.6	0.0	0.0	1.9	0.0	1.0	0.4	1.0

Intersection Summary	
HCM 6th Ctrl Delay	18.8
HCM 6th LOS	B

HCM 6th Signalized Intersection Summary
5: Sabodan Street

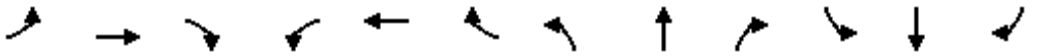
01/14/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	147	237	0	6	75	184	11	0	6	343	0	228
Future Volume (veh/h)	147	237	0	6	75	184	11	0	6	343	0	228
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.97	1.00		0.91	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	160	258	0	7	82	200	12	0	7	373	0	248
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	1066	0	16	359	296	27	0	166	450	0	560
Arrive On Green	0.12	0.30	0.00	0.01	0.19	0.19	0.02	0.00	0.12	0.25	0.00	0.35
Sat Flow, veh/h	1781	3647	0	1781	1870	1544	1781	0	1437	1781	0	1585
Grp Volume(v), veh/h	160	258	0	7	82	200	12	0	7	373	0	248
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1544	1781	0	1437	1781	0	1585
Q Serve(g_s), s	4.9	3.1	0.0	0.2	2.1	6.7	0.4	0.0	0.2	11.0	0.0	6.7
Cycle Q Clear(g_c), s	4.9	3.1	0.0	0.2	2.1	6.7	0.4	0.0	0.2	11.0	0.0	6.7
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	209	1066	0	16	359	296	27	0	166	450	0	560
V/C Ratio(X)	0.77	0.24	0.00	0.43	0.23	0.67	0.44	0.00	0.04	0.83	0.00	0.44
Avail Cap(c_a), veh/h	527	1879	0	160	603	498	160	0	644	1038	0	1492
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	23.9	14.7	0.0	27.5	19.0	20.9	27.2	0.0	21.9	19.7	0.0	13.8
Incr Delay (d2), s/veh	5.8	0.1	0.0	16.6	0.3	2.7	10.9	0.0	0.1	4.0	0.0	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	1.1	0.0	0.2	0.9	2.4	0.2	0.0	0.1	4.6	0.0	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	29.7	14.9	0.0	44.1	19.4	23.6	38.2	0.0	22.0	23.7	0.0	14.4
LnGrp LOS	C	B	A	D	B	C	D	A	C	C	A	B
Approach Vol, veh/h		418			289			19			621	
Approach Delay, s/veh		20.5			22.9			32.2			20.0	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.6	10.9	5.0	21.2	5.3	24.2	11.0	15.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	32.5	25.0	5.0	29.5	5.0	52.5	16.5	18.0
Max Q Clear Time (g_c+I1), s	13.0	2.2	2.2	5.1	2.4	8.7	6.9	8.7
Green Ext Time (p_c), s	1.1	0.0	0.0	1.6	0.0	1.8	0.3	0.8

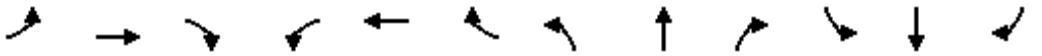
Intersection Summary	
HCM 6th Ctrl Delay	20.9
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	370	0	8	163	18	0	0	0	22	33	0
Future Volume (veh/h)	120	370	0	8	163	18	0	0	0	22	33	0
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	182	561	0	12	247	27				33	50	0
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66				0.66	0.66	0.66
Percent Heavy Veh, %	2	2	0	2	2	2				0	2	0
Cap, veh/h	250	811	0	28	509	56				118	179	0
Arrive On Green	0.14	0.43	0.00	0.02	0.31	0.31				0.16	0.16	0.00
Sat Flow, veh/h	1781	1870	0	1781	1647	180				729	1105	0
Grp Volume(v), veh/h	182	561	0	12	0	274				83	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1827				1834	0	0
Q Serve(g_s), s	3.4	8.4	0.0	0.2	0.0	4.2				1.4	0.0	0.0
Cycle Q Clear(g_c), s	3.4	8.4	0.0	0.2	0.0	4.2				1.4	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.10				0.40		0.00
Lane Grp Cap(c), veh/h	250	811	0	28	0	565				297	0	0
V/C Ratio(X)	0.73	0.69	0.00	0.43	0.00	0.49				0.28	0.00	0.00
Avail Cap(c_a), veh/h	1462	3528	0	385	0	2342				1241	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	14.3	8.0	0.0	16.9	0.0	9.8				12.8	0.0	0.0
Incr Delay (d2), s/veh	4.1	1.1	0.0	10.0	0.0	0.6				0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.3	0.0	0.2	0.0	1.3				0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.4	9.0	0.0	26.9	0.0	10.4				13.3	0.0	0.0
LnGrp LOS	B	A	A	C	A	B				B	A	A
Approach Vol, veh/h		743			286						83	
Approach Delay, s/veh		11.3			11.1						13.3	
Approach LOS		B			B						B	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		5.0	19.6		10.1	9.4	15.2					
Change Period (Y+Rc), s		4.5	4.5		4.5	4.5	4.5					
Max Green Setting (Gmax), s		7.5	65.5		23.5	28.5	44.5					
Max Q Clear Time (g_c+I1), s		2.2	10.4		3.4	5.4	6.2					
Green Ext Time (p_c), s		0.0	4.3		0.3	0.5	1.8					

Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B



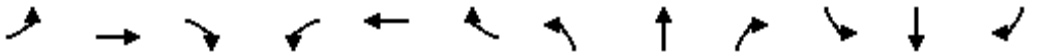
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	240	139	28	664	0	0	0	0	117	2	108
Future Volume (veh/h)	0	240	139	28	664	0	0	0	0	117	2	108
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0				1870	1870	1870
Adj Flow Rate, veh/h	0	296	0	35	820	0				144	2	133
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81				0.81	0.81	0.81
Percent Heavy Veh, %	0	2	2	2	2	0				2	2	2
Cap, veh/h	0	1124		114	1088	0				309	4	259
Arrive On Green	0.00	0.60	0.00	0.60	0.60	0.00				0.18	0.18	0.18
Sat Flow, veh/h	0	1870	1585	34	1811	0				1758	24	1477
Grp Volume(v), veh/h	0	296	0	855	0	0				146	0	133
Grp Sat Flow(s),veh/h/ln	0	1870	1585	1845	0	0				1782	0	1477
Q Serve(g_s), s	0.0	3.0	0.0	0.5	0.0	0.0				3.0	0.0	3.3
Cycle Q Clear(g_c), s	0.0	3.0	0.0	13.6	0.0	0.0				3.0	0.0	3.3
Prop In Lane	0.00		1.00	0.04		0.00				0.99		1.00
Lane Grp Cap(c), veh/h	0	1124		1202	0	0				313	0	259
V/C Ratio(X)	0.00	0.26		0.71	0.00	0.00				0.47	0.00	0.51
Avail Cap(c_a), veh/h	0	3692		3695	0	0				952	0	788
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	1.00	0.00	0.00				1.00	0.00	1.00
Uniform Delay (d), s/veh	0.0	3.8	0.0	5.9	0.0	0.0				14.9	0.0	15.0
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.8	0.0	0.0				1.1	0.0	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.6	0.0	2.8	0.0	0.0				1.1	0.0	1.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	3.9	0.0	6.7	0.0	0.0				16.0	0.0	16.6
LnGrp LOS	A	A		A	A	A				B	A	B
Approach Vol, veh/h		296	A		855						279	
Approach Delay, s/veh		3.9			6.7						16.3	
Approach LOS		A			A						B	

Timer - Assigned Phs		4		6		8			
Phs Duration (G+Y+Rc), s		28.7		11.6		28.7			
Change Period (Y+Rc), s		4.5		4.5		4.5			
Max Green Setting (Gmax), s		79.5		21.5		79.5			
Max Q Clear Time (g_c+I1), s		5.0		5.3		15.6			
Green Ext Time (p_c), s		2.0		1.1		8.6			

Intersection Summary	
HCM 6th Ctrl Delay	8.0
HCM 6th LOS	A

Notes

Unsignalized Delay for [EBR] is excluded from calculations of the approach delay and intersection delay.

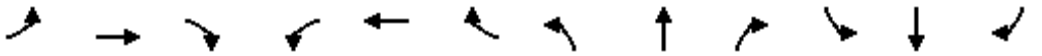


Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	99	257	0	0	551	88	140	0	45	0	0	0
Future Volume (veh/h)	99	257	0	0	551	88	140	0	45	0	0	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.92			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Work Zone On Approach		No			No			No				
Adj Sat Flow, veh/h/ln	1870	1870	0	0	1870	1870	1870	1870	1870			
Adj Flow Rate, veh/h	112	292	0	0	626	0	159	0	51			
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88			
Percent Heavy Veh, %	2	2	0	0	2	2	2	2	2			
Cap, veh/h	137	356	0	0	743		246	0	201			
Arrive On Green	0.27	0.27	0.00	0.00	0.40	0.00	0.14	0.00	0.14			
Sat Flow, veh/h	511	1333	0	0	1870	1585	1781	0	1456			
Grp Volume(v), veh/h	404	0	0	0	626	0	159	0	51			
Grp Sat Flow(s),veh/h/ln	1845	0	0	0	1870	1585	1781	0	1456			
Q Serve(g_s), s	14.0	0.0	0.0	0.0	20.7	0.0	5.8	0.0	2.1			
Cycle Q Clear(g_c), s	14.0	0.0	0.0	0.0	20.7	0.0	5.8	0.0	2.1			
Prop In Lane	0.28		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	493	0	0	0	743		246	0	201			
V/C Ratio(X)	0.82	0.00	0.00	0.00	0.84		0.65	0.00	0.25			
Avail Cap(c_a), veh/h	851	0	0	0	1246		509	0	416			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(I)	1.00	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00			
Uniform Delay (d), s/veh	23.5	0.0	0.0	0.0	18.6	0.0	27.9	0.0	26.3			
Incr Delay (d2), s/veh	3.4	0.0	0.0	0.0	2.7	0.0	2.9	0.0	0.7			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	6.2	0.0	0.0	0.0	8.6	0.0	2.5	0.0	0.7			
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	26.9	0.0	0.0	0.0	21.4	0.0	30.7	0.0	27.0			
LnGrp LOS	C	A	A	A	C		C	A	C			
Approach Vol, veh/h		404			626	A		210				
Approach Delay, s/veh		26.9			21.4			29.8				
Approach LOS		C			C			C				
Timer - Assigned Phs		2		4				8				
Phs Duration (G+Y+Rc), s		13.9		22.7				31.6				
Change Period (Y+Rc), s		4.5		4.5				4.5				
Max Green Setting (Gmax), s		19.5		31.5				45.5				
Max Q Clear Time (g_c+I1), s		7.8		16.0				22.7				
Green Ext Time (p_c), s		0.8		2.2				4.4				

Intersection Summary	
HCM 6th Ctrl Delay	24.6
HCM 6th LOS	C

Notes

Unsignalized Delay for [WBR] is excluded from calculations of the approach delay and intersection delay.



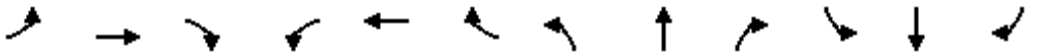
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	175	125	0	13	552	219	13	0	7	159	0	106
Future Volume (veh/h)	175	125	0	13	552	219	13	0	7	159	0	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.89	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	190	136	0	14	600	238	14	0	8	173	0	115
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	236	1783	0	30	723	605	30	0	139	217	0	321
Arrive On Green	0.13	0.50	0.00	0.02	0.39	0.39	0.02	0.00	0.10	0.12	0.00	0.20
Sat Flow, veh/h	1781	3647	0	1781	1870	1565	1781	0	1418	1781	0	1585
Grp Volume(v), veh/h	190	136	0	14	600	238	14	0	8	173	0	115
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1565	1781	0	1418	1781	0	1585
Q Serve(g_s), s	7.1	1.4	0.0	0.5	20.0	7.6	0.5	0.0	0.4	6.5	0.0	4.3
Cycle Q Clear(g_c), s	7.1	1.4	0.0	0.5	20.0	7.6	0.5	0.0	0.4	6.5	0.0	4.3
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	236	1783	0	30	723	605	30	0	139	217	0	321
V/C Ratio(X)	0.81	0.08	0.00	0.46	0.83	0.39	0.46	0.00	0.06	0.80	0.00	0.36
Avail Cap(c_a), veh/h	375	2527	0	129	1072	897	129	0	504	349	0	759
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.0	8.9	0.0	33.6	19.1	15.3	33.6	0.0	28.2	29.4	0.0	23.6
Incr Delay (d2), s/veh	6.7	0.0	0.0	10.5	3.6	0.4	10.5	0.0	0.2	6.6	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.5	0.0	0.3	8.5	2.6	0.3	0.0	0.1	3.1	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	35.7	8.9	0.0	44.0	22.7	15.7	44.0	0.0	28.4	36.1	0.0	24.3
LnGrp LOS	D	A	A	D	C	B	D	A	C	D	A	C
Approach Vol, veh/h		326			852			22			288	
Approach Delay, s/veh		24.5			21.1			38.3			31.4	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.9	11.3	5.7	39.1	5.7	18.5	13.6	31.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	13.5	24.5	5.0	49.0	5.0	33.0	14.5	39.5
Max Q Clear Time (g_c+I1), s	8.5	2.4	2.5	3.4	2.5	6.3	9.1	22.0
Green Ext Time (p_c), s	0.2	0.0	0.0	0.9	0.0	0.7	0.2	4.7

Intersection Summary	
HCM 6th Ctrl Delay	24.1
HCM 6th LOS	C

HCM 6th Signalized Intersection Summary
5: Sabodan Street

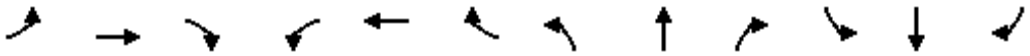
01/14/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	222	303	0	7	118	278	13	0	7	325	0	217
Future Volume (veh/h)	222	303	0	7	118	278	13	0	7	325	0	217
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.98	1.00		0.90	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	241	329	0	8	128	302	14	0	8	353	0	236
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	295	1379	0	18	435	361	30	0	142	415	0	501
Arrive On Green	0.17	0.39	0.00	0.01	0.23	0.23	0.02	0.00	0.10	0.23	0.00	0.32
Sat Flow, veh/h	1781	3647	0	1781	1870	1551	1781	0	1420	1781	0	1585
Grp Volume(v), veh/h	241	329	0	8	128	302	14	0	8	353	0	236
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1870	1551	1781	0	1420	1781	0	1585
Q Serve(g_s), s	8.8	4.2	0.0	0.3	3.8	12.4	0.5	0.0	0.3	12.7	0.0	8.0
Cycle Q Clear(g_c), s	8.8	4.2	0.0	0.3	3.8	12.4	0.5	0.0	0.3	12.7	0.0	8.0
Prop In Lane	1.00		0.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	295	1379	0	18	435	361	30	0	142	415	0	501
V/C Ratio(X)	0.82	0.24	0.00	0.44	0.29	0.84	0.46	0.00	0.06	0.85	0.00	0.47
Avail Cap(c_a), veh/h	545	1776	0	133	502	416	133	0	530	757	0	1147
HCM 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
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	27.0	13.8	0.0	33.0	21.2	24.5	32.6	0.0	27.3	24.6	0.0	18.4
Incr Delay (d2), s/veh	5.5	0.1	0.0	15.4	0.4	12.5	10.4	0.0	0.2	5.0	0.0	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	1.6	0.0	0.2	1.6	5.5	0.3	0.0	0.1	5.6	0.0	2.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.5	13.9	0.0	48.3	21.6	37.0	43.0	0.0	27.4	29.6	0.0	19.1
LnGrp LOS	C	B	A	D	C	D	D	A	C	C	A	B
Approach Vol, veh/h		570			438			22			589	
Approach Delay, s/veh		21.8			32.7			37.4			25.4	
Approach LOS		C			C			D			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.1	11.2	5.2	30.5	5.6	25.7	15.6	20.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	28.5	25.0	5.0	33.5	5.0	48.5	20.5	18.0
Max Q Clear Time (g_c+I1), s	14.7	2.3	2.3	6.2	2.5	10.0	10.8	14.4
Green Ext Time (p_c), s	0.9	0.0	0.0	2.2	0.0	1.7	0.5	0.7

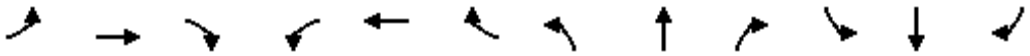
Intersection Summary	
HCM 6th Ctrl Delay	26.2
HCM 6th LOS	C



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	100	399	0	0	263	24	116	1	1	0	0	0
Future Volume (vph)	100	399	0	0	263	24	116	1	1	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	4.5		4.5	4.5			
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00			
Frpb, ped/bikes		1.00			1.00	0.94		1.00	0.94			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		0.95	1.00			
Satd. Flow (prot)		1844			1863	1492		1775	1492			
Flt Permitted		0.99			1.00	1.00		0.95	1.00			
Satd. Flow (perm)		1844			1863	1492		1775	1492			
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	112	448	0	0	296	27	130	1	1	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	15	0	0	1	0	0	0
Lane Group Flow (vph)	0	560	0	0	296	12	0	131	0	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	4!	4			8!		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)		49.5			49.5	49.5		51.5	51.5			
Effective Green, g (s)		49.5			49.5	49.5		51.5	51.5			
Actuated g/C Ratio		0.45			0.45	0.45		0.47	0.47			
Clearance Time (s)		4.5			4.5	4.5		4.5	4.5			
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)		829			838	671		831	698			
v/s Ratio Prot		c0.30			0.16			c0.07				
v/s Ratio Perm						0.01			0.00			
v/c Ratio		0.68			0.35	0.02		0.16	0.00			
Uniform Delay, d1		23.9			19.8	16.8		16.8	15.6			
Progression Factor		1.20			1.00	1.00		1.00	1.00			
Incremental Delay, d2		2.0			0.3	0.0		0.4	0.0			
Delay (s)		30.7			20.0	16.8		17.2	15.6			
Level of Service		C			C	B		B	B			
Approach Delay (s)		30.7			19.8			17.2			0.0	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM 2000 Control Delay	25.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.9%	ICU Level of Service	C
Analysis Period (min)	15		

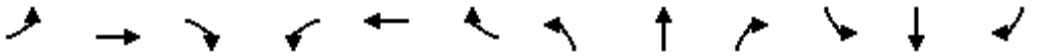
! Phase conflict between lane groups.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	525	0	0	242	23	114	0	0	0	0	0
Future Volume (vph)	167	525	0	0	242	23	114	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	4.5		4.5				
Lane Util. Factor		1.00			1.00	1.00		1.00				
Frpb, ped/bikes		1.00			1.00	0.94		1.00				
Flpb, ped/bikes		1.00			1.00	1.00		0.97				
Frt		1.00			1.00	0.85		1.00				
Flt Protected		0.99			1.00	1.00		0.95				
Satd. Flow (prot)		1841			1863	1495		1716				
Flt Permitted		0.99			1.00	1.00		0.95				
Satd. Flow (perm)		1841			1863	1495		1716				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	190	597	0	0	275	26	130	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	9	0	0	0	0	0	0
Lane Group Flow (vph)	0	787	0	0	275	17	0	130	0	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Split	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	4!	4			8!			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)		70.5			70.5	70.5		30.5				
Effective Green, g (s)		70.5			70.5	70.5		30.5				
Actuated g/C Ratio		0.64			0.64	0.64		0.28				
Clearance Time (s)		4.5			4.5	4.5		4.5				
Vehicle Extension (s)		3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)		1179			1194	958		475				
v/s Ratio Prot		c0.43			0.15							
v/s Ratio Perm						0.01		0.08				
v/c Ratio		0.67			0.23	0.02		0.27				
Uniform Delay, d1		12.4			8.3	7.2		31.1				
Progression Factor		0.75			1.00	1.00		1.00				
Incremental Delay, d2		1.1			0.1	0.0		1.4				
Delay (s)		10.4			8.4	7.2		32.5				
Level of Service		B			A	A		C				
Approach Delay (s)		10.4			8.3			32.5			0.0	
Approach LOS		B			A			C			A	

Intersection Summary			
HCM 2000 Control Delay	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		

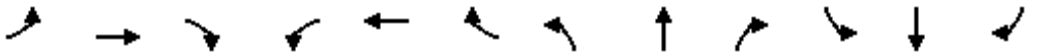
! Phase conflict between lane groups.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	109	361	0	7	133	16	0	0	0	20	30	0
Future Volume (veh/h)	109	361	0	7	133	16	0	0	0	20	30	0
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	165	547	0	11	202	24				30	45	0
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66				0.66	0.66	0.66
Percent Heavy Veh, %	2	2	0	2	2	2				0	2	0
Cap, veh/h	226	799	0	26	514	61				120	180	0
Arrive On Green	0.13	0.43	0.00	0.01	0.32	0.32				0.16	0.16	0.00
Sat Flow, veh/h	1781	1870	0	1781	1630	194				733	1100	0
Grp Volume(v), veh/h	165	547	0	11	0	226				75	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1824				1834	0	0
Q Serve(g_s), s	3.1	8.1	0.0	0.2	0.0	3.3				1.2	0.0	0.0
Cycle Q Clear(g_c), s	3.1	8.1	0.0	0.2	0.0	3.3				1.2	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.11				0.40		0.00
Lane Grp Cap(c), veh/h	226	799	0	26	0	575				301	0	0
V/C Ratio(X)	0.73	0.68	0.00	0.43	0.00	0.39				0.25	0.00	0.00
Avail Cap(c_a), veh/h	1379	3579	0	390	0	2478				1259	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	14.4	7.9	0.0	16.7	0.0	9.2				12.5	0.0	0.0
Incr Delay (d2), s/veh	4.5	1.0	0.0	10.7	0.0	0.4				0.4	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	2.2	0.0	0.1	0.0	1.0				0.4	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.9	9.0	0.0	27.4	0.0	9.6				12.9	0.0	0.0
LnGrp LOS	B	A	A	C	A	A				B	A	A
Approach Vol, veh/h		712			237						75	
Approach Delay, s/veh		11.3			10.4						12.9	
Approach LOS		B			B						B	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		5.0	19.1		10.1	8.8	15.3					
Change Period (Y+Rc), s		4.5	4.5		4.5	4.5	4.5					
Max Green Setting (Gmax), s		7.5	65.5		23.5	26.5	46.5					
Max Q Clear Time (g_c+I1), s		2.2	10.1		3.2	5.1	5.3					
Green Ext Time (p_c), s		0.0	4.2		0.3	0.4	1.4					

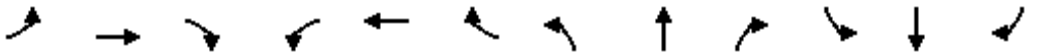
Intersection Summary	
HCM 6th Ctrl Delay	11.2
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	325	156	1	772	0	0	0	0	7	2	169
Future Volume (vph)	0	325	156	1	772	0	0	0	0	7	2	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5						4.5	4.5
Lane Util. Factor		1.00	1.00		1.00						1.00	1.00
Frpb, ped/bikes		1.00	0.94		1.00						1.00	0.93
Flpb, ped/bikes		1.00	1.00		1.00						1.00	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						0.96	1.00
Satd. Flow (prot)		1863	1492		1863						1790	1471
Flt Permitted		1.00	1.00		1.00						0.96	1.00
Satd. Flow (perm)		1863	1492		1863						1790	1471
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	0	401	193	1	953	0	0	0	0	9	2	209
RTOR Reduction (vph)	0	0	50	0	0	0	0	0	0	0	0	168
Lane Group Flow (vph)	0	401	143	0	954	0	0	0	0	0	11	41
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type		NA	Perm	Split	NA					Split	NA	Perm
Protected Phases		4!		8!	8					6	6	
Permitted Phases			4									6
Actuated Green, G (s)		87.3	87.3		67.9						23.7	23.7
Effective Green, g (s)		87.3	87.3		67.9						23.7	23.7
Actuated g/C Ratio		0.73	0.73		0.57						0.20	0.20
Clearance Time (s)		4.5	4.5		4.5						4.5	4.5
Vehicle Extension (s)		3.0	3.0		3.0						3.0	3.0
Lane Grp Cap (vph)		1355	1085		1054						353	290
v/s Ratio Prot		c0.22			c0.51						0.01	
v/s Ratio Perm			0.10									c0.03
v/c Ratio		0.30	0.13		0.91						0.03	0.14
Uniform Delay, d1		5.7	4.9		23.2						38.9	39.8
Progression Factor		1.00	1.00		0.80						1.00	1.00
Incremental Delay, d2		0.1	0.1		9.4						0.2	1.0
Delay (s)		5.8	5.0		27.9						39.0	40.8
Level of Service		A	A		C						D	D
Approach Delay (s)		5.5			27.9			0.0			40.7	
Approach LOS		A			C			A			D	

Intersection Summary			
HCM 2000 Control Delay	22.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

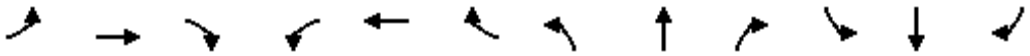
! Phase conflict between lane groups.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	201	0	0	591	19	177	0	1	0	0	0
Future Volume (vph)	131	201	0	0	591	19	177	0	1	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.94		1.00	0.93			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.97	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1490		1711	1471			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1490		1711	1471			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	149	228	0	0	672	22	201	0	1	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	10	0	0	1	0	0	0
Lane Group Flow (vph)	149	228	0	0	672	12	0	201	0	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)	14.9	87.3			67.9	67.9		23.7	23.7			
Effective Green, g (s)	14.9	87.3			67.9	67.9		23.7	23.7			
Actuated g/C Ratio	0.12	0.73			0.57	0.57		0.20	0.20			
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	219	1355			1054	843		337	290			
v/s Ratio Prot	c0.08	0.12			c0.36							
v/s Ratio Perm						0.01		0.12	0.00			
v/c Ratio	0.68	0.17			0.64	0.01		0.60	0.00			
Uniform Delay, d1	50.3	5.1			17.7	11.4		43.8	38.6			
Progression Factor	1.22	0.95			1.00	1.00		1.00	1.00			
Incremental Delay, d2	8.2	0.1			1.3	0.0		2.8	0.0			
Delay (s)	69.3	4.9			19.0	11.4		46.6	38.6			
Level of Service	E	A			B	B		D	D			
Approach Delay (s)		30.4			18.7			46.6			0.0	
Approach LOS		C			B			D			A	

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



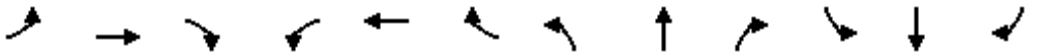
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	439	0	0	286	26	137	1	1	0	0	0
Future Volume (vph)	119	439	0	0	286	26	137	1	1	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00	1.00			
Frpb, ped/bikes	1.00	1.00			1.00	0.94		1.00	0.94			
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.97	1.00			
Frt	1.00	1.00			1.00	0.85		1.00	0.85			
Flt Protected	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (prot)	1770	1863			1863	1487		1721	1491			
Flt Permitted	0.95	1.00			1.00	1.00		0.95	1.00			
Satd. Flow (perm)	1770	1863			1863	1487		1721	1491			
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	134	493	0	0	321	29	154	1	1	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	19	0	0	1	0	0	0
Lane Group Flow (vph)	134	493	0	0	321	10	0	155	0	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)	13.6	54.3			36.2	36.2		46.7	46.7			
Effective Green, g (s)	13.6	54.3			36.2	36.2		46.7	46.7			
Actuated g/C Ratio	0.12	0.49			0.33	0.33		0.42	0.42			
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5	4.5			
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)	218	919			613	489		730	632			
v/s Ratio Prot	0.08	c0.26			0.17							
v/s Ratio Perm						0.01		0.09	0.00			
v/c Ratio	0.61	0.54			0.52	0.02		0.21	0.00			
Uniform Delay, d1	45.7	19.2			29.9	24.9		20.0	18.2			
Progression Factor	1.36	1.10			1.00	1.00		1.00	1.00			
Incremental Delay, d2	4.4	0.5			0.8	0.0		0.7	0.0			
Delay (s)	66.7	21.5			30.7	24.9		20.7	18.2			
Level of Service	E	C			C	C		C	B			
Approach Delay (s)		31.2			30.2			20.7			0.0	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	29.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 6th Signalized Intersection Summary
7: SR-99 SB On Ramp & Maricopa Highway

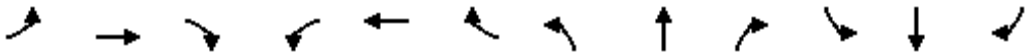
01/14/2020



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	120	382	0	8	136	18	0	0	0	22	33	0
Future Volume (veh/h)	120	382	0	8	136	18	0	0	0	22	33	0
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Work Zone On Approach		No			No						No	
Adj Sat Flow, veh/h/ln	1870	1870	0	1870	1870	1870				1900	1870	1900
Adj Flow Rate, veh/h	182	579	0	12	206	27				33	50	0
Peak Hour Factor	0.66	0.66	0.66	0.66	0.66	0.66				0.66	0.66	0.66
Percent Heavy Veh, %	2	2	0	2	2	2				0	2	0
Cap, veh/h	249	827	0	28	511	67				116	176	0
Arrive On Green	0.14	0.44	0.00	0.02	0.32	0.32				0.16	0.16	0.00
Sat Flow, veh/h	1781	1870	0	1781	1609	211				729	1105	0
Grp Volume(v), veh/h	182	579	0	12	0	233				83	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	0	1781	0	1820				1834	0	0
Q Serve(g_s), s	3.5	8.8	0.0	0.2	0.0	3.5				1.4	0.0	0.0
Cycle Q Clear(g_c), s	3.5	8.8	0.0	0.2	0.0	3.5				1.4	0.0	0.0
Prop In Lane	1.00		0.00	1.00		0.12				0.40		0.00
Lane Grp Cap(c), veh/h	249	827	0	28	0	578				293	0	0
V/C Ratio(X)	0.73	0.70	0.00	0.43	0.00	0.40				0.28	0.00	0.00
Avail Cap(c_a), veh/h	1439	3472	0	379	0	2296				1221	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	0.00	1.00				1.00	0.00	0.00
Uniform Delay (d), s/veh	14.5	8.0	0.0	17.2	0.0	9.4				13.0	0.0	0.0
Incr Delay (d2), s/veh	4.1	1.1	0.0	10.0	0.0	0.5				0.5	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	2.4	0.0	0.2	0.0	1.1				0.5	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	18.6	9.0	0.0	27.2	0.0	9.9				13.6	0.0	0.0
LnGrp LOS	B	A	A	C	A	A				B	A	A
Approach Vol, veh/h		761			245						83	
Approach Delay, s/veh		11.3			10.7						13.6	
Approach LOS		B			B						B	

Timer - Assigned Phs		3	4		6	7	8					
Phs Duration (G+Y+Rc), s		5.1	20.1		10.1	9.4	15.7					
Change Period (Y+Rc), s		4.5	4.5		4.5	4.5	4.5					
Max Green Setting (Gmax), s		7.5	65.5		23.5	28.5	44.5					
Max Q Clear Time (g_c+I1), s		2.2	10.8		3.4	5.5	5.5					
Green Ext Time (p_c), s		0.0	4.5		0.3	0.5	1.5					

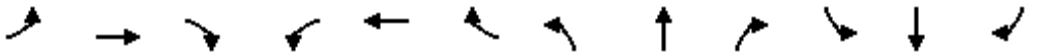
Intersection Summary	
HCM 6th Ctrl Delay	11.4
HCM 6th LOS	B



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	168	547	0	0	246	25	117	0	0	0	0	0
Future Volume (vph)	168	547	0	0	246	25	117	0	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5			4.5	4.5		4.5				
Lane Util. Factor	1.00	1.00			1.00	1.00		1.00				
Frpb, ped/bikes	1.00	1.00			1.00	0.94		1.00				
Flpb, ped/bikes	1.00	1.00			1.00	1.00		0.97				
Frt	1.00	1.00			1.00	0.85		1.00				
Flt Protected	0.95	1.00			1.00	1.00		0.95				
Satd. Flow (prot)	1770	1863			1863	1491		1716				
Flt Permitted	0.95	1.00			1.00	1.00		0.95				
Satd. Flow (perm)	1770	1863			1863	1491		1716				
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	191	622	0	0	280	28	133	0	0	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	16	0	0	0	0	0	0
Lane Group Flow (vph)	191	622	0	0	280	12	0	133	0	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Prot	NA			NA	Perm	Perm	NA	Perm			
Protected Phases	7	4			8			2				
Permitted Phases						8	2		2			
Actuated Green, G (s)	17.2	67.6			45.9	45.9		33.4				
Effective Green, g (s)	17.2	67.6			45.9	45.9		33.4				
Actuated g/C Ratio	0.16	0.61			0.42	0.42		0.30				
Clearance Time (s)	4.5	4.5			4.5	4.5		4.5				
Vehicle Extension (s)	3.0	3.0			3.0	3.0		3.0				
Lane Grp Cap (vph)	276	1144			777	622		521				
v/s Ratio Prot	c0.11	c0.33			0.15							
v/s Ratio Perm						0.01		0.08				
v/c Ratio	0.69	0.54			0.36	0.02		0.26				
Uniform Delay, d1	43.9	12.3			22.0	18.8		28.9				
Progression Factor	1.31	0.87			1.00	1.00		1.00				
Incremental Delay, d2	5.3	0.4			0.3	0.0		1.2				
Delay (s)	62.7	11.0			22.3	18.8		30.1				
Level of Service	E	B			C	B		C				
Approach Delay (s)		23.2			22.0			30.1			0.0	
Approach LOS		C			C			C			A	

Intersection Summary			
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

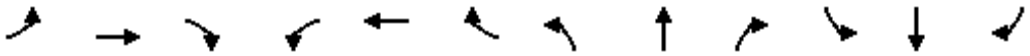
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	372	180	1	891	0	0	0	0	8	2	194
Future Volume (vph)	0	372	180	1	891	0	0	0	0	8	2	194
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5	4.5		4.5						4.5	4.5
Lane Util. Factor		1.00	1.00		1.00						1.00	1.00
Frpb, ped/bikes		1.00	0.95		1.00						1.00	0.93
Flpb, ped/bikes		1.00	1.00		1.00						0.97	1.00
Frt		1.00	0.85		1.00						1.00	0.85
Flt Protected		1.00	1.00		1.00						0.96	1.00
Satd. Flow (prot)		1863	1497		1863						1743	1469
Flt Permitted		1.00	1.00		1.00						0.96	1.00
Satd. Flow (perm)		1863	1497		1862						1743	1469
Peak-hour factor, PHF	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Adj. Flow (vph)	0	459	222	1	1100	0	0	0	0	10	2	240
RTOR Reduction (vph)	0	0	43	0	0	0	0	0	0	0	0	201
Lane Group Flow (vph)	0	459	179	0	1101	0	0	0	0	0	12	39
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type		NA	Perm	Prot	NA					Perm	NA	Perm
Protected Phases		4		3	8						6	
Permitted Phases			4							6		6
Actuated Green, G (s)		83.3	83.3		83.3						17.7	17.7
Effective Green, g (s)		83.3	83.3		83.3						17.7	17.7
Actuated g/C Ratio		0.76	0.76		0.76						0.16	0.16
Clearance Time (s)		4.5	4.5		4.5						4.5	4.5
Vehicle Extension (s)		3.0	3.0		3.0						3.0	3.0
Lane Grp Cap (vph)		1410	1133		1410						280	236
v/s Ratio Prot		0.25										
v/s Ratio Perm			0.12		c0.59						0.01	c0.03
v/c Ratio		0.33	0.16		0.78						0.04	0.16
Uniform Delay, d1		4.3	3.7		7.9						39.0	39.8
Progression Factor		1.00	1.00		0.89						1.00	1.00
Incremental Delay, d2		0.1	0.1		2.4						0.3	1.5
Delay (s)		4.4	3.7		9.5						39.3	41.3
Level of Service		A	A		A						D	D
Approach Delay (s)		4.2			9.5			0.0			41.2	
Approach LOS		A			A			A			D	

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	86.2%	ICU Level of Service	E
Analysis Period (min)	15		

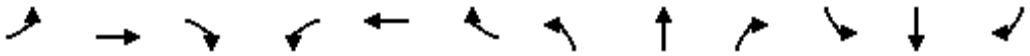
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	229	0	0	683	22	209	0	1	0	0	0
Future Volume (vph)	150	229	0	0	683	22	209	0	1	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	4.5		4.5	4.5			
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00			
Frpb, ped/bikes		1.00			1.00	0.95		1.00	0.93			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.98			1.00	1.00		0.95	1.00			
Satd. Flow (prot)		1827			1863	1497		1770	1469			
Flt Permitted		0.98			1.00	1.00		0.95	1.00			
Satd. Flow (perm)		1827			1863	1497		1770	1469			
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	170	260	0	0	776	25	238	0	1	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	4	0	0	1	0	0	0
Lane Group Flow (vph)	0	430	0	0	776	21	0	238	0	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	4!	4			8!		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)		83.3			83.3	83.3		17.7	17.7			
Effective Green, g (s)		83.3			83.3	83.3		17.7	17.7			
Actuated g/C Ratio		0.76			0.76	0.76		0.16	0.16			
Clearance Time (s)		4.5			4.5	4.5		4.5	4.5			
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)		1383			1410	1133		284	236			
v/s Ratio Prot		0.24			c0.42			c0.13				
v/s Ratio Perm						0.01			0.00			
v/c Ratio		0.31			0.55	0.02		0.84	0.00			
Uniform Delay, d1		4.2			5.6	3.3		44.8	38.7			
Progression Factor		0.95			1.00	1.00		1.00	1.00			
Incremental Delay, d2		0.1			0.5	0.0		24.5	0.0			
Delay (s)		4.1			6.0	3.3		69.3	38.7			
Level of Service		A			A	A		E	D			
Approach Delay (s)		4.1			5.9			69.2			0.0	
Approach LOS		A			A			E			A	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	134	504	0	0	311	30	151	1	1	0	0	0
Future Volume (vph)	134	504	0	0	311	30	151	1	1	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5			4.5	4.5		4.5	4.5			
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00			
Frpb, ped/bikes		1.00			1.00	0.94		1.00	0.94			
Flpb, ped/bikes		1.00			1.00	1.00		1.00	1.00			
Frt		1.00			1.00	0.85		1.00	0.85			
Flt Protected		0.99			1.00	1.00		0.95	1.00			
Satd. Flow (prot)		1843			1863	1494		1775	1488			
Flt Permitted		0.99			1.00	1.00		0.95	1.00			
Satd. Flow (perm)		1843			1863	1494		1775	1488			
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	151	566	0	0	349	34	170	1	1	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	15	0	0	1	0	0	0
Lane Group Flow (vph)	0	717	0	0	349	19	0	171	0	0	0	0
Confl. Peds. (#/hr)	10		10	10		10	10		10	10		10
Confl. Bikes (#/hr)			10			10			10			10
Turn Type	Split	NA			NA	Perm	Split	NA	Perm			
Protected Phases	4!	4			8!		2	2				
Permitted Phases						8			2			
Actuated Green, G (s)		62.9			62.9	62.9		38.1	38.1			
Effective Green, g (s)		62.9			62.9	62.9		38.1	38.1			
Actuated g/C Ratio		0.57			0.57	0.57		0.35	0.35			
Clearance Time (s)		4.5			4.5	4.5		4.5	4.5			
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0			
Lane Grp Cap (vph)		1053			1065	854		614	515			
v/s Ratio Prot		c0.39			0.19			c0.10				
v/s Ratio Perm						0.01			0.00			
v/c Ratio		0.68			0.33	0.02		0.28	0.00			
Uniform Delay, d1		16.5			12.4	10.2		26.0	23.5			
Progression Factor		0.84			1.00	1.00		1.00	1.00			
Incremental Delay, d2		1.5			0.2	0.0		1.1	0.0			
Delay (s)		15.3			12.6	10.2		27.1	23.5			
Level of Service		B			B	B		C	C			
Approach Delay (s)		15.3			12.4			27.1			0.0	
Approach LOS		B			B			C			A	

Intersection Summary			
HCM 2000 Control Delay	16.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

! Phase conflict between lane groups.
c Critical Lane Group

APPENDIX G

WATER AND SEWER SYSTEM PLANNING

DEXTER WILSON ENGINEERING, INC.

WATER • WASTEWATER • RECYCLED WATER

CONSULTING ENGINEERS

WATER AND SEWER SYSTEM PLANNING
FOR THE
TEJON CASINO PROJECT

January 23, 2020

2234 FARADAY AVENUE • CARLSBAD, CA • (760) 438-4422

WATER AND SEWER SYSTEM PLANNING
FOR THE
TEJON CASINO PROJECT

January 23, 2020

Prepared for:
Analytical Environmental Services
1801 7th Street, Suite 100
Sacramento, CA 95811

1-23-2020

Prepared by:
Dexter Wilson Engineering, Inc.
2234 Faraday Avenue
Carlsbad, CA 92008
760-438-4422

Job No. 863-005

TABLE OF CONTENTS

PAGE NO.

CHAPTER 1 INTRODUCTION 1-1
- Purpose 1-1
- Mettler (Alternative A1), Mettler Reduced (Alternative A2), or Maricopa Site (Alternative B) 1-2

CHAPTER 2 WATER SYSTEM 2-1
- Planning Criteria 2-1
- Projected and Existing Water Demands 2-1
- Existing Water Facilities 2-6
  - Local Water Supply and History 2-8
  - Regional Water Supply 2-9
  - Storage and Distribution 2-9
- Proposed Water Facilities 2-9
  - Water Use Comparison 2-9
  - Proposed Water System 2-10
    - Groundwater Wells 2-10
    - Groundwater Treatment 2-14
    - Potable Water Storage and Distribution 2-15
    - Water System Facilities Summary 2-16
  - Water Facilities Space Requirements 2-17
- Sizing of Water System by Alternative 2-17
- Tejon Casino Water Facilities Impact 2-17

CHAPTER 3 SEWER COLLECTION, TREATMENT, & DISPOSAL SYSTEM 3-1
- Planning Criteria 3-1
- Projected Sewer Flows 3-1
- Existing Sewer Facilities 3-4
- Proposed Sewer Facilities 3-4
  - Gravity Sewers 3-8
  - Wastewater Treatment Plant 3-8

TABLE OF CONTENTS

PAGE NO.

Reuse and Disposal....3-9
Percolation Pond....3-9
Permitting....3-10
Tejon Casino Sewer Facilities Impact....3-10

CITATIONS & REFERENCES

LIST OF TABLES

PAGE NO.

TABLE 2-1 TEJON CASINO (ALT. A1 – METTLER SITE)
ESTIMATED WATER DEMAND....2-2

TABLE 2-2 TEJON CASINO (ALT. A2 – METTLER REDUCED SITE)
ESTIMATED WATER DEMAND....2-3

TABLE 2-3 TEJON CASINO (ALT. B – MARICOPA SITE)
ESTIMATED WATER DEMAND....2-4

TABLE 2-4 TEJON CASINO (ALT. A1 – METTLER SITE)
EXISTING AND PROPOSED WATER DEMAND....2-5

TABLE 2-5 TEJON CASINO (ALT. A2 – METTLER REDUCED SITE)
EXISTING AND PROPOSED WATER DEMAND....2-5

TABLE 2-6 TEJON CASINO (ALT B – MARICOPA SITE)
EXISTING AND PROPOSED WATER DEMAND....2-6

TABLE 2-7 TEJON CASINO ESTIMATED MAXIMUM BRINE DISPOSAL....2-15

TABLE 3-1 TEJON CASINO (ALT A1 – METTLER SITE)
PROJECTED SEWER FLOWS....3-2

TABLE 3-2 TEJON CASINO (ALT A2 – METTLER REDUCED SITE)
PROJECTED SEWER FLOWS....3-3

TABLE 3-3 TEJON CASINO (ALT B – MARICOPA SITE)
PROJECTED SEWER FLOWS....3-4

LIST OF FIGURES

PAGE NO.

FIGURE 1-1 VICINITY MAP METTLER SITE 1-3

FIGURE 1-2 VICINITY MAP MARICOPA SITE 1-4

FIGURE 1-3 PRELIMINARY SITE PLAN METTLER PREFERRED SITE 1-5

FIGURE 1-4 PRELIMINARY SITE PLAN METTLER REDUCED SITE 1-6

FIGURE 1-5 PRELIMINARY SITE PLAN MARICOPA SITE 1-7

FIGURE 2-1 EXISTING WATER FACILITIES 2-7

FIGURE 2-2 METTLER ALTERNATIVE A1
PROPOSED WATER SITE PLAN 2-11

FIGURE 2-3 METTLER ALTERNATIVE A2
PROPOSED WATER SITE PLAN 2-12

FIGURE 2-4 MARICOPA ALTERNATIVE B
PROPOSED WATER SITE PLAN 2-13

FIGURE 3-1 METTLER ALTERNATIVE A1
PROPOSED SEWER SITE PLAN 3-5

FIGURE 3-2 METTLER ALTERNATIVE A2
PROPOSED SEWER SITE PLAN 3-6

FIGURE 3-3 MARICOPA ALTERNATIVE B
PROPOSED SEWER SITE PLAN 3-7

LIST OF ABBREVIATIONS

AEWSD	Arvin-Edison Water Storage District
AF	Acre Feet
AFY	Acre Feet per Year
DDW	Division of Drinking Water
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
gpd	gallons per day
gpm	gallons per minute
hp	horsepower
MCWD	Mettler County Water District
SF	Square Feet
SGMA	Sustainable Groundwater Management Act
TDS	Total Dissolved Solids
WRMWSD	Wheeler Ridge Maricopa Water Storage District

CHAPTER 1

INTRODUCTION

The Tejon Casino project proposes a casino building, restaurants, and hotel at two alternative sites in the County of Kern, California. The proposed project alternative sites are currently utilized for agriculture in the southwest portion of Kern County. Only one of the alternative sites will ultimately be developed as the project. The Mettler site (Alternative A1 or A2) is located along Valpredo Avenue approximately 500 feet to the west of CA 99, and the Maricopa site (Alternative B) is located along Maricopa Highway (CA 166) immediately to the west of Interstate 5. Figure 1-1 provides a vicinity map for the Mettler site and Figure 1-2 provides a vicinity map for the Maricopa site. Figure 1-3 provides a preliminary site plan for the Mettler preferred site, Figure 1-4 provides a preliminary site plan for the Mettler reduced site, and Figure 1-5 provides a preliminary site plan for the Maricopa site.

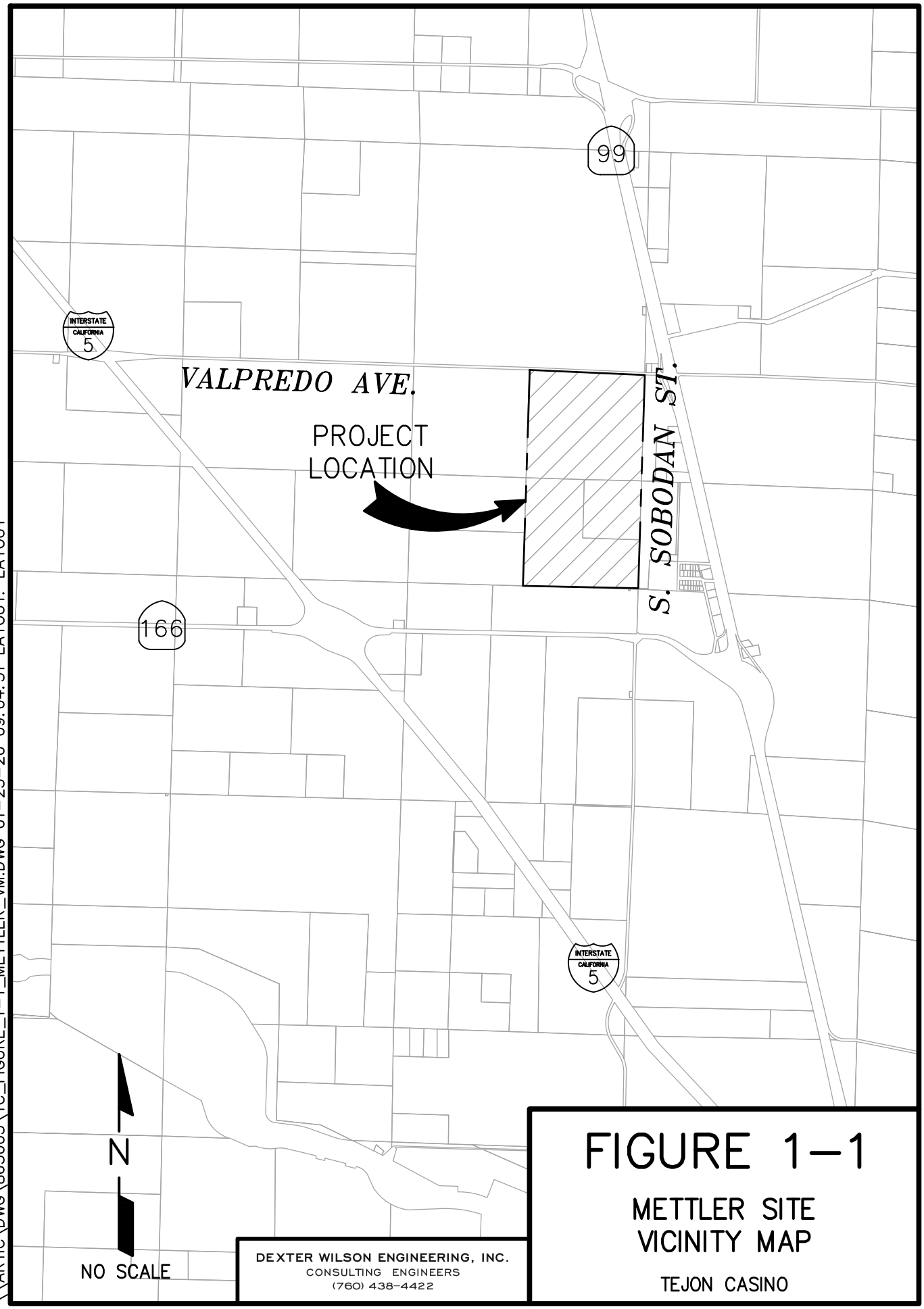
Purpose

The purpose of this report is to evaluate the ability of the existing water and sewer systems and infrastructure (if any) to accommodate this development and to identify what water and sewer improvements are necessary to support the development of the proposed project. The information presented in this report is intended to support the environmental document being prepared for this development proposal. Water and sewer system requirements are outlined as preliminary concepts in order to capture the overall facilities and physical space needed to provide service to the proposed project alternatives. Once a project alternative is selected, more detailed preliminary design studies will be needed to define the actual facility and space needs of the water and sewer infrastructure to serve the proposed development project.

Mettler (Alternative A1), Mettler Reduced (Alternative A2), or Maricopa Site (Alternative B)

This report is based on the proposed Tejon Casino and associated development project which will be constructed at one of two possible sites with the following basic components:

- Casino
- Restaurants and Retail
- Hotel
- Meeting Rooms
- Pool and Spa/Fitness
- Back of House Space
- Recreational Vehicle Park and General Parking
- Fire/Sheriff Station
- Organic Farm (Future)
- Residential Community (Future)
- Community Park (Future)
- Community/Tribal Area (Future)



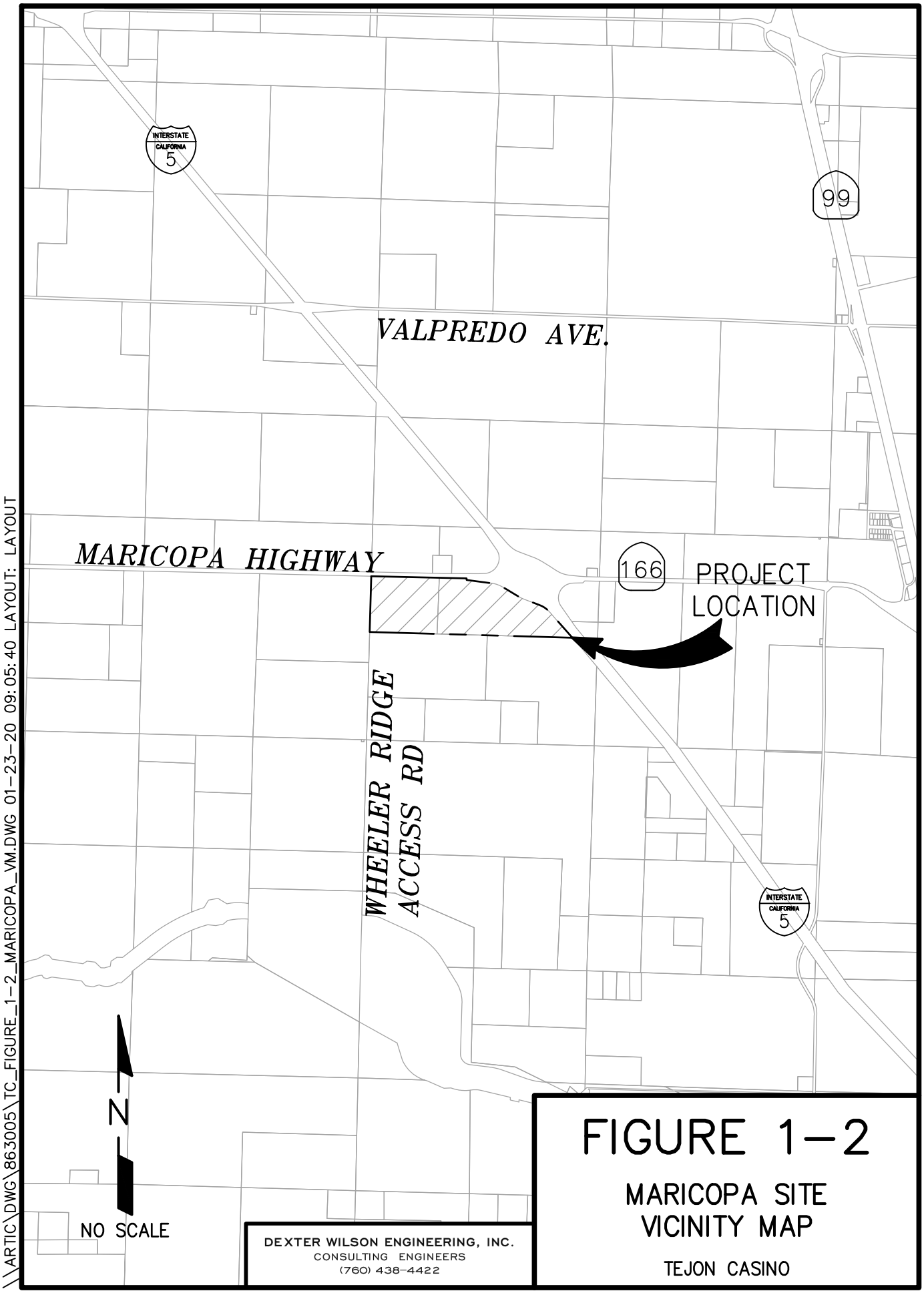
\\ARTIC\DWG\863005\TC_FIGURE_1-1_METTLER_VM.DWG 01-23-20 09:04:51 LAYOUT: LAYOUT

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 1-1

METTLER SITE VICINITY MAP

TEJON CASINO



\\ARTIC\DWG\863005\TC_FIGURE_1-2_MARICOPA_VM.DWG 01-23-20 09:05:40 LAYOUT: LAYOUT

FIGURE 1-2

MARICOPA SITE VICINITY MAP

TEJON CASINO

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

\\ARTIC\DWG\863005\TC_FIGURE_1-3_METTLER_ALTA1_PROSITE.DWG 01-23-20 09:08:31 LAYOUT: LAYOUT

N

NO SCALE

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 1-3
METTLER (ALTERNATIVE A1 PROPOSED SITE PLAN)
TEJON CASINO

\\ARTIC\DWG\863005\TC_FIGURE_1-4_METTLER_ALTA2_PROSITE.DWG 01-23-20 09:08:59 LAYOUT: LAYOUT

N

NO SCALE

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 1-4
METTLER (ALTERNATIVE A2 PROPOSED SITE PLAN)
TEJON CASINO

N

NO SCALE

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 1-5
MARICOPA
(ALTERNATIVE B
PROPOSED SITE PLAN)
TEJON CASINO

\\ARTIC\DWG\863005\TC_FIGURE_1-5_MARICOPA_ALTB_SITEPLAN.DWG 01-23-20 09:09:45 LAYOUT: LAYOUT

CHAPTER 2

WATER SYSTEM

This chapter summarizes the pertinent planning criteria, projected water demands, and existing and proposed water facilities associated with providing water service to the proposed casino project.

Planning Criteria

Based on a review of data from other casinos and relevant projects utilizing groundwater in Kern County, the pertinent planning criteria used to evaluate existing and proposed water facilities are summarized as follows:

- Average casino building water use – 360 gpd/1,000 SF [1]
- Restaurant average water use – 360 gpd/1,000 SF [1]
- Hotel average water use – 120 gpd/room [1]
- Recreational vehicle park – 90 gpd/vehicle [19]
- Fire/Sheriff station – 3,238 gpd/acre [2]
- Community center water use – 96 gpd/1,000 SF [1]
- Residential water use– 648 gpd/unit [2]
- Parks water use – 1,295 gpd/acre [2]
- Irrigation water use – 2,000 gpd/acre [3]
- Agricultural water use – 2,000 gpd/acre [3]
- Fire flow – 2,500 gpm [2]
- Maximum day demand peaking factor – 1.8 [2]
- Peak hour demand peaking factor – 3.6 [2]

Projected and Existing Water Demands

Based on the above planning criteria and proposed land use plan, Table 2-1, Table 2-2, and Table 2-3 summarize the projected water demands for each alternative of the project. In addition to the building and facility water use, potential future development is also proposed at each alternative. The proposed potential future development would include a small farm, residential community, and community area.

The total projected water demand of 346,779 gpd equates to 388 acre-feet per year for Alternative A1 (Mettler), the total projected water demand of 331,768 gpd equates to 372 acre-feet per year for Alternative A2 (Mettler Reduced), and the total projected water demand of 215,410 gpd equates to 241 acre-feet per year for Alternative B (Maricopa).

TABLE 2-1
TEJON CASINO (ALTERNATIVE A1 - METTLER SITE)
ESTIMATED WATER DEMAND

Land Use	Quantity	Demand Factor	Demand
Casino Only			
Casino	166,500 SF	360 gpd/1,000 SF	59,940 gpd
Restaurants	73,300 SF	360 gpd/1,000 SF	26,388 gpd
Hotel	400 rooms	120 gpd/room	48,000 gpd
RV Park (10 spaces/acre)	22 Acres	90 gpd/vehicle	19,800 gpd
Fire/Sheriff Station	10,000 SF	3,238 gpd/acre	744 gpd
Subtotal (Average)			**154,872 gpd**
Subtotal (Max Day)			**278,870 gpd**
Subtotal (Peak Hour)			**557,539 gpd**
Potential Future Development			
Organic Farm	40 acres	2,000 gpd/acre	80,000 gpd
Residential Community	92 homes	648 gpd/unit	59,616 gpd
Community Park	29 acres	1,295 gpd/acre	37,555 gpd
Community/Tribal Area	153,500 SF	96 gpd/1,000 SF	14,736 gpd
Subtotal (Average)			**191,907 gpd**
Subtotal (Max Day)			**345,433 gpd**
Subtotal (Peak Hour)			**690,865 gpd**
TOTAL (Average)			**346,779 gpd**
TOTAL (Max Day)			**624,202 gpd**
TOTAL (Peak Hour)			**1,248,404 gpd**

TABLE 2-2
TEJON CASINO (ALTERNATIVE A2 - METTLER REDUCED SITE)
ESTIMATED WATER DEMAND

Land Use	Quantity	Demand Factor	Demand
Casino Only			
Casino	147,000 SF	360 gpd/1,000 SF	52,920 gpd
Restaurants	56,700 SF	360 gpd/1,000 SF	20,412 gpd
Hotel	300 rooms	120 gpd/room	36,000 gpd
Fire/Sheriff Station	10,000 SF	3,238 gpd/acre	744 gpd
Subtotal (Average)			**110,076 gpd**
Subtotal (Max Day)			**198,137 gpd**
Subtotal (Peak Hour)			**369,274 gpd**
Potential Future Development			
Organic Farm	40 acres	2,000 gpd/acre	80,000 gpd
Residential Community	92 homes	648 gpd/unit	59,616 gpd
Community Park	52 acres	1,295 gpd/acre	67,340 gpd
Community/Tribal Area	153,500 SF	96 gpd/1,000 SF	14,736 gpd
Subtotal (Average)			**221,692 gpd**
Subtotal (Max Day)			**399,046 gpd**
Subtotal (Peak Hour)			**798,091 gpd**
TOTAL (Average)			**331,768 gpd**
TOTAL (Max Day)			**597,182 gpd**
TOTAL (Peak Hour)			**1,194,365 gpd**

TABLE 2-3
TEJON CASINO (ALTERNATIVE B - MARICOPA SITE)
ESTIMATED WATER DEMAND

Land Use	Quantity	Demand Factor	Demand
Casino Only			
Casino	166,500 SF	360 gpd/1,000 SF	59,940 gpd
Restaurants	73,300 SF	360 gpd/1,000 SF	26,388 gpd
Hotel	400 rooms	120 gpd/room	48,000 gpd
RV Park (10 spaces/acre)	5 Acres	90 gpd/vehicle	4,500 gpd
Fire/Sheriff Station	10,000 SF	3,238 gpd/acre	744 gpd
Subtotal (Average)			**139,572 gpd**
Subtotal (Max Day)			**251,230 gpd**
Subtotal (Peak Hour)			**502,459 gpd**
Potential Future Development			
Organic Farm	30 acres	2,000 gpd/acre	60,000 gpd
Residential Community	15 homes	648 gpd/unit	9,720 gpd
Community Park	2.5 acres	1,295 gpd/acre	3,238 gpd
Community/Tribal Area	30,000 SF	96 gpd/1,000 SF	2,880 gpd
Subtotal (Average)			**75,838 gpd**
Subtotal (Max Day)			**136,508 gpd**
Subtotal (Peak Hour)			**273,017 gpd**
TOTAL (Average)			**215,410 gpd**
TOTAL (Max Day)			**387,738 gpd**
TOTAL (Peak Hour)			**775,476 gpd**

Irrigation demand for the landscaped areas surrounding the casino, restaurant, and hotel is incorporated already in the water demand design criteria for the various land uses and is projected to be 15 percent of the overall water demand for each land use. This is based on a conservative estimate of an equal ratio of landscaped area to finished floor area within the casino, restaurant, hotel, RV Park, and fire/sheriff station. This equates to an irrigation demand of 23,231 gpd for Alternative A1, 16,511 gpd for Alternative A2, and 20,936 gpd for Alternative B.

Both sites are currently utilized as agriculture; the current land use will be replaced with the proposed project land uses as identified generally in Chapter 1 and more specifically in Tables 2-1, 2-2, and 2-3. Below, Table 2-4, Table 2-5, and Table 2-6 present the water demand based on existing use on the sites as well as projected water demand for the proposed use of the sites and the estimated net change in average daily water use.

TABLE 2-4
TEJON CASINO (ALTERNATIVE A1 - METTLER SITE)
EXISTING AND PROPOSED WATER DEMAND

Land Use	Quantity	Generation Factor	Average Water Demand
Existing			
Agriculture	303 acres	2,000 gpd/acre	606,000 gpd
Total Existing Water Demand			**606,000 gpd**
Proposed			
Casino Only	See Table 2-1	See Table 2-1	154,872 gpd
Potential Future Development	See Table 2-1	See Table 2-1	191,907 gpd
Total Proposed Water Demand			**346,779 gpd**
Change in Water Demand			**-259,221 gpd** **-43%**

TABLE 2-5
TEJON CASINO (ALTERNATIVE A2 – METTLER REDUCED SITE)
EXISTING AND PROPOSED WATER DEMAND

Land Use	Quantity	Generation Factor	Average Water Demand
Existing			
Agriculture	303 acres	2,000 gpd/acre	606,000 gpd
Total Existing Water Demand			**606,000 gpd**
Proposed			
Casino Only	See Table 2-2	See Table 2-2	110,076 gpd
Potential Future Development	See Table 2-2	See Table 2-2	221,692 gpd
Total Proposed Water Demand			**331,768 gpd**
Change in Water Demand			**-274,232 gpd** **-45%**

TABLE 2-6 TEJON CASINO (ALTERNATIVE B - MARICOPA SITE) EXISTING AND PROPOSED WATER DEMAND			
Land Use	Quantity	Generation Factor	Average Water Demand
Existing			
Agriculture	117 acres	2,000 gpd/acre	234,000 gpd
Total Existing Water Demand			**234,000 gpd**
Proposed			
Casino Only	See Table 2-3	See Table 2-3	139,572 gpd
Potential Future Development	See Table 2-3	See Table 2-3	75,838 gpd
Total Proposed Water Demand			**215,410 gpd**
Change in Water Demand			**-18,590 gpd** **-8%**

Existing Water Facilities

There are two water purveyors in the area of the alternative project sites. The Mettler site is in the Arvin-Edison Water Storage District (AEWSD) service area, and the Maricopa site is in the Wheeler Ridge Maricopa Water Storage District (WRMWSD). These Districts provide raw water service to a portion of the County of Kern [4]. Agricultural water demand is supplied by a combination of raw surface water from the Central Valley Project (CVP), other surface water exchanges with other agencies, and District groundwater [4].

Within these Districts, potable water is supplied solely by means of private groundwater wells. Therefore, the proposed Tejon Casino project will use groundwater as its source of supply. There currently are no groundwater wells at either alternative site [5].

The following sections describe the existing water facilities in more detail and Figure 2-1 graphically shows the existing water facilities in the vicinity of the alternative project sites including existing groundwater wells [5].

Presently both alternative sites are under surface water contracts with their Districts [6]. This enables the properties to obtain the water necessary to sustain the agricultural use of the land. Once a non-agricultural project is developed, surface water would no longer be delivered to that site. Instead of securing surface water for agricultural use, the property would extract groundwater for potable water service to the development project.

COPUS RD.

DAVID RD.

WHEELER RIDGE RD.

N

0 4000 FEET

INTERSTATE CALIFORNIA 5

99

VALPREDO AVE.

METTLER SITE

AEWSD CANAL

MARICOPA HIGHWAY

166

S. SOBODAN ST.

MARICOPA SITE

CALIFORNIA AQUEDUCT

AEWSD CANAL CONNECTION TO CALIFORNIA AQUEDUCT

WHEELER RIDGE RD.

LEGEND

- PROJECT BOUNDARY
- EXISTING GROUNDWATER WELL
- AEWSD: ARVIN–EDISON WATER STORAGE DISTRICT
- WRMWSD: WHEELER RIDGE MARICOPA WATER STORAGE DISTRICT
- MCWD: METTLER COUNTY WATER DISTRICT

FIGURE 2–1

EXISTING WATER FACILITIES

TEJON CASINO

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438–4422

\\ARTIC\DWG\863005\WATER\TC_WTR_FIGURE_2-1_EXFAC.DWG 01-23-20 16:40:13 LAYOUT: LAYOUT

The impact to adjacent municipal groundwater production wells in MCWD is anticipated to be minimal. The existing MCWD groundwater wells are approximately 3,000 feet away from the proposed well sites at the Mettler alternative(s) and the MCWD well depths are in excess of 700 feet. The existing groundwater well(s) in the vicinity of the Maricopa site are over 3,000 feet away from the proposed Maricopa well sites. With current groundwater level at a maximum depth of approximately 400 feet, the effect of new groundwater wells for the proposed project on the existing wells near both the Mettler and Maricopa sites will be insignificant [4] [7].

Local Water Supply and History. AEWSA was organized in 1942 under California Water Storage District law and currently serves approximately 132,000 acres of land (113,000 irrigated acres) [8]. In 1962, the District entered into a water supply contract with the United States Bureau of Reclamation (USBR) to supply water for the District's project from the Friant-Kern System of the CVP [8]. The water supply contract provides for the annual delivery of 40,000 acre-feet of Class 1 (firm) water and up to 311,675 acre-feet of Class 2 (non-firm) water [8]. This contract was renewed in 2001 through 2026, with provisions for renewal after that [8].

During the period 1964 through 1968, the District's water distribution facilities were constructed [8]. Prior to the construction and operation of the District's water distribution facilities, groundwater overdraft was estimated at 126,000 acre-feet per year [8]. This resulted in the continual lowering of groundwater levels, until pumping lifts exceeded 600 feet in many areas of the District [8]. Because of this, the District's distribution system has incorporated recharge basins and District-owned deep injection wells to capture and store wet-period water underground for later recovery and use during dry periods.

As a result of the District's water management operations, groundwater levels in the District no longer have a downward trend, but have stabilized [9]. The District has also experienced a substantial reduction in subsurface inflow from neighboring areas and a significant improvement in both groundwater depths and groundwater quality for the water users in the District who continue to rely on groundwater [9].

Most recent yearly data show the District had received a total of approximately 235,000 acre-feet of water. A total of 144,000 acre-feet were imported through the CVP and 91,000 acre-feet were transferred through other agencies such that less than 1,000 acre-feet were utilized from District groundwater supply.

The MCWD is a small municipal water district located adjacent to Alternatives A1 and A2 (Mettler). However, MCWD does not have sufficient capacity or facilities to serve the project. Currently the Mettler County Water District only serves a population of 157 people using two active groundwater wells. These wells are approximately 900 feet deep with screening intervals from 730 to 870 feet deep according to DDW and the GAMA groundwater database [5] [10].

Regional Water Supply. On a more regional level, the District participates in numerous water transfers and exchanges and, in a typical year, will participate in water transfers and exchanges with 15 to 20 other agencies in various locations throughout the State [8]. The District's position, and its interconnections to major Federal, State, and local water conveyance facilities, gives the District an ability to facilitate these transfers and exchanges.

Storage and Distribution. The District's backbone facility is a 45-mile canal system that extends from around the urbanized area of Bakersfield and throughout the District [11]. The canal has a capacity of 1,000 cubic feet per second {11}. This rate of flow accommodates maximum water deliveries as provided in the District's original Federal water service contract [11]. This distribution system is sufficient to serve all agricultural/irrigation connections. There are no connections for service to urban populations within the District [3]. All urban water use within the District boundary is through private facility extraction and distribution of groundwater.

Proposed Water Facilities

To accommodate the proposed casino and hotel project, an evaluation of the water supply and distribution system is necessary. Prior to discussing these items, a comparison of water demand projections is provided.

Water Use Comparison. Since the properties for the proposed project sites are within the AEWSD District boundary, the agricultural water use for these properties has been taken into consideration when AEWSD does regional planning for water supply infrastructure necessary to support long term water use in the area. To ensure that the currently proposed project is not anticipated to use considerable additional water compared to its agricultural water use allocation, a comparison between the current water use and the proposed Tejon Casino project water use is necessary.

Based on the summaries provided in Table 2-1, Table 2-2, and Table 2-3, the proposed Tejon Casino project is estimated to have a water use of either 346,779 gpd, 331,768 gpd, or 215,410 gpd at full build out. The conceptual land use plan for the project includes large areas of parking and other open spaces such that water will not be required on a considerable portion of the site. The total gross acreage of the Mettler site is 303 acres and the total gross acreage of the Maricopa site is 117 acres.

Currently both sites are used as agriculture (primarily grapes, potatoes, oranges, wheat, carrots, and almonds) [12]. Utilizing the delivered water quantity and irrigated acres within the District, a factor of 2,000 gpd/acre is calculated to estimate existing water use on an acreage basis [3]. Using this factor, the existing and proposed total estimated water use for the project site alternatives are presented in Table 2-4, Table 2-5, and Table 2-6.

Based on Table 2-4, Table 2-5, and Table 2-6, the proposed Tejon Casino project at the Mettler site is anticipated to have a 43 percent decrease in water use, the Mettler reduced site is anticipated to have a 45 percent decrease in water use, and the Maricopa site is anticipated to have an eight percent decrease in water use compared to current agricultural uses.

Proposed Water System. As noted earlier, surface water imported into the area of the proposed Tejon Casino alternative sites can only be used for agricultural purposes. Therefore, the source of potable water for the proposed Tejon Casino development at either site will be groundwater. This will require the construction of onsite groundwater wells; the wells will need to be sized to supply the build-out water demand for the proposed development project. Proposed water facilities are presented on Figure 2-2, Figure 2-3, and Figure 2-4.

Groundwater Wells. Either of the two potential project sites lie within the southeastern portion of the Kern County Subbasin of the San Joaquin Valley Basin. The size of the subbasin is calculated to be 205 square miles with a usable capacity of 5.5 million acre-feet and safe yield of 228,000 acre-feet per year [13]. Historical yields from previous wells range from approximately 622 gpm to 1,786 gpm, and averaged 1,191 gpm [14]. At this groundwater pumping yield rate, build-out water demands can be satisfied for either development site alternative. The size of the well and the depth of the well will be determined based on the ultimate water demands needed for the selected development site.

\\ARTIC\DWG\863005\WATER\TC_WTR_FIGURE_2-2_METTLER_ALTA1_PROSITE.DWG 01-23-20 08:45:05 LAYOUT: LAYOUT

N

NO SCALE

LEGEND

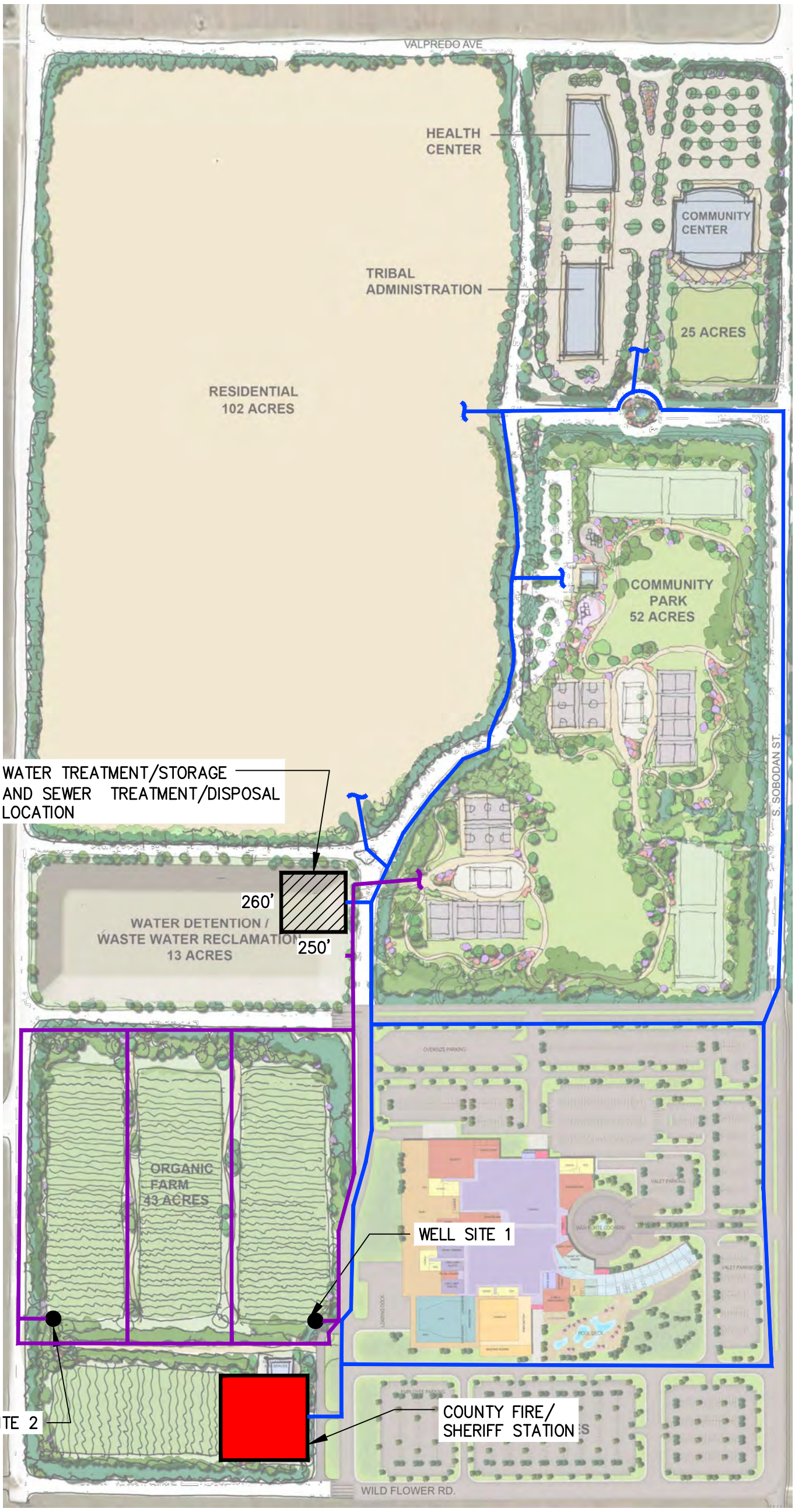
PROPOSED POTABLE WATER

PROPOSED IRRIGATION WATER

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 2-2
METTLER
ALTERNATIVE A1
PROPOSED WATER SITE PLAN

TEJON CASINO



N

NO SCALE

LEGEND

PROPOSED POTABLE WATER

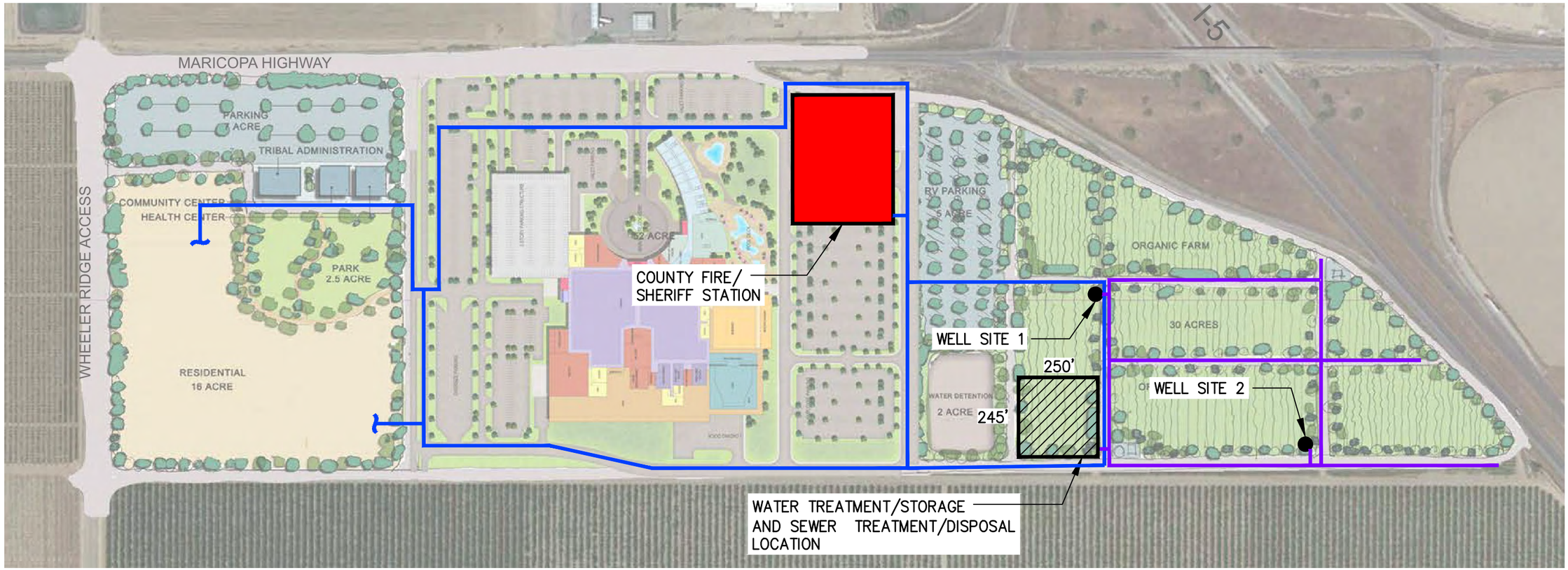
PROPOSED IRRIGATION WATER

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 2-3

METTLER
ALTERNATIVE A2
PROPOSED WATER SITE PLAN

TEJON CASINO



LEGEND

PROPOSED POTABLE WATER

PROPOSED IRRIGATION WATER

N

NO SCALE

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 2-4

MARICOPA
ALTERNATIVE B
PROPOSED WATER SITE PLAN
TEJON CASINO

\\ARTIC\DWG\863005\WATER\TC_WTR_FIGURE_2-4_MARICOPA_ALTB_PROSITE.DWG 01-23-20 08:46:19 LAYOUT: LAYOUT

Well size is measured by casing diameter and well pump horsepower. Generally, casing diameter determines the maximum yield rate of a well, and the well pump horsepower is determined using the maximum yield rate and the depth of the well. The project would drill and install two wells onsite to ensure a redundant water supply is maintained in case of well failure. The well depth(s) are expected be approximately 600 to 800 feet based on a preliminary review of groundwater conditions in the project area. Preliminary groundwater well locations for each site alternative are shown on Figure 2-2, Figure 2-3, and Figure 2-4.

Groundwater Treatment. Groundwater quality in the Central Valley aquifer has varied historically depending on drought conditions. Primarily salts and nitrate constituents have fluctuated the most and at times have exceeded acceptable drinking water limits of 500 mg/L and 10 mg/L respectively. The proposed Tejon Casino project will need to sample groundwater at the selected development site to assess what treatment measures will be required.

There are two standard groundwater treatment systems which will be used at the proposed Tejon Casino site. First is groundwater filtration. Its purpose will be to remove particulates from the pumped groundwater. The second will be disinfection. Its purpose will be to provide assurance that the potable water distributed within the project site will maintain a disinfection residual to meet drinking water standards. The disinfection residual will protect public health.

In addition to filtration, project planning should anticipate the need for a reverse osmosis treatment system for the purpose of removing excess constituents from the groundwater. The level of treatment will depend upon the quality of the groundwater and is expected to vary from year to year. It is likely that in most years no reverse osmosis treatment will be needed. In other years only a portion of the total water used will need to be treated to supply water quality meeting the drinking water standards. Most recent groundwater quality data from MCWD, which is adjacent to the Mettler site, show TDS levels safely below drinking water standards (<500 mg/L).

In general, the reverse osmosis treatment process will be minimized in order to reduce operational costs. Thus, only non-irrigated demands are anticipated to be treated with reverse osmosis. A by-product of reverse osmosis will be waste brine; this will have to be trucked offsite and disposed of in an approved landfill or by other means available such as through evaporation. Truck disposal would occur at an existing brine waste facility in the South Bay area of Los Angeles. A typical truck for liquid waste hauling has a 3,000-gallon capacity.

Brine disposal in periods of reverse osmosis treatment utilization is estimated to be based on a necessary diversion of groundwater to achieve 500 mg/L TDS. Groundwater quality measurements historically have reached a maximum concentration of approximately 650 mg/L [15] [16]. Table 2-7 presents the maximum brine disposal estimation for the proposed Tejon Casino project by alternative.

TABLE 2-7
TEJON CASINO ESTIMATED MAXIMUM BRINE DISPOSAL

Alternative	Average Potable Water Demand[1]	Assumed TDS (Worst Case)	Percent of Groundwater Treated	Brine Percentage of Groundwater Treated[2]	Total Brine Generation
A1	229,224 gpd	625 mg/L	25%	1%	2,751 gpd
A2	184,428 gpd	625 mg/L	25%	1%	2,213 gpd
B	152,172 gpd	625 mg/L	25%	1%	1,826 gpd

1 Includes Casino demands, Future Residential demands, and Future Community/Tribal Area demands.
2 Assumes a two-pass system at 80% recovery.

Potable Water Storage and Distribution. Either development site will have a total of two groundwater wells with a single groundwater well operating that will supply the potable water needs for the entire site. To accomplish this, there will need to be a potable water distribution piping system within the site. In addition, there will be a non-potable distribution system for the irrigation demands within the site. Also, fire flow supply to the onsite fire hydrants is intended to be supplied from the non-potable system. Groundwater for non-potable uses will not need to be treated; this will reduce treatment costs. It is anticipated that the potable distribution system onsite will consist of 4-inch diameter and 6-inch diameter piping looped around the site and the non-potable distribution system will consist of 6-inch diameter and 8-inch diameter piping looped around the site.

The non-potable system will operate at a lower pressure than the potable system further saving pumping costs. Both systems will be supplied from an onsite storage tank which will be filled with groundwater using the well pump. A booster pump system will draw water from the storage tank and feed the two distribution systems. Water pumped into the potable water system will be treated, but water pumped into the non-potable water system will not be treated.

The onsite storage tank will be sized based on the well pump rate and the fire flow requirement. It is anticipated that the fire hydrant flow requirement will be larger than the well pump rate; thus, the storage tank will need to supply the majority of the fire flow requirement. For an expected fire flow of 2,500 gpm per typical commercial land use, the storage tank will need to hold about 300,000 gallons [2]. To this storage volume must be added operational storage which is typically about 25 percent of maximum day demand. This will increase the necessary storage to approximately 400,000 gallons. Tank size will need to be calculated more precisely once a project concept is selected and project design parameters are known.

Water System Facilities Summary. A summary of proposed water system components is provided below:

- Two groundwater wells to extract water from the underlying aquifer;
- Continuous water quality monitoring of yielded groundwater;
- Disinfection system to meet drinking water requirements for potable water uses;
- Groundwater filtration for potable water uses;
- Reverse osmosis water treatment capability during years when water quality does not meet drinking water standards;
- Brine disposal from reverse osmosis treatment;
- Onsite groundwater storage to meet potable demand, irrigation demand, and fire flow demand;
- Potable and non-potable distribution systems to deliver water throughout the site;
- Water booster pump system to pressurize the potable and non-potable systems from the groundwater storage tank;
- Emergency power generator to maintain system operation during a power outage.

Water Facilities Space Requirements. The largest water system facility will be the groundwater storage tank. The ideal configuration will be to have the groundwater well, the storage tank, the booster pumps, and the groundwater treatment systems all within one secured area of the project. The estimated area that will be needed is approximately 12,000 square feet based on the needed equipment stated above.

The booster pumps and treatment systems should be installed inside a building for weather protection as well as noise attenuation. The tank will be the tallest of these facilities topping out at around 20 feet in height.

Sizing of Water System by Alternative

Depending on the proposed project alternative chosen, the sizing of the proposed water facilities explained in this chapter will vary. Alternative A1 and Alternative A2 would have similar capacities for each water system component while Alternative B would have smaller water system components comparatively. The average water demand of Alternative B is approximately two thirds of the water demand for either Alternative A1 or Alternative A2; thus, most water system components in Alternative B would be scaled down. The exception would be water storage, specifically fire storage. The fire flow requirement would remain identical regardless of alternative; hence, the water storage tank capacity would lessen only in relation to the decrease in domestic water demand.

Tejon Casino Water Facilities Impact

Table 2-4, Table 2-5, and Table 2-6 show that development of either alternative will result in a net reduction in water use thus aiding in recovery of the existing groundwater aquifer. The surface water allotment that was previously used at the project site(s) will be incorporated into the existing groundwater banking program. This quantity of water, which is greater than the average water demand of either project alternative, will aid in the recharge of the groundwater aquifer in which the project is located thus improving groundwater levels overall.

Additional measures could include, but not be limited to, the utilization of recycled water to further reduce average water demand. Recycled water could be used for irrigation of the farm and park areas which account for approximately 30 percent of the overall water demand for any project alternative.

With regard to required water facilities, all necessary water facilities for each of the three alternatives will be located entirely within each project site. There are no existing water facilities in the vicinity of the proposed project sites which can be utilized for water service to the project sites. Therefore, there are no offsite facility improvements contemplated for any of the three alternatives. Each alternative will be required to construct all necessary groundwater extraction, treatment, and distribution facilities on the property.

All treatment plant components and processes will be protected from the floodplain by means of a flood control levee. Initial findings on potential flood threats in the project vicinity would merit a levee between 2 to 4 feet high to protect from the anticipated 100-year flood water levels.

CHAPTER 3

SEWER COLLECTION, TREATMENT, AND DISPOSAL SYSTEM

This chapter summarizes the pertinent planning criteria, projected sewer flows, proposed effluent disposal, and existing and proposed facilities associated with providing sewer service to the proposed Tejon Casino Project.

Planning Criteria

The pertinent planning criteria used to evaluate projected sewer flows for the proposed project come from a variety of sources and are summarized below.

- Average casino building sewer flow – 300 gpd/1,000 SF [17]
- Average hotel sewer flow – 100 gpd/room [17]
- Average restaurant sewer flow – 300 gpd/1,000 SF [17]
- Recreational Vehicle Park – 75 gpd/vehicle [19]
- Fire/Sheriff Station – 2,698 gpd/acre [18]
- Average community center sewer flow – 80 gpd/1,000 SF [17]
- Residential sewer flow – 301 gpd/unit [18]
- Design discharge peaking factor – 2.54 x (avg. discharge)$^{-0.1}$; in MGD [18]

Projected Sewer Flows

Projected sewer flows from the project were estimated based on the factors provided above. Table 3-1, Table 3-2, and Table 3-3 summarize the projected sewer flows by alternative for the Tejon Casino project. In addition to the building and facility wastewater generation, a potential future development is also proposed at each alternative. The proposed potential future development would include sewer flow from a residential community and community area. The total projected sewer flow requiring treatment and disposal is 169,031 gpd for Alternative A1 (Mettler), 131,701 gpd for Alternative A2 (Mettler reduced), and 123,224 gpd for Alternative B (Maricopa).

TABLE 3-1
TEJON CASINO (ALTERNATIVE A1 - METTLER SITE)
PROJECTED SEWER FLOWS

Land Use	Quantity	Generation Factor	Flow
Casino Only			
Casino	166,500 SF	300 gpd/1,000 SF	49,950 gpd
Restaurants	73,300 SF	300 gpd/1,000 SF	21,990 gpd
Hotel	400 rooms	100 gpd/room	40,000 gpd
RV Park (10 spaces/acre)	22 Acres	75 gpd/vehicle	16,500 gpd
Fire/Sheriff Station	10,000 SF	2,698 gpd/acre	619 gpd
Subtotal (Average)			**129,059 gpd**
Subtotal (Peak)			**402,294 gpd**
Potential Future Development			
Organic Farm	40 acres	---	0
Residential Community	92 homes	301 gpd/unit	27,692 gpd
Community Park	29 acres	---	0
Community/Tribal Area	153,500 SF	80 gpd/1,000 SF	12,280 gpd
Subtotal (Average)			**39,972 gpd**
Subtotal (Peak)			**140,092 gpd**
TOTAL (Average)			**169,031 gpd**
TOTAL (Peak)			**512,865 gpd**

TABLE 3-2
TEJON CASINO (ALTERNATIVE A2 – METTLER REDUCED SITE)
PROJECTED SEWER FLOWS

Land Use	Quantity	Generation Factor	Flow
Casino Only			
Casino	147,000 SF	300 gpd/1,000 SF	44,100 gpd
Restaurants	56,700 SF	300 gpd/1,000 SF	17,010 gpd
Hotel	300 rooms	100 gpd/room	30,000 gpd
Fire/Sheriff Station	10,000 SF	2,698 gpd/acre	619 gpd
Subtotal (Average)			**91,729 gpd**
Subtotal (Peak)			**295,862 gpd**
Potential Future Development			
Organic Farm	40 acres	---	0
Residential Community	92 homes	301 gpd/unit	27,692 gpd
Community Park	52 acres	---	0
Community/Tribal Area	153,500 SF	80 gpd/1,000 SF	12,280 gpd
Subtotal (Average)			**39,972 gpd**
Subtotal (Peak)			**140,092 gpd**
TOTAL (Average)			**131,701 gpd**
TOTAL (Peak)			**409,698 gpd**

TABLE 3-3
TEJON CASINO (ALTERNATIVE B - MARICOPA SITE)
PROJECTED SEWER FLOWS

Land Use	Quantity	Generation Factor	Flow
Casino Only			
Casino	166,500 SF	300 gpd/1,000 SF	49,950 gpd
Restaurants	73,300 SF	300 gpd/1,000 SF	21,990 gpd
Hotel	400 rooms	100 gpd/room	40,000 gpd
RV Park (10 spaces/acre)	5 Acres	75 gpd/vehicle	3,750 gpd
Fire/Sheriff Station	10,000 SF	2,698 gpd/acre	619 gpd
Subtotal (Average)			**116,309 gpd**
Subtotal (Peak)			**366,341 gpd**
Potential Future Development			
Organic Farm	30 acres	---	0
Residential Community	15 homes	301 gpd/unit	4,515 gpd
Community Park	2.5 acres	---	0
Community/Tribal Area	30,000 SF	80 gpd/1,000 SF	2,400 gpd
Subtotal (Average)			**6,915 gpd**
Subtotal (Peak)			**28,883 gpd**
TOTAL (Average)			**123,224 gpd**
TOTAL (Peak)			**385,886 gpd**

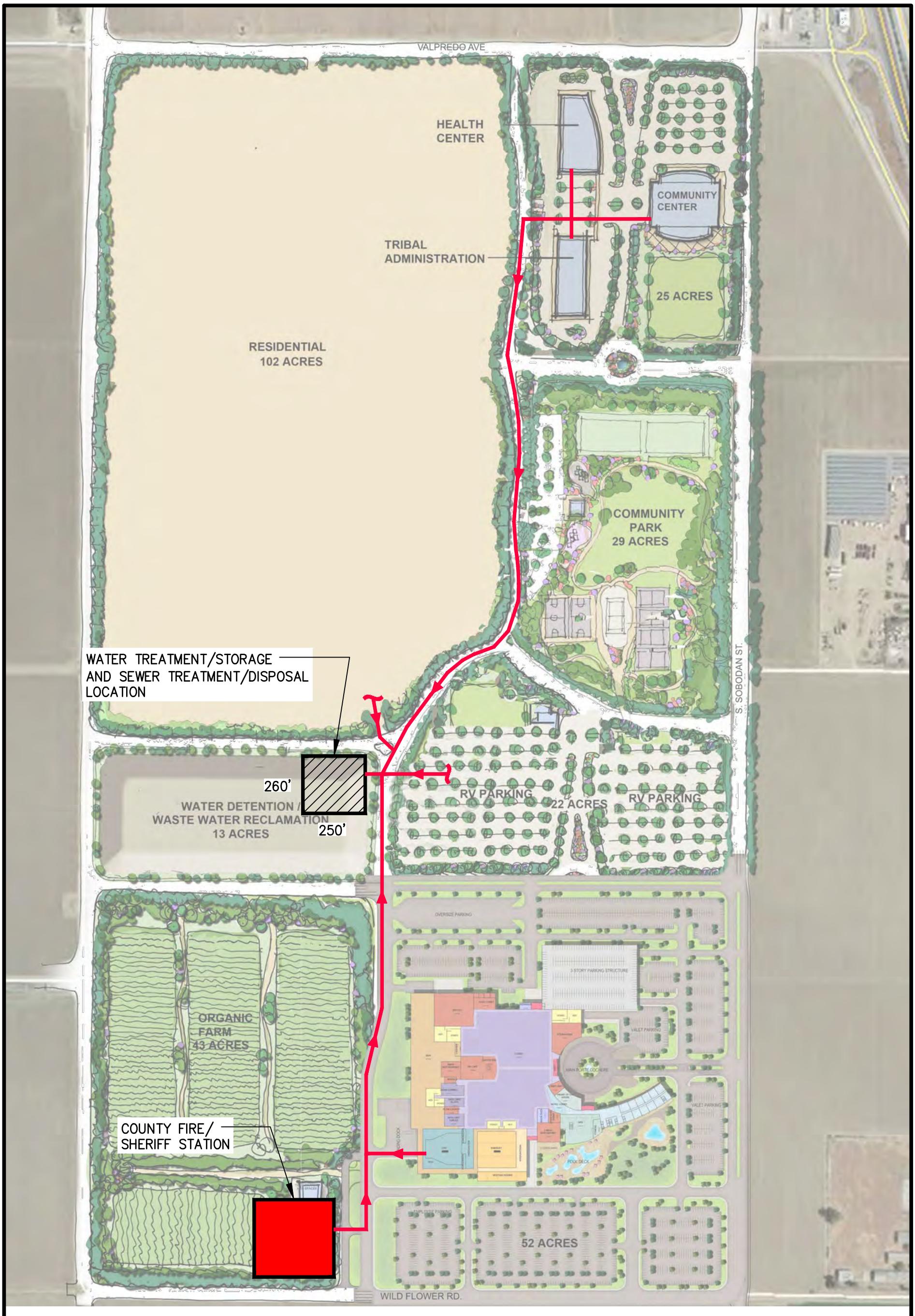
Existing Sewer Facilities

The proposed Tejon Casino alternative sites consist solely of agriculture uses with little or no sewer flow. Any current sewer flow at either site alternative would be treated onsite through small scale septic systems. There are no agencies or districts in the vicinity of the proposed project site(s) that offer sanitary sewer service. The nearest agency or district (Arvin Community Services District) providing sewer service is over ten miles away from either proposed project site.

Proposed Sewer Facilities

The proposed sewer system improvements necessary to accommodate the proposed casino project will include the construction of onsite gravity sewer collection lines, an onsite package wastewater treatment system, and an effluent disposal system. Proposed sewer facilities are presented on Figure 3-1, Figure 3-2, and Figure 3-3.

\\ARTIC\DWG\863005\SEWER\TC_SWR_FIGURE_3-1_METTLER_ALTA1_PROSITE.DWG 01-23-20 08:50:55 LAYOUT: LAYOUT



N

NO SCALE

LEGEND

PROPOSED SEWER

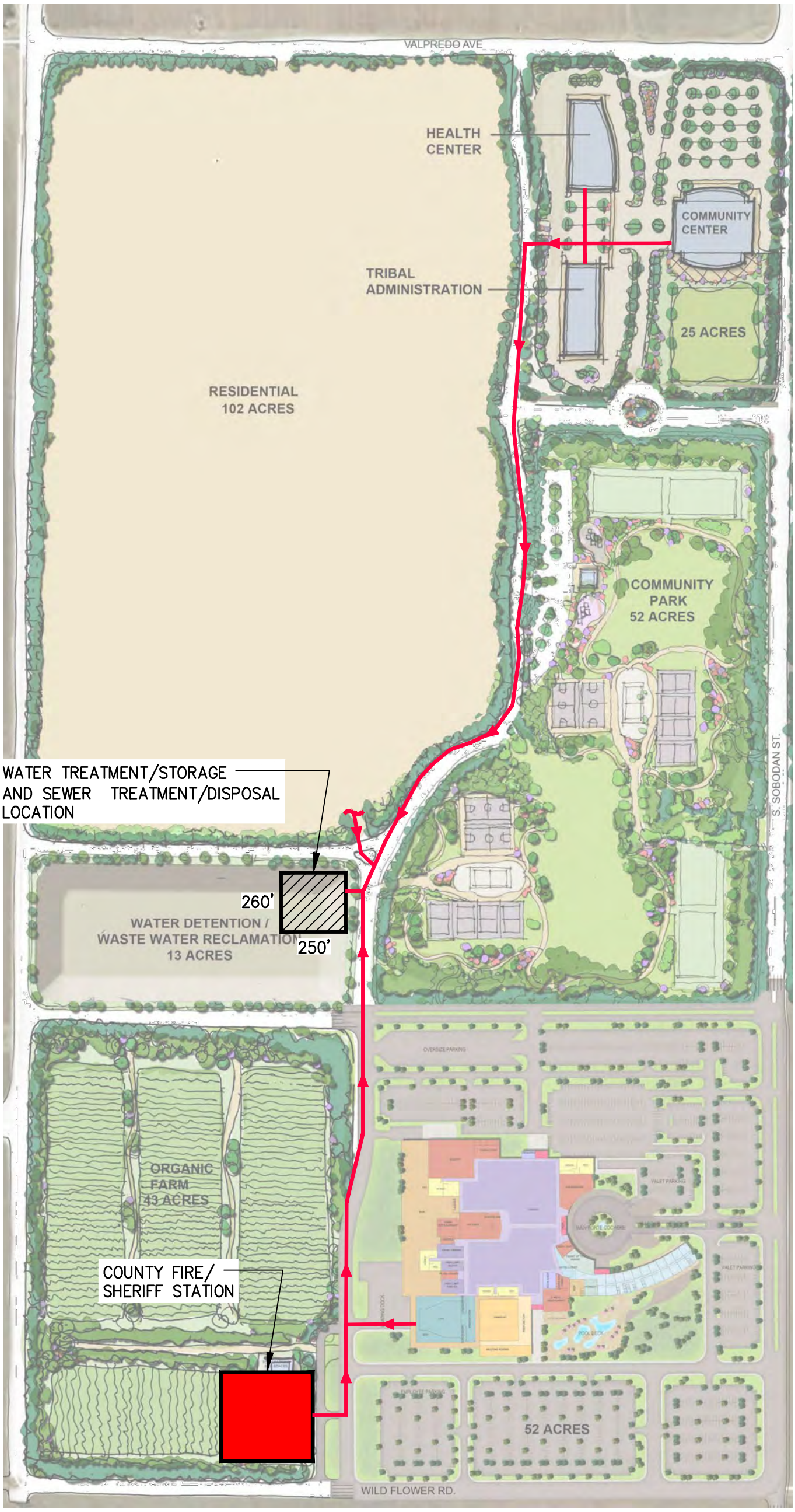
DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 3-1

METTLER
ALTERNATIVE A1
PROPOSED SEWER SITE PLAN

TEJON CASINO

\\ARTIC\DWG\863005\SEWER\TC_SWR_FIGURE_3-2_METTLER_ALTA2_PROSITE.DWG 01-23-20 08:51:45 LAYOUT: LAYOUT



N

NO SCALE

LEGEND

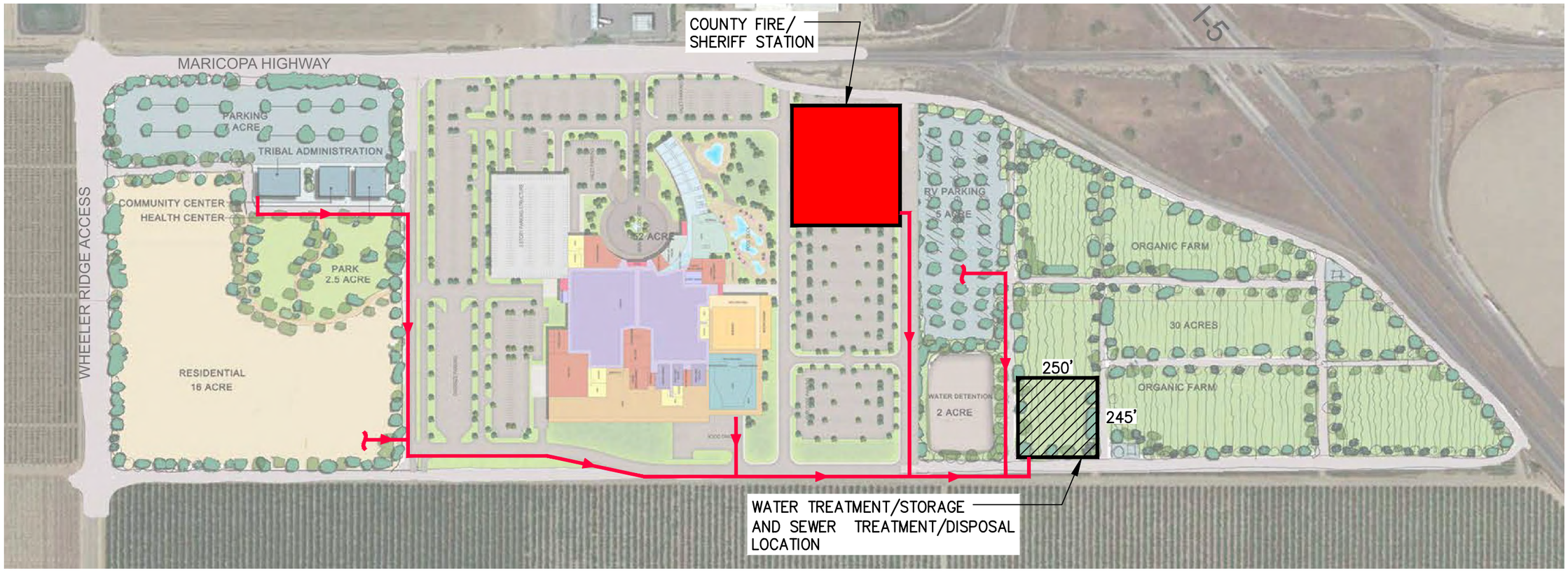
PROPOSED SEWER

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

FIGURE 3-2

METTLER ALTERNATIVE A2 PROPOSED SEWER SITE PLAN

TEJON CASINO



LEGEND

PROPOSED SEWER

N

NO SCALE

FIGURE 3–3

MARICOPA
ALTERNATIVE B
PROPOSED SEWER SITE PLAN
TEJON CASINO

DEXTER WILSON ENGINEERING, INC.
CONSULTING ENGINEERS
(760) 438-4422

\\ARTIC\DWG\863005\SEWER\TC_SWR_FIGURE_3-3_MARICOPA_ALTB_PROSITE.DWG 01-23-20 08:55:02 LAYOUT: LAYOUT

Gravity Sewers. Private onsite gravity sewer lines will be required to collect flows from the casino and associated facilities and to convey these flows to the proposed onsite treatment system. The site should be designed so that sewer will gravity flow from the entire project to the onsite treatment area. At the projected sewer flows calculated in Table 3-1, 3-2, and 3-3, the gravity sewer pipe sizes will range from 6-inch to 12-inch diameter for Alternative A1 and 6-inch to 10-inch for Alternative A2and Alternative B. The largest diameter pipe size will be needed for the influent line to the onsite treatment plant.

Wastewater Treatment Plant. The onsite gravity sewer collection system will flow into an onsite wastewater treatment system. This onsite wastewater treatment will be capable of a treatment level that is suitable for beneficial reuse of the treated effluent per EPA rules and regulations.

Depending on the exact package treatment plant selected there may be a need for additional tertiary (filtration) treatment. For example, a package membrane bioreactor would not require any additional treatment beyond disinfection to meet EPA standards whereas a package sequencing batch reactor (SBR) would require a supplemental filtration system to meet EPA tertiary requirements for reuse. Regardless of treatment methodology selected for the project, a preliminary summary of required equipment would be:

- Two submersible influent pumps (5 hp each);
- One primary screen for primary solids;
- Two aeration blowers for secondary treatment (15 hp each);
- Various minor process pumps, approximately six (<2 hp each);
- In-line disinfection system for tertiary effluent (Chlorine or Ultraviolet Radiation);
- Two effluent pumps for reuse/disposal (10 hp each);
- Adequate tankage for storage (one average day of irrigation water demand);
- Odor control;
- Emergency power generator.

Solids and sludge generated by the wastewater treatment plant would be hauled offsite for disposal. Primary solids would be collected and stored in an enclosure to be hauled away via regular trash service. Biological solids (sludge) would be stored for periodic disposal to an approved landfill. Sludge generation is estimated be approximately 100 to 150 gallons per day. This would equate to a single disposal truck trip every two weeks.

Reuse and Disposal. The wastewater generated onsite will be treated to acceptable reuse standards ("recycled water") according to EPA requirements. This will allow reuse for irrigation around the hotel and casino buildings and at other use areas such as the Community Park and Organic Farm.

For all alternatives of the proposed project, there will be excess recycled water available compared to the water demands of the Community Park and Organic Farm per Tables 2-1, 2-2, 2-3 and Tables 3-1, 3-2, and 3-3. Utilizing recycled water to its fullest extent would reduce average water use by approximately 132 AFY for Alternatives A1, 165 AFY for Alternative A2, and 71 AFY for Alternative B. Recycled water distribution piping would vary in size up to 4-inch diameter throughout the proposed use areas of the project.

All of the recycled water generated from the wastewater treatment facility would not be able to be utilized on a continuous basis. The projected sewer and subsequent recycled water generation will exceed the projected irrigation demand thus creating an excess amount of recycled water that would need to be disposed of during normal weather conditions as well as during periods of wet weather when there is no irrigation demand.

Percolation Pond. The means by which excess treated effluent can be disposed of is a percolation pond. This facility will hold excess treated effluent and allow it to infiltrate into the soil. Percolation of excess effluent can continue during rainfall and storm events throughout the wet weather season. The additional water from rainfall into the percolation pond will be accommodated within the percolation pond area by designing the percolation ponds with greater than one foot of minimum freeboard. The recommended freeboard for rainfall is 20 percent of the calculated depth of the percolation pond, or as determined by the design engineer.

Soil conditions at both alternative sites show infiltration rates to range from 0.57 to 1.98 inches per hour per the latest data from the USDA soil survey [18]. The minimum percolation rate allowed by the County is 1.0 inches per hour. Using that conservative percolation/infiltration factor, this would require a maximum percolation area of approximately 35,000 square feet at the peak sewer flow rate of the proposed Tejon Casino project alternatives. Percolation testing will be conducted at the ultimate selected project site to confirm the final required percolation pond size.

Permitting

No permitting will be necessary for the package wastewater treatment plant, recycled water distribution piping, recycled water use sites, and odor control system. Permitting through the federal Environmental Protection Agency (EPA) is required only for surface water discharges through the National Pollutant Discharge Elimination System. Surface water discharge is not an option for this project. Therefore, the design of all proposed wastewater treatment and disposal facilities, recycled water distribution systems, and odor control facilities will be self-certified by the registered professional engineer or engineers who will be responsible for the design.

Tejon Casino Sewer Facilities Impact

As with the potable water systems needed at each proposed project site, the wastewater systems needed to support the proposed development will have to be constructed entirely within the project boundary. There is no opportunity for any of the three alternatives to connect to an existing wastewater collection, treatment, and disposal system. Therefore, each project alternative will have to construct its own facilities to be fully capable of providing collection, treatment, and effluent disposal within its site boundary.

All treatment plant components and processes will be protected from the floodplain by means of a flood control levee. Initial findings on potential flood threats in the project vicinity would merit a levee between 2 to 4 feet high to protect from the anticipated 100-year flood water levels.

CITATIONS

[1] Reference 4: Page 3.6-12

[2] Reference 1: Page 5

[3] Reference 2: Page 1-1

[4] Reference 3: Page 4

[5] Reference 7: Map

[6] Reference 2: Attachment B1

[7] Reference 3: Page 19

[8] Reference 3: Page 4

[9] Reference 3: Page 7

[10] Reference 8: Cover Page

[11] Reference 3: Page 11

[12] Reference 2: Page 1-2

[13] Reference 2: Page 2-1

[14] Reference 3: Page 16

[15] Reference 2: Attachment H

[16] Reference 3: Table 5

[17] Reference 5: Page 2-2

[18] Reference 6: Map

[19] Reference 9: Page 192

REFERENCES

1. City of Bakersfield Standards and Specifications for Domestic Water Systems, July 2017

2. Arvin-Edison Water Storage District Water Management Plan Update, October 2015.

3. Arvin-Edison Water Storage District Groundwater Management Plan, June 2003.

4. Draft Tribal Environmental Report Timbisha Shoshone Casino Project, December 2017.

5. City of Bakersfield Public Works Department Sewers Subdivision & Engineering Design Manual, September 2013.

6. USDA Natural Resources Conservation Service Web Soil Survey, August 2017.

7. GAMA Groundwater Information System, January 2019.

8. *Division of Drinking Water CA Drinking Water Watch Water System Details* https://sdwis.waterboards.ca.gov/PDWW/JSP/WaterSystemDetail.jsp?tinwsys_is_number=1311&tinwsys_st_code=CA&wsnumber=CA1500401. Accessed 5 March 2019

9. Metcalf & Eddy. *Wastewater Engineering Treatment and Resource Recovery*. New York, NY, McGraw-Hill Education, 2014