NEGATIVE DECLARATION

The City of Bakersfield Development Services Department has completed an initial study (attached) of the possible environmental effects of the following-described project and has determined that a Negative Declaration is appropriate. It has been found that the proposed project, as described and proposed to be mitigated (if required), will not have a significant effect on the environment. This determination has been made according to the California Environmental Quality Act (CEQA), the State CEQA Guidelines, and the City of Bakersfield's CEQA Implementation Procedures.

PROJECT NO. (or Title): **Conditional Use Permit 20-0379**

COMMENT PERIOD BEGINS: September 8, 2021

COMMENT PERIOD ENDS: October 8, 2021

MITIGATION MEASURES (*included in the proposed project to avoid potentially significant effects, if required)***:**

Cultural Resources Impact Mitigation Measures:

1. Prior to construction and as needed throughout the construction period, a construction worker cultural awareness training program shall be provided to all new construction workers within one week of employment at the project site. The training shall be prepared and conducted by a qualified cultural resources specialist.

2. During construction, if buried paleontological or cultural resources are encountered during construction or ground disturbance activities, all work within 50 feet of the find shall immediately cease and the area cordoned off until a qualified cultural and/or paleontological resource specialist that meets the Secretary of the Interior's Professional Qualification Standards can evaluate the find and make recommendations. If the specialist determines that the discovery represents a potentially significant resource, additional investigations may be required. These additional studies may include avoidance, testing, and excavation. All reports, correspondence, and determinations regarding the discovery shall be submitted to the California Historical Resources Information System's Southern San Joaquin Valley Information Center at California State University Bakersfield.

3. During construction, if human remains are discovered, further ground disturbance shall be prohibited pursuant to California Health and Safety Code Section 7050.5. The specific protocol, guidelines, and channels of communication outlined by the Native American Heritage Commission, in accordance with Health and Safety Code Section 7050.5, Public Resources Code 5097.97, and Senate Bill 447 shall be followed. In the event of the discovery of human remains, at the direction of the county coroner, Health and Safety Code Section 7050.5(C) shall guide Native American consultation.

Traffic Mitigation Measures:

4. Prior to the issuance of building permits, the project applicant shall participate in the RTIF program by paying the adopted fees in place for the land use type at time of development.

Please see Appendix A for Site Plan Conditions of Approval.

INITIAL STUDY
ENVIRONMENTAL ANALYSIS

1. **Project Title:** Conditional Use Permit No. 20-0379

2. **Lead Agency** *(name and address)*: City of Bakersfield
Development Services Department
1715 Chester Avenue
Bakersfield, California 93301

3. **Contact Person and Phone Number:** Ryder Dilley
(661) 326-3616 (desk) or 326-3733 (receptionist)

4. **Project Location:** 2201 Taft Hwy (APNs 184-160-13, -14, and -43)

5. **Project Sponsor's Name and Address:** LAV//Pinnacle Engineering
Attn: Matt VoVilla
12418 Rosedale Hwy, Suite A
Bakersfield, CA 93312

6. **General Plan Designation:** SI (Service Industrial) and LI (Light Industrial)

7. **Zoning:** M-1 (Light Manufacturing) and M-2 (General Manufacturing)

8. **Description of Project** *(Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation.)*:

LAV//Pinnacle Engineering (applicant), is proposing a Conditional Use Permit (CUP) to allow development of a truck stop on approximately 16 acres, to be constructed in three phases. The project site is located at 2201 Taft Hwy, which is generally on the south side of Taft Hwy and approximately 1,000 feet west of CA State Route 99. The overall project consists of multiple uses that are outlined by Phase in Table 1 below.

Table 1. Project Phasing

Development Component	Phase 1 (Estimated Completion Spring 2022)	Phase 2 (Estimated Completion Fall 2022)	Phase 3 (Estimated Completion Spring 2023)
Convenient store with food court	16,582 ft^2	--	--
Car and truck fueling facilities	10 regular gas pumps, 9 diesel pumps	--	--
Associated car and truck parking	115 spaces (2 EV spaces)	--	--
Truck wash and tire repair facility	--	11,700 ft^2	--
Truck wash/repair parking	--	24 parking spaces	--
Freight broker office	--	--	1,943 ft^2
Truck sales office	--	--	240 ft^2
Office and truck sales parking	--	--	13 parking spaces

The project would include street improvements on the south side of Taft Hwy and would dedicate and improve both Grewal Street and Buhlar Street. Landscaping would be provided along the street frontages and throughout the project area. All improvements and landscaping would be completed with Phase 1 of the project.

Access to the project site is proposed via two ingress/egress points at Taft Hwy and Compagnoni Street. In addition, a sump is proposed on the southwest corner of the project site, to be constructed with Phase 1.

9. Surrounding Land Uses and Setting *(Briefly describe the project's surroundings.)***:**

The project site consists of three undeveloped parcels of land with remains of prior residential and industrial uses. A segment of the Kern Island Canal runs through the western portion of the site. The nearest residential properties are located over 405 feet to the west. Surrounding City and County areas are zoned and partially developed with public and private uses found in commercial, industrial, and residential zones. To the northeast are existing commercial buildings along Taft Hwy. To the east are commercial, industrial, and public office buildings along Taft Hwy and Compagnoni Street. To the south is vacant land utilized for agriculture and a partially developed industrial yard for the County of Kern. To the west is vacant land, residential properties, and a commercial retail building along Taft Hwy.

10. Other public agencies whose approval is anticipated to be required *(e.g., permits, financing approval, or participation agreement)***:**

- Kern County Public Works---Street improvements
- California Department of Transportation—Access and Improvements along Taft Hwy
- San Joaquin Valley Air Pollution Control District—Indirect Source Rule compliance
- State Water Resources Control Board—National Pollutant Discharge Elimination System General Permit
- City of Bakersfield—Water, Sewer, Street Improvement, and Encroachment Permits
- City of Bakersfield—Grading permits
- City of Bakersfield—Building permits
- City of Bakersfield—Metropolitan Bakersfield Habitat Conservation Plan compliance
- City of Bakersfield—Site Plan Review
- City of Bakersfield—Regional Transportation Impact Fee Program compliance

Appendices:
Appendix A: Site Plan Review Conditions of Approval
Appendix B: Site Plans
Appendix C: Maps
Appendix D: Air Quality Analysis
Appendix E: Biological Study
Appendix F: Cultural Study
Appendix G: Noise Study
Appendix H: Traffic Impact Study

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

As indicated by the checklist on the following pages, the project would result in potentially significant impacts with respect to the environmental factors checked below (*Impacts reduced to a less than significant level through the incorporation of mitigation are not considered potentially significant.*):

☐ Aesthetics	☐ Agriculture/Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards and Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

ENVIRONMENTAL DETERMINATION:

On the basis of this initial evaluation:

☐ I find that the proposed project **could** not have a significant effect on the environment, and a **negative declaration** will be prepared.

■ I find that although the proposed project **could** have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **mitigated negative declaration** will be prepared.

☐ I find that the proposed project **may** have a significant effect on the environment, and an **environmental impact report** is required.

☐ I find that the proposed project **may** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect has been (1) adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) addressed by mitigation measures based on the earlier analysis as described on the attached sheets. An **environmental impact report** is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project **could** have a significant effect on the environment, because all potentially significant effects have been (1) analyzed adequately in an earlier **environmental impact report or negative declaration** pursuant to applicable legal standards, and (2) avoided or mitigated pursuant to that earlier **environmental impact report or negative declaration**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

_____ *Signature*

08/24/2021
Date

Ryder Dilley, Associate Planner II
Printed name

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors, as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant with Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level.

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:
   a) The significance criteria or threshold, if any, used to evaluate each question; and
   b) The mitigation measure identified, if any, to reduce the impact to less than significant.

Environmental Issue

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
I. AESTHETICS: Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	■	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcrops, and historic buildings within a state scenic highway?	☐	☐	☐	■
c) In nonurbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	■	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	■	☐
II. AGRICULTURE RESOURCES:				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use?	☐	☐	☐	■
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	■
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	■
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	■
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	■
III. AIR QUALITY:				
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	■	☐
b) 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?	☐	☐	■	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	■	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	■	☐

Environmental Issue

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	■	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☐	■
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	■
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 any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	■	☐
f) 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 project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	■
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	■	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	■	☐	☐
VI. ENERGY: Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	■	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	■	☐
VII. GEOLOGY AND SOILS: Would the project;				
a) Directly or indirectly cause 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 soil erosion or the loss of topsoil?	☐	☐	■	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	■	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	■	☐

Environmental Issue

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	■
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	■	☐	☐
VIII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	■	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	■	☐
IX. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	■	☐
b) Create a significant hazard to the public or the 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 school?	☐	☐	☐	■
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	■
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	■
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	■	☐
X. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	■	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	■	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i. Result in a substantial erosion or siltation on- or off-site?	☐	☐	■	☐
ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☐	■	☐
iii. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	■	☐
iv. Impede or redirect flood flows?	☐	☐	☐	■
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	■	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	■	☐
XI. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	■

Environmental Issue

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	■
XII. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?	☐	☐	☐	■
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	■
XIII. NOISE: Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	■	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	■	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	■
XIV. POPULATION AND HOUSING: Would the project;				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	■	☐
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■
XV. PUBLIC SERVICES:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered 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 public services:				
i. Fire protection?	☐	☐	■	☐
ii. Police protection?	☐	☐	■	☐
iii. Schools?	☐	☐	■	☐
iv. Parks?	☐	☐	■	☐
v. Other public facilities?	☐	☐	■	☐
XVI. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	■
XVII. TRANSPORTATION: Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	■	☐	☐

Environmental Issue

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
b) Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?	☐	☐	■	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	■	☐
d) Result in inadequate emergency access?	☐	☐	■	☐
XVIII. TRIBAL CULTURAL RESOURCES:				
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code § 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 historical resources as defined in Public Resources Code section 5020.1(k)?	☐	☐	☐	■
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 § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	☐	☐	☐	■
XVIV. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	■	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	■	☐
c) Result in a determination by the waste water treatment provider, 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?	☐	☐	■	☐
d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	■	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	■	☐
XX. WILDFIRES: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	■	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	■	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	■	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	■	☐

Environmental Issue

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
XXI. MANDATORY FINDINGS OF SIGNIFICANCE:				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	■	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	■	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	■	☐

EVALUATION OF ENVIRONMENTAL EFFECTS

I. AESTHETICS

a. **Less-than-significant impact.** The existing visual environment in the area adjacent to the project is predominantly vacant lots, highway commercial uses such as gas stations, and residential including single-family homes. The project does not conflict with any applicable vista protection standards, scenic resource protection requirements or design criteria of federal, state, or local agencies, and the project is consistent with the *Metropolitan Bakersfield General Plan* (MBGP) designations and zone districts per the Zoning Ordinance for the project area. The project site is located within an area having slopes from 0 to 5%. The area is not regarded or designated within the *Metropolitan Bakersfield General Plan* as visually important or "scenic." The construction of a truck stop at the site would be in character and compatible with other existing commercial and public facility uses in the vicinity of the site and is a natural extension of the urban growth occurring in the project area. Therefore, the project would not have a substantial adverse effect on a scenic vista.

b. **No impact.** Based on a field visit, it was determined that no trees, rock outcrops, buildings (historic or otherwise), or other physical resources are apparent on the vacant property and partially developed vicinity. Additionally, the project is not located adjacent to or near any officially designated or potentially eligible scenic highways to be listed on the California Department of Transportation (Caltrans) State Scenic Highway System (Caltrans 2019). Therefore, the project would not substantially damage scenic resources, including, but not limited to, trees, rock outcrops, and historic buildings within a state scenic highway.

c. **Less-than-significant impact.** The site and surrounding area are located within an urbanized area. Therefore, the project would not substantially degrade the existing visual character or quality of public views of the site and its surroundings in a nonurbanized area. The proposed urban land use is contiguous with existing public facilities, commercial, residential, and industrial land uses that are allowed by City and County land use regulations. The project and future City development are required to conform to City zoning provisions which apply a range of site design criteria to new buildings, tenant improvements, and site alterations involving retail, industrial, and office buildings; require the screening of on-site views into the private side and rear yards of residential

uses in the vicinity; and require public and private street frontage trees and groundcover plantings. Therefore, impacts are less than significant.

d. **Less-than-significant impact.** This project involves incremental urban growth within the City of Bakersfield's jurisdiction. This project would have to comply with City development standards, including Title 17 (zoning ordinance), Title 15 (buildings and construction), as well as California Code of Regulations Title 24 (building code). Together, these local and state requirements oblige project compliance with current lighting standards that minimize unwanted light or glare to spill over into neighboring properties. Therefore, the project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

II. AGRICULTURE RESOURCES

a. **No impact.** The project site is identified as three different types of land by the California Important Farmland Finder (DOC 2021): Semi Agricultural and Rural Commercial, Grazing, and as Vacant or Disturbed Land. The site is not being farmed or grazed, and the site is bordered by major streets, vacant and agricultural land, and urban development. The biological evaluation indicates the site is mostly disturbed by previous development with a portion of it having industrial and residential waste (Padre 2021). The project does not convert 100 acres or more of the farmlands designated Prime, Unique, or of Statewide Importance to nonagricultural uses. Therefore, the project would not significantly convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use.

b. **No impact.** The project site is currently zoned M-1 (Light Manufacturing) and M-2 (General Manufacturing) and is not under a Williamson Act contract. Therefore, the project would not conflict with existing zoning for agricultural use or a Williamson Act contract.

c. **No impact.** As discussed in II.b, the project site is zoned M-1 and M-2. There are no forested lands located on the site or in the surrounding area. Therefore, the project would not conflict with existing zoning for, or cause rezoning of forest land or timberland, or timberland zoned Timberland Production.

d. **No impact.** Please refer to response II.c. The project would not result in the loss of forestland or conversion of forest land to non-forest.

e. **No impact.** Please refer to responses II.a through II.d. This project is in an area designated for urban development by the MBGP and the Zoning Ordinance. The project itself is typical of the development found in Metropolitan Bakersfield. The project site is also surrounded by existing and developing commercial, industrial, and residential land uses. Therefore, the project would not involve other changes in the existing environment, which, due to their location or nature, could result in conversion of farmland to non-agricultural use or conversion of forest land to non-forest use.

III. AIR QUALITY

a. **Less-than-significant impact.** The project is located within the San Joaquin Valley Air Pollution Control District (SJVAPCD) jurisdiction, in the San Joaquin Valley Air Basin (SJVAB). The SJVAB is classified by the state as being in severe nonattainment for the state 1-hour ozone standard as well as in nonattainment for the state particulate matter

less than 10 microns (PM10) and particulate matter less than 2.5 microns (PM2.5). The SJVAB is also classified as in extreme nonattainment for the federal 8-hour ozone standard, nonattainment for the federal PM2.5 standard, and attainment/maintenance for the federal carbon monoxide (CO) and PM10 standards.

Emission sources resulting from the project would include ground disturbance and other construction-related work as well as operational emissions associated with the travel center activities including travelers (automobile and truck) and drive-by motorists stopping to fuel, rest, and/or eat.

The SJVAPCD encourages local jurisdictions to design all developments in ways that reduce air pollution from vehicles, which is the largest single category of air pollution in the San Joaquin Valley. The *Guide for Assessing and Mitigating Air Quality Impacts* (GAMAQI) (SJVAPCD 2015) lists various land uses and design strategies that reduce air quality impacts of new development. Local ordinance and general plan requirements related to landscaping, sidewalks, street improvements, level of traffic service, energy efficient heating and cooling building code requirements are consistent with these listed strategies. Regulation and policy that will result in the compliance with air quality strategies for new residential and commercial developments include, but are not limited to, Title 24 efficiency standards, Title 20 appliance energy efficiency standards, 2005 building energy efficiency standards, Assembly Bill (AB) 1493 motor vehicle standards, and compliance with the Metropolitan Bakersfield General Plan Air Quality Conservation Element as well as the SJVAPCD air quality guidelines and rules.

As shown in the following table, the SJVAPCD has established specific criteria pollutants thresholds of significance for the operation of specific projects.

SJVAPCD Significance Thresholds for Criteria Pollutants	
Air Pollutant	**Tons/Year**
CO	100
Reactive Organic Gas (ROG)	10
Nitrogen Oxides (NOX)	10
Sulfur Oxides (SOX)	27
PM10	15
PM2.5	15

Source: BPG 2021

Construction of the project would result in air pollutant emissions. Emissions from construction would result from fuel combustion and exhaust from equipment as well as vehicle traffic, grading, and the use of toxic materials (e.g., lubricants). The following table provides estimated construction emissions because of the project.

Construction Emissions						
Construction Year	**Pollutant (lbs/day)**					
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Year 2022 Emissions	3.7	38.8	29.5	0.08	9.8	5.9
Year 2023 Emissions	20.9	23.9	24.7	0.08	3.9	1.5
SJVAPCD Emissions Thresholds	100	100	100	100	100	100
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: BPG 2021 Table 4

As shown in the above table, construction emissions are not predicted to exceed SJVAPCD significance thresholds levels. Therefore, impacts are less than significant.

Project operations would also result in air pollutant emissions. Vehicle trips to and from the development would be the primary source of operational emissions. The following table provides estimated operational emissions because of the project.

Operational Emissions						
Emissions Source	**Pollutant (lbs/day)**					
	ROG	**NOx**	**CO**	**SOx**	**PM10**	**PM2.5**
Operational Emissions	15.4	55.2	44.7	0.16	4.74	6.03
SJVAPCD Threshold	100	100	100	100	100	100
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: BPG 2021

As shown in the above table, the operational emissions are also not predicted to exceed SJVAPCD significance thresholds levels.

Specific to this project, the Air Quality and Greenhouse Gas Study (BPG 2021) outlines a number of recommended measures to ensure that the project complies with the air quality plan. The Site Plan Review will include a standard condition of approval (Condition B.18) requiring that the developer meet all regulations of the SJVAPCD during construction and operation of the project. Therefore, impacts would be less than significant.

b. **Less-than-significant impact.** Under GAMAQI, any project that would have individually significant air quality impacts would also be considered to have significant cumulative air quality impacts. Impacts of local pollutants are cumulatively significant when the combined emissions from the project and other planned projects exceed air quality standards. The following table shows the project's contribution to cumulative emissions calculated for both Kern County and the greater SJVAB.

Cumulative Emissions						
Emissions Inventory	**Pollutants (tons/year)**					
	ROG	**NOX**	**CO**	**SOX**	**PM10**	**PM2.5**
Kern County – 2012[1]	36,026	26,426	58,108	949	16,097	4,964
SJVAB – 2012[1]	218,964	119,282	490,998	4,526	117,567	40,150
Project	2.81	10.07	8.16	0.029	0.87	1.10
Project % of Kern	0.0078	0.038	0.014	0.003	0.0054	0.022
Project % of SJVAB	0.0013	0.0084	0.0017	0.0006	0.0007	0.0027
[1]Latest inventory available as of May 2018.						

As shown in the above table, the project does not pose a significant increase to estimated cumulative emissions for criteria pollutants in nonattainment within Kern County and the greater SJVAB. The project's regional contribution to cumulative impacts would be negligible (well less than 1% for all pollutants under consideration) and therefore, the project's contribution is not cumulatively considerable.

Additionally, the GAMAQI, citing California Code of Regulations (CCR) Section15064(h)(3), states on page 66 that "[a] Lead Agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively

considerable if the project will comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that will avoid or substantially lessen the cumulative problem within the geographic area in which the project is located" (SJVAPCD 2015).

The City's Site Plan Review standard conditions of approval and State law require compliance with air quality control measures and rules required by the SJVAPCD, which include, but are not limited to, SJVAPCD Rule 2010 (Permits Required), SJVAPCD Rule 2201 (New and Modified Stationary Source Review Rule), SJVAPCD Rule 4102 (Nuisance), and SJVAPCD Rule 9510 (Indirect Source Rule), each of which is discussed below.

SJVAPCD Rule 2010 requires any person constructing, altering, replacing or operating any source operation which emits, may emit, or may reduce emissions to obtain an Authority to Construct or a Permit to Operate from the SJVAPCD Air Pollution Control Officer (APCO). The project will comply with this rule by obtaining authorization from APCO prior to commencing construction on the project.

SJVAPCD Rule 2201 requires review and offset of stationary sources of air pollution and no net increase in emissions above specified thresholds from new and modified stationary sources of all nonattainment pollutants and their precursors. This is achieved through the use of mechanisms as approved by the SJVAPCD, such as emission trade-offs by which a permit to construct or operate any source pollution is granted. The project will comply with this rule by demonstrating compliance when obtaining authorization from APCO under Rule 2010. For example, compliance with Rule 2201 may include using Best Available Control Technology and providing emission offsets.

SJVAPCD Rule 4102 protects the health and safety of the public by prohibiting discharge from any source whatsoever of air contaminants that cause injury, detriment, nuisance, or other annoyance to any considerable number of people. The project will comply with this rule by not discharging air contaminants or other materials, which cause injury, detriment, nuisance, or other annoyance to any considerable number of people.

SJVAPCD Rule 9510 requires the reduction of emissions of nitrogen oxides (NOX) and particulate matter smaller than ten microns in aerodynamic diameter (PM10) associated with construction and operational activities of development projects occurring within the San Joaquin Valley. Rule 9510 applies to new development projects that would equal or exceed specific size limits called applicability thresholds (e.g., developing more than 2,000 square feet of commercial space, 25,000 square feet of light industrial space, 10,000 square feet of heavy industrial space, or 50 residential units). The project is subject to SJVAPCD Rule 9510 because it exceeds the applicability threshold. Accordingly, the project must reduce a portion of the emissions occurring during construction and operational phases through on-site measures, or pay off-site mitigation fees. The objective of this rule is to reduce construction NOX and PM10 emissions by 20% and 45%, respectively, as well as to reduce operational NOX and PM10 emissions by 33.3% and 50%, respectively, when compared to unmitigated projects. The SJVAPCD uses CalEEMod (California Emission Estimator Model) to estimate emissions of NOX and PM10 for potential land uses. Examples of measures that may be implemented to reduce emissions pursuant to this rule include, but are not limited to, incorporating energy efficiency beyond Title 24 requirements, providing bicycle lanes throughout a project, using cleaner fleet construction vehicles, providing employee incentives for using alternative transportation, and building in proximity to existing or planned bus stops.

When a development project cannot reduce its NOX and PM10 emissions to the level required by Rule 9510, then the difference must be mitigated through the payment of an offsite emissions reduction fee. One hundred percent (100%) of all off-site mitigation fees are used by the SJVAPCD to fund emission reduction projects through its Incentives Programs, achieving emission reductions on behalf of the project.

Due to the fact that 1) the air quality modeling indicates that the project's regional contribution to cumulative impacts would be negligible and 2) the project is required by State law and the standard conditions of approval to comply with the requirements of the SJVAPCD attainment plans and rules, the project would not 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. Therefore, impacts are less than significant.

c. **Less-than-significant impact.** Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved that expose sensitive receptors to sustained exposure to any pollutants present. Examples of the types of land use that are sensitive receptors include residences, retirement facilities, hospitals, and schools. The most sensitive portions of the population are children, the elderly, the acutely ill, and the chronically ill, especially those with cardiorespiratory diseases.

The air quality and GHG study (BPG 2021) indicated the closest off-site sensitive receptors are existing residences located on the west side of Hughes Lane approximately 405 feet west of the site. Additional more distant sensitive receptors are located further north, northwest, and to the southwest of the site. The study identified that the primary impact to sensitive receptors would be from diesel particulate matter emitted by diesel trucks accessing the site. It was determined that emissions generated from construction and operation of the project would be less than the SJVAPCD screening criteria. The project site is also located beyond the recommended distance of 300 feet between residential uses and large fueling stations provided by the California Air Resources Board (CARB). The study concluded that based on the project's operational emissions and activity types, the proposed project would not result in any impacts to any on-site or off-site sensitive receptors. Therefore, the project would not expose sensitive receptors to substantial pollutant concentrations.

d. **Less-than-significant impact.** The air quality and GHG study (BPG 2021) concluded that heavy-duty equipment in the project area during construction would emit odors; however, the construction activity would cease to occur after completion. The primary source of odors during operation would be from the operation of the restaurant. SJVAPCD Rule 4692 requires the use of a catalytic oxidizer control device approved by the SJVAPCD to control emission. The study concluded with these measures the project would not emit any nuisance odors resulting from the expected uses (BPG 2021). The City's Site Plan Review standard conditions of approval and State law require compliance with air quality control measures. Therefore, the project would not create objectionable odors affecting a substantial number of people, and impacts are less than significant.

IV. <u>BIOLOGICAL RESOURCES</u>

a. **Less-than-significant impact.** A Biological Study was completed for the proposed project (Padre 2021) to determine the likelihood of presence of any threatened, endangered,

and/or sensitive (TES) species that may be present and impacted during project related activities. Of the listed species, the study determined that one of the listed plant species and eight of the wildlife species have a potential to occasionally occur on the project site. The study also indicated the San Joaquin kit fox (SJKF) (*Vulpes macrotis mutis*) is likely to occur on the project site. No active indicators of occupation or use by these species (e.g., scat, tracks, nesting materials, prey remains, or any other sign) were identified during the field survey; however, suitable denning habitats were observed that have the potential to be used by these species in the future.

As recorded by a study prepared in 2017, the Swainson's hawk (*Buteo swainsoni*) was observed flying overhead, and the Loggerhead shrike (*Lanius ludovicianus*) was observed sitting on a fence within the eastern portion of the project site. Both species are known to occur; however, no nesting or breeding behaviors were observed and neither species was observed during the 2021 survey. No other sensitive species were observed during the surveys.

The project is subject to the terms of the Metropolitan Bakersfield Habitat Conservation Plan (MBHCP) and associated Section 10(a)(1)(b) and Section 2081 permits issued by USFWS and CDFW, respectively. The project is also subject to ITP No. 2081-2013-058-04 (ITP) and associated Mitigation Monitoring and Reporting Program (MMRP). These documents are hereby incorporated by reference. Terms of these permits require applicants for all development projects within the plan area to pay habitat mitigation fees and notify agencies prior to grading in areas covered under the permit.

Compliance with the MBHCP and applicable State laws and regulations governing the protection of candidate, sensitive, or special status species are included as a standard condition of approval for the Site Plan Review (Condition B.9). Therefore, no additional mitigation is required and impacts are less than significant.

b. **No impact.** The Biological study determined that there is no riparian habitat or other sensitive natural community located within the project site (Padre 2021). The project is also not located within, or adjacent to, the Kern River riparian habitat area. Therefore, the project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community.

c. **No impact.** Based on the results of the field survey and a review of the USFWS National Wetlands Inventory, there are no wetlands, as defined by Section 404 of the federal Clean Water Act (CWA), located within the project site (Padre 2021). Therefore, the project would not have a substantial adverse effect on federally-protected wetlands.

d. **Less-than-significant impact.** The project site is isolated from natural areas, is not within the Kern River floodplain (noted as a wildlife corridor in the MBHCP) and is not along a canal that has been identified by the USFWS as a corridor for native resident wildlife species. Therefore, it was concluded that the project would not interfere with wildlife movement (Padre 2021).

There is the potential during construction and related activities to temporarily affect nursery sites such as dens and burrows. Project construction could cause the direct destruction of a nursery site or cause enough of an indirect disturbance to cause special-status wildlife to abandon a nursery site. Compliance with the MBHCP pre-construction surveys and applicable State laws and regulations governing the protection of candidate, sensitive, or special status species are included as a standard condition of

approval for the Site Plan Review (Condition B.11). Therefore, the project would not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with an established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

e. **Less-than-significant impact.** It was concluded that the project site does not contain any biological resources that are protected by local policies. The project is located within the boundary of the MBHCP, which addresses biological impacts within the Metropolitan Bakersfield General Plan area. The MBHCP has been adopted as policy and is implemented by ordinance. The development entitled by this proposal would be required to comply with the MBHCP. Therefore, the project would not conflict with any local policies or ordinances protecting biological resources.

f. **Less-than-significant impact.** Please refer to responses IV.a, IV.d, and IV.e. All development within the City that requires a grading permit is subject to MBHCP compliance prior to the issuance of a grading permit. Therefore, the project would not 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

a. **No Impact**. A Cultural Resource Study was prepared for the project site (Hudlow 2021). The search concluded that there are no recorded cultural resources within the project area, including the project site, that are listed on any of the historic registers. The survey of the site observed remains of prior automotive businesses and demolished remains of a small house. It has been verified in the field that no structures, including potentially historic structures, are located at the project site. Therefore, the project would not cause a substantial adverse change in the significance of a historical resource.

b. **Less-than-significant with mitigation incorporated.** It has been concluded that the project site does not contain any known archaeological resources (Hudlow 2021). However, there is still the potential to unearth previously unknown archaeological resources at the site, and grading and other ground-disturbing activities have the potential to damage or destroy such resources. Mitigation Measure 2 requires ceasing work and investigating any discovery by qualified experts in the event that previously unknown archaeological resources are unearthed during construction. With the implementation of Mitigation Measure 2, the project would not cause a substantial adverse change in the significance of an archaeological resource.

c. **Less than significant with mitigation incorporated.** There are no known human remains within the project site. The project could inadvertently uncover or damage previously unknown human remains. Mitigation Measure 3 requires that if any human remains are found at the site during construction, work will cease and the remains would be handled pursuant to applicable law. With implementation of Mitigation Measure 3, the project would not significantly disturb any human remains.

VI. ENERGY

a. **Less-than-significant impact.** The truck stop construction will require temporary energy demands typical of other commercial, industrial, and/or office construction projects that occur throughout the state and this development's construction would not result in inefficient or unnecessary consumption of energy resources beyond typical construction.

All new construction within the City of Bakersfield must adhere to modern building standards, including California Code of Regulations Title 24, which outlines energy efficiency standards for new buildings to ensure that they do not wastefully, inefficiently, or unnecessarily consume energy. Therefore, the project would not result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

b. **Less-than-significant impact.** There is no adopted plan by the City of Bakersfield for renewable energy or energy efficiency. As discussed in VI.a, all new development projects within the City are required to adhere to modern building standards related to energy efficiency. Additionally, the City encourages applicants and developers to go beyond the required standards and make their developments even more efficient through programs such as LEED, or Leadership in Energy and Environmental Design, which is a green building rating system that provides a framework to create healthy, highly efficient, and cost-saving green buildings. Other encouraged programs available applicants and developers are Title 20 appliance energy efficiency standards and 2005 building energy efficiency standards. Therefore, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

VII. GEOLOGY AND SOILS

a. The following discusses the potential for the project to expose people or structures to substantial adverse effects because of various geologic hazards. The City is within a seismically active area. According to the *Metropolitan Bakersfield General Plan*, major active fault systems border the southern portion of the San Joaquin Valley. Among these major active fault systems include the San Andreas, Breckenridge-Kern County, Garlock, Pond Poso, and White Wolf faults. There are numerous additional smaller faults suspected to occur within the Bakersfield area, which may or may not be active. The active faults have a maximum credible Richter magnitude that ranges from 6.0 (Breckenridge-Kern County) to 8.3 (San Andreas). Potential seismic hazards in the planning area involve strong ground shaking, fault rupture, liquefaction, and landslides.

i. **No Impact.** Ground rupture is ground deformation that occurs along the surface trace of a fault during an earthquake. The project site is not included within the boundaries of an "Earthquake Fault Zone" as defined in the Alquist-Priolo Earthquake Fault Zoning Act (DOC 2019b). Therefore, the project would not expose people or structures to potential substantial adverse effects involving rupture of a known earthquake fault.

ii. **Less-than-significant impact.** The City is within a seismically active area. Future structures proposed on the project site are required by state law and City ordinance to be constructed in accordance with the Uniform Building Code (specifically Seismic Zone 4, which has the most stringent seismic construction requirements in the United States), and to adhere to all modern earthquake construction standards. Therefore, the project would not expose people or structures to potential substantial adverse effects involving strong seismic ground shaking.

iii. **Less-than-significant impact.** The most common seismic-related ground failure is liquefaction and lateral spreading. In both cases, during periods of ground motion caused by an event such as an earthquake, loose materials transform from a solid state to near-liquid state because of increased pore water pressure.

Such ground failure generally requires a high-water table and poorly draining soils in order for such ground failure to occur. The project site's soils are Bakersfield fine sandy loam and Granoso sandy loam, 0 to 2% slopes, which classify as somewhat poorly drained and somewhat excessively drained, respectively (USDA 2021). As a result, the potential for liquefaction at the project site is low. In addition, future structures proposed on the project site are required by state law and City ordinance to be constructed in accordance with the Uniform Building Code, including those relating to soil characteristics. Therefore, the project would not expose people or structures to potential substantial adverse effects involving seismic-related ground failure, including liquefaction.

iv. **No Impact.** In Kern County, the common types of landslides induced by earthquake occur on steeper slopes found in the foothills and along the Kern River Canyon; in these areas, landslides are generally associated with bluff and stream bank failure, rock slide, and slope slip on steep slopes (Bakersfield 1997). The project site is generally flat, there are no such geologic features located at the project site, and the site is not located near the Kern River Canyon. Therefore, the project would not expose people or structures to potential substantial adverse effects involving landslides.

b. **Less-than-significant impact.** The project site's soils have low susceptibility to sheet and rill erosion by rainfall and high susceptibility to wind erosion at the ground surface (USDA 2021). The relatively low precipitation in the project area [on average about 6 inches/year] results in surface runoff that is intermittent and temporary in nature. The erosion potential at the site and low average rainfall does not make the project site susceptible to substantial soil erosion or loss of topsoil.

Construction of the site would temporarily disturb soils, which could loosen soil, and the removal of vegetation could contribute to future soil loss and erosion by wind and storm water runoff. The project would have to request coverage under the National Pollutant Discharge Elimination System (NPDES) *General Permit for Storm Water Discharges Associated with Construction Activities* (No. 2012-0006-DWQ) (General Permit) because the project would result in one or more acres of ground disturbance. To conform to the requirements of the General Permit, a Storm Water Pollution Prevention Plan (SWPPP) would need to be prepared that specifies best management practices (BMPs) to prevent construction pollutants, including eroded soils (such as topsoil), from moving offsite. Implementation of the General Permit and BMPs requirements would mitigate erosion of soil during construction activities.

During operation, the soils would be sufficiently compacted to required engineered specifications, revegetated in compliance with City requirements, or paved over with impervious surfaces such that the soils at the site would not be particularly susceptible to soil erosion. Therefore, the project would not result in substantial soil erosion or the loss of topsoil.

c. **Less-than-significant impact.** As discussed in VII.a.iii and VII.a.iv, the project site's soils would not expose people or structures to potential substantial adverse effects involving seismic-related ground failure, including liquefaction, lateral spreading, or landslides. In addition, the site is not in or near a subsidence area mapped by the U.S. Geological Service.

Collapsible soils consist of loose, dry, low-density materials that collapse and compact under the addition of water or excessive loading. Because the project site is derived from alluvium, which is generally loose material, there is the potential for collapsible soils. Future structures proposed on the project site are required by state law and City ordinance to be constructed in accordance with the Uniform Building Code, including those relating to soil characteristics. Therefore, the project would not be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.

d. **Less-than-significant impact.** When a soil has 35% or more clay content, it is considered a clayey soil. Sandy loam soils generally have 6 to 25% clay content (USDA 2021) and therefore, do not have a high potential to be expansive. Additionally, future structures proposed on the project site are required by state law and City ordinance to be constructed in accordance with the Uniform Building Code, including those relating to soil characteristics. Therefore, the project would not be located on expansive soil creating substantial risks to life or property.

e. **No impact.** The project would not require the use of septic tanks or alternative wastewater disposal systems because the project would connect to existing City sewer services in the area. Therefore, there would be no impacts related to soils incapable of adequately supporting septic tanks or alternative waste water disposal systems.

f. **Less-than-significant impact with mitigation incorporated.** Paleontological sensitivity is determined by the potential for a geologic unit to produce scientifically significant fossils. Because paleontological resources typically occur in the substratum soil horizon, surface expressions are often not visible during a pedestrian survey. Paleontological sensitivity is therefore derived from known fossil data collected from the entire geologic unit. According to the California Department of Conservation's Geologic Map of California, the project site consists of Quaternary nonmarine sedimentary geologic formations. This geological formation consists of older alluvium deposits that have the potential to contain unknown paleontological resources or unique geologic features.

   Similar to archaeological resources, there is the potential to unearth previously unknown paleontological resources at the site, and grading and other ground-disturbing activities that exceed a depth of 10 feet have the potential to damage or destroy such resources. With the implementation of Mitigation Measure 2, the project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

VIII. GREENHOUSE GAS EMISSIONS

a. **Less-than-significant impact.** The project would generate an incremental contribution and, when combined with the cumulative increase of all other sources of greenhouse gases (GHG), could contribute to global climate change impacts. Although the project is expected to emit GHG, the emission of GHG by a single project into the atmosphere is not itself necessarily an adverse environmental effect. Rather, it is the increased accumulation of GHG from more than one project and many sources in the atmosphere that may result in global climate change. The resultant consequences of that climate change can cause adverse environmental effects. A project's GHG emissions typically would be relatively very small in comparison to state or global GHG emissions and, consequently, they would, in isolation, have no significant direct impact on climate

change. Therefore, a project's GHG emissions and the resulting significance of potential impacts are more properly assessed on a cumulative basis.

The project's GHG emissions were estimated and are summarized in the following table.

Emission Source	Emissions ($MTCO_2e$ per year)		
	Business as Usual	**2023 (with Design Features)**	**Percent Reduction**
Total	2,982	2,178	27%
	Reduction from BAU	**804**	--
	Percent Reduction	**27%**	--
	Significance Threshold	**21.7%**	--
	Are emissions significant?	**No**	

Notes:
$MTCO_2e$ = metric tons of carbon dioxide equivalents
Source: Mitchell 2019

As shown in the above table, the project results in a 27% reduction in GHG emissions in comparison to BAU, which exceeds the 21.7% required to show consistency with AB 32 targets. Therefore, the project would not generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment.

b. **Less-than-significant impact.** CARB is responsible for the coordination and administration of both federal and state air pollution control programs within California. According to *California's Climate Change Scoping Plan*, there must be statewide reduction GHG emissions to 1990 levels by 2020. Recent updates to CARB's emission inventory forecasts have identified that reducing greenhouse gas emissions to 1990 levels means cutting approximately 21.7% from BAU emission levels projected for 2020. In addition, per SB 375 requirements, CARB has adopted regional reduction targets, which call for a 5% reduction in per-capita emissions by 2020 and 10% reduction in 2035 within the San Joaquin Valley using 2005 as the baseline. These regional reduction targets will be a part of the Kern COG Sustainable Communities Strategy. The SJVAPCD has adopted guidance (*Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*) and a policy (District Policy – Addressing GHG Emission Impacts for Stationary Source Projects under CEQA When Serving as the Lead Agency).

As proposed, the project would not conflict with any statewide policy, regional plan, or local guidance or policy adopted for the purpose of reducing GHG emissions. The project would not interfere with the implementation of AB 32 and SB 375 because it would be consistent with the GHG emission reduction targets identified by CARB and the Scoping Plan by achieving BAU GHG emissions reduction greater than the 21.7% targeted reduction goal. The project is consistent with these statewide measures and considered not significant or cumulatively considerable under CEQA. Therefore, the project would not conflict with any applicable plan, policy or regulation of an agency adopted for the purpose of reducing the emissions of GHG.

IX. HAZARDS AND HAZARDOUS MATERIALS

a. **Less-than-significant impact.** The proposed project would include the routine use of hazardous materials typical of fueling stations and tanks. Standard conditions of approval for the project include the creation of a hazardous material management plan

(Condition C.7) and approval from the Prevention Services Division when installing an underground or above ground storage tank (Condition C.8).

Construction activities would require the transport, storage, use, and/or disposal of hazardous materials such as fuels and greases for the fueling/servicing of construction equipment, and there is the potential for upset and accident conditions that could release such material into the environment. Such substances would be stored in temporary storage tanks/sheds that would be located at the site. Although these types of materials are not acutely hazardous, they are classified as hazardous materials and create the potential for accidental spillage, which could expose construction workers. All transport, storage, use, and disposal of hazardous materials used in the construction of the project would be in strict accordance with federal and state laws and regulations. During construction of the project, Material Safety Data Sheets (MSDS) for all applicable materials present at the site would be made readily available to onsite personnel. During construction, non-hazardous construction debris would be generated and disposed of at approved facilities for handling such waste. Also, during construction, waste disposal would be managed using portable toilets located at reasonably accessible onsite locations. Therefore, the project would not create a significant hazard to the public or the environment through the routine transport, use, or storage of hazardous materials.

b. **Less-than-significant impact.** Please refer to response VIX.a. Therefore, the project would not create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous material into the environment.

c. **No impact.** The AQIA concluded that the project would not significantly affect sensitive receptors (BPG 2021). In addition, the project site is not located within one-quarter mile of an existing or proposed school. Therefore, the project would not emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 miles of an existing or proposed school.

d. **No impact.** The EnviroStor (DTSC 2019) and Cortese (CalEPA 2019) lists pursuant to Government Code (GC) Section 65962.5 were reviewed. No portion of the project site is identified on either list, which provides the location of known hazardous waste concerns. Therefore, the project would not be located on a site which is included on a list of hazardous materials sites compiled pursuant to GC Section 65962.5 and, as a result, create a significant hazard to the public or the environment.

e. **No impact.** The project site is not located within the Kern County *Airport Land Use Compatibility Plan* area (Kern County 2012). The closest airport to the project site is the Bakersfield Municipal Airport, which is over 3.5 miles to the northeast of the site. Therefore, the project would not result in a safety hazard for people residing or working in the project area.

f. **Less-than-significant impact.** The project would have to develop or improve roads to the site as well as internal roads that are compliant with the City's Fire Code to allow emergency vehicles adequate access to the site and all portions of the site. Access to the site would be maintained throughout the construction period, and appropriate detours would be provided in the event of potential temporary road closures. The project would not interfere with any local or regional emergency response or evacuation plans because the project would not result in a substantial alteration to the adjacent and area circulation system. The project is typical of urban development in Bakersfield, and is not

inconsistent with the adopted City of Bakersfield Hazardous Materials Area Plan (Bakersfield 1997). This plan identifies responsibilities and provides coordination of emergency response at the local level to hazardous materials incidents. Therefore, the project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

g. **Less-than-significant impact.** The project site is not located within a "very high," "high," or "moderate" fire hazard severity zone (CalFire 2008). The site consists of vacant and disturbed land, and its vicinity is developed with commercial, industrial, and residential land uses that do not possess high fuel loads that have a high potential to cause a wildland fire. The project site would be developed with hardscapes and irrigated landscaping, which would further reduce fire potential at the site. Additionally, the City and County require "defensible space" within areas of the County susceptible to wildland fires as shown on CalFire maps through the Fire Hazard Reduction Program. Defensible space is the buffer created between a building and the grass, trees, shrubs, or any wildland area that surrounds it. Therefore, the project would not expose people or structures to a significant risk of loss, injury or death involving wild land fires, including where wild lands are adjacent to urbanized areas or where residences are intermixed with wild lands.

X. HYDROLOGY AND WATER QUALITY

a. **Less-than-significant impact.** Construction would include ground-disturbing activities. Disturbance of onsite soils during construction could result in soil erosion and siltation, and subsequent water quality degradation through increased turbidity and sediment deposition during storm events to offsite locations. Additionally, disturbed soils have an increased potential for fugitive dust to be released into the air and carried offsite. As described in VII.b, the project would be required to comply with the General Permit. To conform to the requirements of the General Permit, a SWPPP would need to be prepared that specifies BMPs to prevent construction pollutants from moving offsite. The project is required to comply with the General Permit because project-related construction activities would disturb at least 1 acre of soil.

   The City owns and maintains a municipal separate storm sewer system (MS4). The project's operational urban storm water discharges are covered under the Central Valley Water Quality Control Board (CVRWQCB) *National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements General Permit for Discharges from Municipal Separate Storm Sewer Systems* (Order No. R5-2016-0040; NPDES No. CAS0085324) (MS4 Permit) (CVRWQCB 2016). The MS4 Permit mandates the implementation of a storm water management framework to ensure that water quality is maintained within the City because of operational storm water discharges throughout the City, including the project site. By complying with the General Permit and MS4 Permit, the project would not violate any water quality standards or waste discharge requirements.

b. **Less-than-significant impact.** Potable water from the project would be supplied by the California Water Service. The project is proposing a project consistent with the designated zoning and land use on the property, and therefore, the project's projected water use has been considered by CalWater against its most current Urban Water Management Plan (UWMP). By state law, current UWMPs do not need to address the Sustainable Groundwater Management Act (SGMA) or sustainable groundwater management at this time. It was concluded that the agency has sufficient existing

capacity to service the project. As a result, the project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level.

c. The following discusses whether the project would substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces.

   i. **Less-than-significant impact.** The project site does not contain any blue-line streams or other surface water features (Padre 2021) and therefore, the project would not alter the course of a river or stream. The project site would be graded and, as a result, the internal drainage pattern at the site would be altered from the baseline condition. Additionally, the project would result in increased impervious surfaces (i.e., building pads, sidewalks, asphalt parking area, etc.) at the site, which would reduce percolation to ground and result in greater amounts of storm water runoff concentrations at the site. If uncontrolled, differences in drainage patterns and increased impervious surfaces could result in substantial erosion or siltation on- or offsite. However, the project would be required to comply with the General Permit during construction and MS4 permit during operation. In order to comply with the MS4 Permit, the City requires compliance with adopted building codes, including complying with an approved drainage plan, which avoids on- and offsite flooding, erosion, and siltation problems. Therefore, the project would not 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 that would result in substantial erosion or siltation on- or offsite.

   ii. **Less-than-significant impact.** Please refer to response X.c.i. Therefore, the project would not 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 that would result in flooding on- or offsite.

   iii. **Less-than-significant impact.** Please refer to response X.c.i. Therefore, the project would not create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff.

   iv. **No Impact.** The project site is located outside the 500-year floodplain and is not located within a 100-year flood hazard area (FEMA 2019). Therefore, the project would not impede or redirect flood flows.

d. **Less-than-significant impact.** As discussed in responses X.g and IX.h, the project is not located within a floodplain. There are no nearby levees that would be susceptible to failure or flooding of the site. The project site, like most of the City, is located within the Lake Isabella flood inundation area (Kern County 2017), which is the area that would experience flooding in the event that there was a catastrophic failure of the Lake Isabella Dam. There is an approved Lake Isabella Dam Failure Evacuation Plan (Kern County 2009) that establishes a process and procedures for the mass evacuation and short-term support of populations at risk below the Lake Isabella Dam. The City would utilize the Evacuation Plan to support its Emergency Operations Plans (EOPs). With implementation of the Evacuation Plan, the project would not expose 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.

e. **Less-than-significant impact.** Please refer to response X.c.i. There is currently no adopted groundwater management plan for the project site or its vicinity. Therefore, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

XI. LAND USE AND PLANNING

a. **No impact.** The project is a continuation of the existing urban development pattern of the City and Kern County and is adjacent to existing commercial and industrial land uses. The project does not include a long and linear feature, such as a freeway, railroad track, block wall, etc., that would have the potential to divide a community. The project is the development of a finite 16-acre project site that does not impede existing or future movement or development of the City. Therefore, the project would not physically divide an established community.

b. **No impact.** The proposed project is a conditional use within the M-1 (Light Manufacturing) zone district, a permitted use in the M-2 (General Manufacturing) zone district, and is consistent with the LI (Light Industrial) and SI (Service Industrial) land use designations. Furthermore, the site plans for the project have been designed in accordance with all applicable development standards. Therefore, the project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.

XII. MINERAL RESOURCES

a. **No impact.** The project site is not within the administrative boundaries of an oilfield and there are no oil wells found on the site (DOGGR 2019). The only other potential mineral resource in the area is aggregate for the making of concrete. Aggregate is mined in alluvial fans and along existing and historical waterways. There are no blue-line water features or existing or planned aggregate mining operations at the site. Therefore, the project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

b. **No impact.** The project site is currently designated LI (Light Industrial) and SI (Service Industrial) within the M-1 (Light Manufacturing) and M-2 (General Manufacturing) zone districts. No portion of the site is designated for a potential mineral resource extraction use such as R-MP (Mineral and Petroleum). Therefore, the project would not result in the loss of availability of a locally-important mineral resource recovery site that is delineated in a local general plan, specific plan or other land use plan.

XIII. NOISE

a. **Less-than-significant impact.** The project would generate both short-term construction noise and operational noise. The first type of short-term construction noise would result from transport of construction equipment and materials to the project site, and construction worker commutes. These transportation activities would incrementally raise noise levels on access roads leading to the site. A one-time trip to move pieces of heavy

equipment for grading and construction activities would result in single-event noise at a distance of 50 feet from a sensitive noise receptor that would reach a maximum level of 84 A-weighted decibels (dBA). Because the equipment would be left onsite for the duration of project construction, the one-time trip would not add to the daily traffic noise in the project vicinity. The total daily vehicle trips resulting from construction worker commutes would be minimal when compared to existing traffic volumes on the affected streets, and the long-term noise level change would not be perceptible.

The second type of short-term construction noise is related to noise generated during project construction. The site preparation and grading phase, which includes excavation and grading, tends to generate the highest noise levels because earthmoving equipment is the noisiest construction equipment. Construction noise levels during grading would be less than 70 dBA, which would not exceed the hourly noise level standard at the nearest sensitive uses. Construction noise would cease to occur once project construction is completed. The project will also be required to comply with the construction hours specified in the City Noise Ordinance, which states that construction activities are limited to the hours of 6:00 a.m. and 9:00 p.m. on weekdays, and between the hours of 8:00 a.m. and 9:00 p.m. on weekends.

Project operations would generate stationary noise sources including parking lot activities, truck repair equipment, mechanical ventilation equipment, and drive-thru window speakers. The sound levels from these activities are required to be built and operate in compliance with Bakersfield Municipal Code and the Noise Element. A noise study was completed for the project (BPG 2021). The analysis determined that stationary operational noise levels around the project site would experience noise level impacts that would be less than the residential compatibility noise level standards of 50 dBA through 60 dBA that is normally acceptable at the nearest residential property line.

Therefore, the project would not generate substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b. **Less-than-significant impact.** Some ground-borne vibration and noise would originate from earth movement and building activities during the project's construction phase. Ground-borne noise and vibration from construction activity would be mostly low to moderate. The closest structures to the project site are the existing commercial and industrial uses to the north and east. The operation of typical construction equipment would generate ground-borne vibrations that would not exceed guidelines that are considered safe for any type of buildings. Operation of the proposed project would not generate ground-borne vibration. Therefore, the project would not generate excessive ground-borne vibration or ground-borne noise levels and impacts are less than significant.

c. **No impact.** Please refer to response IX.e. The project is not located within the proximity of an airport or private air strip. Therefore, the project would not expose people residing or working in the project area to excessive noise levels for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport.

XIV. POPULATION AND HOUSING

a. **Less-than-significant impact.** The project is the development of a truck stop including a convenience store with restaurants, fueling stations, on-site truck wash building, and office buildings with accessory truck parking. The project would not directly induce population growth through the development of residential land uses or large-scale business, or indirectly by the extension of infrastructure or removal of another barrier to growth. Therefore, the project would not induce substantial population growth in an area, either directly or indirectly. Impacts are less than significant.

b. **No impact.** The project site consists of vacant and disturbed land that is designated for industrial uses. Therefore, the project would not displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.

XV. PUBLIC SERVICES

a. The following discusses whether the project would result in substantial adverse physical impacts to public services. The need for additional public service is generally directly correlated to population growth and the resultant additional population's need for services beyond what is currently available.

   i. **Less-than-significant impact.** Fire protection services for the Metropolitan Bakersfield area are provided through a joint fire protection agreement between the City and County. The project may necessitate the addition of fire equipment and personnel to maintain current levels of service, and this potential increase in fire protection services would be paid for by property taxes generated by the proposed development. Therefore, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered 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 fire protection.

   ii. **Less-than-significant impact.** Police protection for the project would be provided by the Bakersfield Police Department. Potential increase in services can be paid for by property taxes generated by this development. Therefore, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered 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 police protection.

   iii. **Less-than-significant impact.** The project is not growth inducing and therefore, is a not driver for population growth, including the need for additional schools. The need for additional schools can be proportionately paid for by increased property tax revenues as a result of the project. Therefore, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered 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 schools.

iv. **Less-than-significant impact.** The project is not growth inducing and therefore, is a not driver for population growth, including the need for additional recreational opportunities. Therefore, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered 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 parks.

v. **Less-than-significant impact.** The project and eventual buildup of this area would result in an increase in maintenance responsibility for the City. Though the project may necessitate increased maintenance for other public facilities, this potential increase can be paid for by property taxes or in lieu fees generated by this development. Therefore, the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered 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 other public facilities.

XVI. RECREATION

a. **No impact.** Please refer to response XV.a.iv. Therefore, the project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

b. **No impact.** Please refer to response XV.a.iv. Therefore, the project would not include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment.

XVII. TRANSPORTATION AND TRAFFIC

a. **Less-than-significant impact with mitigation incorporated.** The project would result in temporary construction-related traffic impacts. Construction workers traveling to and from the project site as well as construction material delivery would result in additional vehicle trips to the area's roadway system. Construction material delivery may require a number of trips for oversized vehicles that may travel at slower speeds than existing traffic and, due to their size, may intrude into adjacent travel lanes. These trips may temporarily degrade level of service (LOS) on area roadways and at intersections. Additionally, the total number of vehicle trips associated with all construction-related traffic (including construction worker trips) could temporarily increase daily traffic volumes on local roadways and intersections. The project may require temporary lane closures or the need for flagmen to safely direct traffic on roadways near the project site. However, once the project is built, it would not result in any permanent traffic-related effects.

Policy 36 of the Metropolitan Bakersfield General Plan Circulation Element states:

> Prevent streets and intersections from degrading below Level of Service "C" where possible due to physical constraints (as defined in a Level of Service standard) or when the existing Level of Service if below "C" prevent where possible further degradation due to new development or expansion of existing development with a three-part mitigation program: adjacent right-of-way dedication, access

improvements and/or an area-wide impact fee. The area-wide impact fee would be used where the physical changes for mitigation are not possible due to existing development and/or the mitigation measure is part of a larger project, such as freeways, which will be built at a later date.

Intersection/Roadway Segment	Total Improvements Required by 2042	Mitigation
Taft Highway/S.R. 119	Add 2 Lanes	RTIF includes a project to improve this segment of street.
South "H" Street	Add 2 Lanes	RTIF includes a project to improve this segment of street.
Notes: EB = Eastbound; WB = Westbound; T = Through Lane Source: LAV//Pinnacle 2021		

The analysis concluded that the project should participate in the Regional Transportation Impact Fee (RTIF) Program (see Mitigation Measure 4). With implementation of Mitigation Measure 8, the project would not conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system

b. **Less-than-significant impact.** Section 15064.3 of the updated CCR (or CEQA Guidelines), statewide application came into effect July 1, 2020. This CCR Section 15064.3(b) states:

Criteria for Analyzing Transportation Impacts.

(1) Land Use Projects. Vehicle miles traveled exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant transportation impact. Projects that decrease vehicle miles traveled in the project area compared to existing conditions should be presumed to have a less than significant transportation impact.

(2) Transportation Projects. Transportation projects that reduce, or have no impact on, vehicle miles traveled should be presumed to cause a less than significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements. To the extent that such impacts have already been adequately addressed at a programmatic level, such as in a regional transportation plan EIR, a lead agency may tier from that analysis as provided in Section 15152.

(3) Qualitative Analysis. If existing models or methods are not available to estimate the vehicle miles traveled for the particular project being considered, a lead agency may analyze the project's vehicle miles traveled qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

(4) Methodology. A lead agency has discretion to choose the most appropriate methodology to evaluate a project's vehicle miles traveled, including whether to express the change in absolute terms, per capita, per household or in any other measure. A lead agency may use models to estimate a project's vehicle miles traveled, and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate vehicle miles traveled and any revisions to model outputs should be documented and explained in the environmental document prepared for the project. The standard of adequacy in Section 15151 shall apply to the analysis described in this section.

As such, an Traffic Impact Study that included a Vehicles Miles Traveled (VMT) analysis was completed for the project (LAV//Pinnacle 2021). It was found that the majority of trips are considered "pass-bys" or "diverted link trips", adding negligible to no vehicle miles traveled. Therefore, the project would not be in conflict or be inconsistent with CCR Section 15064.3(b). Impacts would be less than significant.

c. **Less-than-significant impact.** The project would have to comply with all conditions placed on it by the City Traffic Engineering Division in order to comply with accepted traffic engineering standards intended to reduce traffic hazards, including designing the roads so that they do not result in design feature hazards. The project is with the City limits and surrounded by compatible existing and planned land uses and land use designations. Therefore, the project would not substantially increase hazards due to a design feature or incompatible uses.

d. **Less-than-significant impact**. There is the potential that, during the construction phase, the project would impede emergency access. For projects that require minor impediments of a short duration (e.g., pouring a new driveway entrance), the project would be required to obtain a street permit from City Public Works. If a project requires lane closures and/or the diversion of traffic, then a Traffic Control Plan, subject to Public Works approval, would be required. During operations, the project would have to comply with all applicable City policies and requirements to ensure adequate emergency access. The need for such permits is determined by the Public Works Department during the permitting and construction phases of their permitting process. In addition, the site plans have been designed in accordance with all City development standards. Therefore, impacts are less than significant.

XVIII. TRIBAL CULTURAL RESOURCES

a. **No impact.** The proposal is not a general plan amendment, so consultation pursuant to Senate Bill 18 is not required. In addition, as of this writing, the City has not received any request for consultation under Assembly Bill 52. A California Historical Resources Information System records search was conducted for the proposed project, and no resources were identified (SSJVIC 2020). The Planning Division has not received information which identifies or suggests the presence of resources within the project area. Therefore, the project would not cause a substantial adverse change in the significance of a tribal cultural resource that is listed in the California Register of Historical Resources or in a local register of historical resources.

b. **No impact.** See response to XVIIII.a. Therefore, the project would not cause a substantial adverse change in the significance of a tribal cultural resource that is determined by the lead agency to be significant.

XVIV. UTILITIES AND SERVICE SYSTEMS

a. **Less-than-significant impact**. The project would require the construction of new water, storm water drainage, sewer facilities; above and/or belowground electrical facilities, natural gas facilities, and telecommunications (e.g., cable, fiber optics, phone, etc.) typical of the proposed development. Water, storm water, and sewer structures would have to be designed to meet the City's *Current Subdivision & Engineering Design Manual* (Bakersfield 1999). Compliance with the Design Manual would ensure that the facilities would not result in significant environmental effects. Electrical, natural gas, and telecommunications facilities would be placed by the individual serving utilities; these entities already have in place safety and siting protocols to ensure that placement of new utilities to serve new construction would not have a significant effect on the environment. Therefore, the project would not require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects.

b. **Less-than-significant impact.** The designated water purveyor is California Water Service. Prior to the issuance of building permits, the City must receive evidence the development has secured the water service and will construct needed improvements in accordance with the provider's standards and other improvement practices. Additionally, the City Water Resources Department has conditioned this facility to submit engineering plans for any required facilities for their review. Therefore, the project has sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years.

c. **Less-than-significant impact**. Wastewater because of the project would be treated at WWTP No. 3, which is owned and operated by the City WWTP No. 3 has an overall capacity of 32 million gallons per day (MGD) and a current available capacity of 14.7 MGD (Bakersfield 2019). The project is consistent with the industrial land use designations on the site. The project site's contribution to the available capacity of their respective facilities has been included in the agency's Capacity Fee and Municipal Service Review and therefore, there is sufficient capacity to serve the project. As a result, it has been determined that the wastewater treatment provider which serves or may serve the project has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments.

d. **Less-than-significant impact.** It is assumed that solid waste generated as a result of the project would be disposed at the Bena Landfill located at 2951 Neumarkel Road, Bakersfield, CA 93307. In accordance with city standards which are designed to achieve State waste stream reduction and recycling goals, the Solid Waste Division of Public Works has examined the facility and conditioned the proposal to incorporate appropriate on-site trash facilities, subject to city approval. Therefore, the project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.

e. **Less-than-significant impact.** By law, the project would be required to comply with federal, state, and local statutes and regulations, including those relating to waste reduction, litter control, and solid waste disposal.

XX. WILDFIRE

a. **Less-than-significant impact.** Please refer to response IX.f. Therefore, the project would not substantially impair an adopted emergency response plan or emergency evacuation plan.

b. **Less-than-significant impact.** Please refer to response IX.g. Additionally, the project site is relatively flat, not near wildlands, the site and its surrounding do not possess high fuel loads (i.e., lots of vegetation and other burnable material) to exacerbate wildfire risks and therefore, fire-related pollutant concentrations. Therefore, the project would not exacerbate wildfires and expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire due to slope, prevailing winds, and other factors.

c. **Less-than-significant impact.** Please refer to responses IX.a, XX.a, and XX.b. Therefore, the project would not require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

d. **Less-than-significant impact.** The project site is relatively flat, is not within a floodplain, and is not in a moderate- to high-risk area for wildfires. Therefore, the project would not expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE

a. **Less-than-significant impact with mitigation incorporated.** The project is subject to the terms of the MBHCP and associated Section 10(a)(1)(b) and Section 2801 permits issued to the City of Bakersfield by the U.S. Fish and Wildlife Service and the California State Department of Fish and Wildlife, respectively. Terms of the permit require applicants for all development projects within the plan area to pay habitat mitigation fees, excavate known kit fox dens, and notify agencies prior to grading. There are no important examples of the major periods of California history or prehistory found at the site; however, there is potential for unknown cultural resources to be encountered during ground-disturbing activities, which is addressed by Mitigation Measure 1. Therefore, the project, with mitigation, would not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory.

b. **Less-than-significant impact.** As described in the responses above, the project has no impacts that would be defined as individually limited, but cumulatively considerable.

c. **Less-than-significant impact.** As described in the responses above, the project would not have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly.

BIBLIOGRAPHY/REFERENCE LIST

Bakersfield (City of Bakersfield). 1997. Hazardous Materials Area Plan. January.

Bakersfield. 2019. Proposed Subdivision & Engineering Design Manual. June.

Bakersfield. 1994. Metropolitan Bakersfield Habitat Conservation Plan and Final Environmental Impact Report.

Bakersfield. 2021. Wastewater Treatment Plants. Available:<https://www.bakersfieldcity.us/679/Wastewater-Treatment-Plants>. Accessed: July 21, 2021.

Bakersfield. 2017. Bakersfield Register of Historic Places; Area of Historic Interest; and National Register of Historic Places.

Birdseye Planning Group (BPG). 2021. Air Quality/Greenhouse Gas Study for a Taft Highway Pilot Truck Center Project, City of Bakersfield, Kern County, California, June 2021.

Birdseye Planning Group (BPG). 2021. Noise Study for a Taft Highway Pilot Truck Center Project, City of Bakersfield, Kern County, California, June 2021.

CalEPA (California Environmental Protection Agency). 2019. Cortese List Data Resources. Available:<https://calepa.ca.gov/sitecleanup/corteselist/>. Accessed: July 21, 2021.

CalFire (Department of Forestry and Fire Protection). 2008. Draft Fire Hazard Severity Zones in LRA, Kern County. Available: <https://osfm.fire.ca.gov/divisions/wildfire-planning-engineering/wildland-hazards-building-codes/fire-hazard-severity-zones-maps/>. Accessed: July 21, 2021.

CalGEM. 2021. Geologic Energy Management Division, formerly the Division of Oil, Gas, and Geothermal Resources – Well Finder. Available: <https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-119.05623/35.41312/16>. Accessed July 21, 2021.

California Water Service (Cal Water). 2020. Will Serve Letter, City of Bakersfield, Kern County, California, October 2020.

Caltrans (California Department of Transportation). 2019. California State Scenic Highway Mapping System. Available:< https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways>. Accessed: July 21, 2021.

California Water Service (Cal Water). 2021. Will Serve Letter, City of Bakersfield, Kern County, California, July 2021

CBOC (California Burrowing Owl Consortium). 1993. Burrowing Owl Protocol and Mitigation Guidelines. April.

CSP (California State Parks, Office of Historic Preservation). 2020. Available: <ohp.parks.ca.gov/?page id=21423>. Accessed July 22, 2021.

CVRWQCB. 2016. Order No. R5-2016-0040, NPDES No. CAS0085324, National Pollutant Discharge Elimination System Permit and Waste Discharge Requirements General Permit for Discharges from Municipal Separate Storm Sewer Systems. Available:<https://www.waterboards.ca.gov/centralvalley/board_decisions/adopted_orders/general_orders/r5-2016-0040_ms4.pdf>. Accessed: July 22, 2021.

DOC. 2021. CGS Information Warehouse: Regulatory Maps. Available:<http://maps.conservation.ca.gov/cgs/informationwarehouse/>. Accessed: July 22, 2021.

DOC. 2021. 2021 California Important Farmland Finder. Available: <https://maps.conservation.ca.gov/DLRP/CIFF/>. Accessed: July 21, 2021.

DTSC (Department of Toxic Substance Control). 2021. EnviroStor. Available:<https://www.envirostor.dtsc.ca.gov/public/>. Accessed: July 22, 2021.

FEMA (Federal Emergency Management Agency). 2021. FEMA Flood Map Service Center: Search By Address. Available:<https://msc.fema.gov/portal/search#searchresultsanchor>. Accessed: July 22, 2021.

Hudlow Cultural Resources Associates (Hudlow). 2021. Phase I Cultural Resource Survey Taft Highway and Highway 99, City of Bakersfield, Kern County, California, February 2021.

Kern County. 2009. Lake Isabella Dam Failure Evacuation Plan. Available:< https://kerncountyfire.org/jsp-uploads/Isabella-Dam-Failure-Plan.pdf >. Accessed: July 22, 2021.

Kern County. 2012. Airport Land Use Compatibility Plan. November.

Kern County. 2021. Lake Isabella Flood Area. Available:< https://kernpublicworks.com/building-and-development/floodplain-management/lake-isabella-flood-area/>. Accessed: July 21, 2021.

LAV//Pinnacle Engineering (LAV//Pinnacle). 2021. Traffic Impact Study for Commercial and Industrial Development, City of Bakersfield, Kern County, California, June 2021.

Padre Associates, Inc. (Padre). 2021. Biological Resources Study for a Pilot Truck Center, City of Bakersfield, Kern County, California, July 2021.

SJVAPCD (San Joaquin Valley Air Pollution Control District). 2015. Guide for Assessing and Mitigating Air Quality Impacts. March.

USDA (U.S. Department of Agriculture). 1988. Soil Survey of Kern County, California, Northwest Part. Available: <https://www.nrcs.usda.gov/Internet/FSE_MANUSCRIPTS/california/CA666/0/kern.pdf>. Accessed: July 22, 2021.

USDA WSS. 2020. Web Soil Survey. Available: <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed: July 22, 2021.

USGS (U.S. Geological Survey). Areas of Land Subsubsidence in California. <https://ca.water.usgs.gov/land_subsidence/california-subsidence-areas.html>. Accessed: July 22, 2021.

Appendix A:

Site Plan Conditions of Approval

EXHIBIT A

CONDITIONS OF APPROVAL
Conditional Use Permit No. 20-0379

I. The applicant's rights granted by this approval are subject to the following provisions:

- The project shall be in accordance with all approved plans, conditions of approval, and other required permits and approvals. All construction shall comply with applicable building codes.

- All conditions imposed shall be diligently complied with at all times and all construction authorized or required shall be diligently prosecuted to completion before the premises shall be used for the purposes applied for under this approval.

- This approval will not be effective until ten (10) days after the date upon which it is granted by the BZA to allow for appeal to the City Council. Any permit or license for any approval granted shall not be issued until that effective date.

- This approval shall automatically be null and void two (2) years after the effective date unless the applicant or successor has actually commenced the rights granted, or if the rights granted are discontinued for a continuous period of one (1) year or more. This time can be extended for up to one (1) additional year by the approving body.

- The BZA may initiate revocation of the rights granted if there is good cause, including but not limited to, failure to comply with conditions of approval, complete construction or exercise the rights granted, or violation by the owner or tenant of any provision of the Bakersfield Municipal Code pertaining to the premises for which the approval was granted. The BZA may also consider adding or modifying conditions to ensure the use complies with the intent of City ordinances.

- Unless otherwise conditioned, this approval runs with the land and may continue under successive owners provided all the above mentioned provisions are satisfied.

II. The following conditions shall be satisfied as part of the approval of this project:

1. In consideration by the City of Bakersfield for land use entitlements, including but not limited to related environmental approvals related to or arising from this project, the applicant, and/or property owner and/or subdivider ("Applicant" herein) agrees to indemnify, defend, and hold harmless the City of Bakersfield, its officers, agents, employees, departments, commissioners and boards ("City" herein) against any and all liability, claims, actions, causes of action or demands whatsoever against them, or any of them, before administrative or judicial tribunals of any kind whatsoever, in any way arising from, the terms and provisions of this application, including without limitation any CEQA approval or any related development approvals or conditions whether imposed by the City, or not, except for CITY's sole active negligence or willful misconduct.

   This indemnification condition does not prevent the Applicant from challenging any decision by the City related to this project and the obligations of this condition apply regardless of whether any other permits or entitlements are issued.

The City will promptly notify Applicant of any such claim, action or proceeding, falling under this condition within thirty (30) days of actually receiving such claim. The City, in its sole discretion, shall be allowed to choose the attorney or outside law firm to defend the City at the sole cost and expense of the Applicant and the City is not obligated to use any law firm or attorney chosen by another entity or party.

2. This conditional use permit allows for a truck stop in the M-1/M-2 (Light Manufacturing/General Manufacturing Zone) district located at 2201/2311 Taft Highway as depicted on attached Exhibits B and C.

III. The following are specific items that you need to resolve before you can obtain a building permit or be allowed occupancy. These items include conditions and/or mitigation required by previous site entitlement approvals (these will be specifically noted), changes or additions that need to be shown on the final building plans, alert you to specific fees, and other conditions for your project to satisfy the City's development standards.

The items listed below will usually need to be shown on the final building plans or completed before a building permit is issued. As part of the building permit submittal, identify the location of your response by using the *APPLICANT'S RESPONSE* line provided directly below the item (example: sheet number, detail, etc.).

A. <u>DEVELOPMENT SERVICES - BUILDING (1715 Chester Avenue)</u>
(Staff contact - Oscar Fuentes; 661-326-3676 or OFuentes@bakersfieldcity.us)

1. Prior to review of improvement plans by the City, the developer shall submit a grading plan for the proposed site to be reviewed and approved by the City Engineer and Building Official (Bakersfield Municipal Code Section 16.44.010). With the grading plan, if the project is subject to the provisions of the National Pollutant Discharge Elimination System (NPDES), a Notice of Intent (NOI) to comply with the terms of the General Permit to Discharge Storm Water Associated with Construction Activity (WQ Order No. 99-08-DWQ) must be filed with the State Water Resources Control Board in Sacramento before the beginning of any construction activity. Compliance with the general permit requires that a Storm Water Pollution Prevention Plan (SWPPP) be prepared, continuously carried out, and always be available for public inspection during normal construction hours.

   APPLICANT'S RESPONSE:_____

2. A grading permit is required prior to final plan approval. The developer shall submit four (4) copies of grading plans and two (2) copies of the preliminary soils report to the Building Division. A final soils report shall also be submitted to the Building Division before they can issue a building permit. Please note that grading plans must be consistent with the final building site plans and landscaping plans. Building permits will not be issued until the grading permit is approved by the Building Division, Planning Division (HCP), and Public Works Department.

   APPLICANT'S RESPONSE:_____

3. Show on the final building plan pedestrian access from the public way and accessible parking. Private streets are not the public way.

   APPLICANT'S RESPONSE:_____

4. The developer shall include fire resistive wall construction details with the final building plans for all exterior walls of any building that is within the distance as set forth in Table 602 of the California Building Code.

   APPLICANT'S RESPONSE:_____

5. Include with or show on the final building plans information necessary to verify that the project complies with all accessibility requirements of Title 24 of the California Building Code.

   APPLICANT'S RESPONSE:_____

6. The developer shall obtain all required approvals from the Kern County Environmental Health Services Department (2700 "M" Street, Bakersfield, CA., 93301; PH 661-862-8700) for any food handling facility (i.e.: market, delicatessen, café, concession, restaurant) before building permits can be issued.

   APPLICANT'S RESPONSE:_____

7. Buildings or structures shall require installation of an automatic fire sprinkler system where required by current California Building Code and City ordinance.

   APPLICANT'S RESPONSE:_____

8. The Building Division will calculate and collect the appropriate school district impact fee at the time they issue a building permit.

   APPLICANT'S RESPONSE:_____

9. Final Building plans shall show pedestrian access pathways or easements for persons with disabilities from public rights-of-ways that connect to all accessible buildings, facilities, elements, and spaces in accordance with the California Building Code. These pedestrian access ways shall not be parallel to vehicular lanes unless separated by curbs or railings.

   APPLICANT'S RESPONSE:_____

10. Prior to granting occupancy, the Building Division will verify that a water meter serving the development is in place. Therefore, it is recommended that the developer contact the applicable water purveyor to inquire about their process for obtaining water service for the development as soon as possible. To determine who the water purveyor for the development is, you may contact the City of Bakersfield Water Resources Department (1000 Buena Vista Road, Bakersfield, CA, phone: 661-326-3715).

APPLICANT'S RESPONSE:_____

11. Show on the final building plan, electric vehicle supply equipment to facilitate future installation as required by the California Green Code.

APPLICANT'S RESPONSE:_____

B. <u>DEVELOPMENT SERVICES - PLANNING (1715 Chester Avenue)</u>
(Staff contact – Ryder Dilley; 661-326-3616 or rdilley@bakersfieldcity.us)

1. The minimum parking required for this project has been computed based on use and shall be as follows:

Building	Use	Square Footage	Parking Ratio	Parking Required
1	Convenience Store	9,344 SF	1/200	47 spaces
	Restaurant	7,238 SF	1/75	97 spaces
	Drive-thru credit		2 spaces/window	(2) spaces
	Vehicle fuel pump credit		2 spaces/pump	(20) spaces
	Diesel fuel lane credit		1 space/lane	(9) spaces
	Subtotal	***16,582 SF***		***113 spaces***
2	Truck Wash	11,400 SF	1/500	23 spaces
	Accessory Office	300 SF	1/300	1 space
	Subtotal	***11,700 SF***		***24 spaces***
3	Truck Sales Office	240 SF	1/250	1 space
	Sales Area	19,460	1/4,000	4 spaces
	Subtotal	***19,700 SF***		***5 spaces***
4	Office	1,943 SF	1/250	8 spaces
	Subtotal	***1,943 SF***		***8 spaces***
	Total	***49,925 SF***		***150 spaces***
			Total Required **Total Provided**	**150 spaces** **155 spaces**

(**Note:** 155 parking spaces are shown on the proposed site plan. By ordinance, compact and tandem spaces cannot be counted towards meeting minimum parking requirements. For commercial development containing a multi-tenant pad, any change in use where 50 percent or more of the pad requires additional parking pursuant to Bakersfield Municipal Section 17.58.110, the Planning Director may require parking commensurate with the new use.)

APPLICANT'S RESPONSE:_____

2. Minimum parking stall dimensions shall be 9 feet wide by 18 feet long and shall be designed according to standards established by the Traffic Engineer. Vehicles may hang over landscape areas no more than 2-1/2 feet provided required setbacks along street frontages are maintained, and trees and shrubs are protected from vehicles.

   APPLICANT'S RESPONSE:_____

3. All parking lots, driveways, drive aisles, loading areas, and other vehicular access ways, shall be paved with concrete, asphaltic concrete, or other paved street surfacing material in accordance with the Bakersfield Municipal Code (Sections 15.76.020 and 17.58.060.A.).

   APPLICANT'S RESPONSE:_____

4. Lighting is required for all parking lots, except residential lots with four units or less (Section 17.58.060.A.). Illumination shall be evenly distributed across the parking area with light fixtures designed and arranged so that light is directed downward and is reflected away from adjacent properties and streets. Use of glare shields or baffles may be required for glare reduction or control of back light. No light poles, standards and fixtures, including bases or pedestals, shall exceed a height of 40 feet above grade. However, light standards placed less than 50 feet from residentially zoned or designated property, or from existing residential development, shall not exceed a height of 15 feet. The final building plans shall include a picture or diagram of the light fixtures being used and show how light will be directed onto the parking area.

   (**Note:** Staff can require additional adjustments to installed lighting after occupancy to resolve glare or other lighting problems if they negatively affect adjacent properties.)

   APPLICANT'S RESPONSE:_____

5. Because off-site parking and/or off site access to the project is being proposed, the developer shall file with the Planning Division before any building permits are issued, a copy of a recorded lease, CC&Rs, or other instrument that ensures that the offsite parking and/or legal access proposed for this project is available for its actual lifetime.

   APPLICANT'S RESPONSE:_____

6. Because parking and/or access is being shared with adjacent properties, the developer shall file with the Planning Division before any building permits are issued a copy of a recorded map, CC&Rs, or other instrument that ensures that drive aisles, parking, and access is legally shared in common with adjoining properties as depicted on the site plan for the life of the project.

   APPLICANT'S RESPONSE:_____

7. The developer shall include a copy of a final landscape plan with each set of the final building plans submitted to the Building Division. Building permits will not be issued until the Planning Division has approved the final landscape plan for consistency with approved site plans and minimum ordinance standards. **Please refer to the landscaping requirements in Chapter 17.61.** Landscape plans shall include, but are not limited to, data on: gallon/box size, spacing, species (reference approved parking lot tree list), ratio of deciduous vs. evergreen, shade calculations, ground cover calculations, etc.

   (**Note 1:** At the time a final site inspection is conducted, it is expected that plants will match the species identified and be installed in the locations consistent with the approved landscape plan. Changes made without prior approval of the Planning staff may result in the removal and/or relocation of installed plant materials and delays in obtaining building occupancy.)

   (**Note 2:** No mature landscaping shall be removed without prior approval by the Planning Director.)

   (**Note 3:** Upon approval of the final landscape plan, a digital copy shall be submitted to the Planning staff contact listed above.)

   APPLICANT'S RESPONSE:_____

8. Evidence is required to determine that your parcel was legally created. Please provide a copy of a parcel map, tract map, or certificate of compliance.

   (**Note:** An Assessor's map is not acceptable since it is only for tax purposes and does not verify legal parcel status.) If a map is not available, a copy of a deed that includes the parcel's current legal description dated March 4, 1972, or earlier is acceptable; however, you may be required to apply for a Certificate of Compliance before a building permit can be issued (please contact the Public Works Department at 661-326-3566 regarding this application.)

   APPLICANT'S RESPONSE:_____

9. Street addresses for the project shall be designated by staff. These numbers will be the only addresses assigned by the city unless you wish to have a different address program. Internal building unit addresses will be only by suite number and will be the responsibility of the owner or developer to assign to each tenant. Please contact the Karl Davisson at 661-326-3594 for further information.

   (**Note:** It is recommended that you assign suite numbers beginning with 100, 200, 300 etc. instead of an alphabetic character. If in the future a tenant space were split, you would then be able to assign a suite number between the existing numbers, which would keep your suites in numerical order. Keeping an orderly numbering system will make it easier for customers, emergency personnel, and mail delivery to find the business.)

   APPLICANT'S RESPONSE:_____

10. Business identification signs are **neither considered nor approved** under this review (e.g. wall, monument, pylon, etc.). A separate sign permit reviewed by the Planning and Building Divisions and issued by the Building Division, is required for all new signs, including future use and construction signs.

(**Note:** Signs must comply with the Sign Ordinance; Chapter 17.60 of the Bakersfield Municipal Code. Review this Chapter as part of due diligence.)

APPLICANT'S RESPONSE:_____

11. The following conditions are required as part of a grading permit:

a. Habitat Conservation fees shall be required for this project and will be calculated based on the fee in effect at the time we issue an urban development permit (includes grading plan approvals) as defined in the Implementation/Management Agreement (Section 2.21) for the Metropolitan Bakersfield Habitat Conservation Plan. Upon payment of the fee, the applicant will receive acknowledgment of compliance with Metropolitan Bakersfield Habitat Conservation Plan (Implementation/Management Agreement Section 3.1.4). This fee is currently $2,145 per gross acres, payable to the City of Bakersfield (submit to the Planning Division). This fee must be paid before any grading or other site disturbance occurs.

Forms and instructions are available at the Planning Division or on the city's web site at https://bakersfieldcity.us/gov/depts/community_development/habitat.htm.

The current MBHCP expires on February 28, 2022. To ensure take of covered species does not occur after the expiration date, fees must be paid no later than August 31, 2021 and all covered activities must be completed by the MBHCP expiration date of February 28, 2022. As determined by the City, only projects ready to be issued an urban development permit, grading plan approval, or building permit will be eligible to pay fees under the current MBHCP. Early payment or pre-payment of MBHCP fees shall not be allowed. The ability of the City to issue urban development permits is governed by the terms of the MBHCP. Urban development permits issued after the 2022 expiration date may be subject to a new or revised Habitat Conservation Plan, if approved, or be required to comply directly with requests of the U.S. Fish & Wildlife Service and the California Department of Fish and Wildlife.

(Continued)

b. Burrowing Owl Notification: The burrowing owl is a migratory bird species protected by international treaty under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 C.F.R. Part 10 including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 C.F.R. 21). Sections 3503, 3503.5, and 3800 of the California Fish and Game Code prohibit the taking, possession, or destruction of birds, their nests or eggs. To avoid violation of the provisions of these laws generally requires that project related disturbance at active nesting territories be reduced or eliminated during critical phases of the nesting cycle (March 1- August 15, annually). Disturbance that causes nest abandonment and/or loss of reproductive effort (e.g., killing or abandonment of eggs or young) may be considered "taking" and is potentially punishable by fines and/or imprisonment.

c. Prior to ground disturbance, the developer shall have a California Department of Fish and Wildlife approved MBHCP biologist survey the location for kit fox, and comply with the provisions of the Metropolitan Bakersfield Habitat Conservation Plan. Survey protocol shall be recommended by the California Department of Fish and Wildlife. Developer shall be subject to the mitigation measures recommended by the biologist. Copies of the survey shall be provided to the Development Services Department, California Department of Fish and Wildlife, and the U.S. Fish and Wildlife Service prior to ground disturbance.

APPLICANT'S RESPONSE:_____

12. Rooftop areas of commercial buildings (e.g., office, retail, restaurant, assembly, hotel, hospital, church, school), and industrial buildings adjacent to residentially zoned properties, shall be completely screened by parapets or other finished architectural features constructed to a height of the highest equipment, unfinished structural element or unfinished architectural feature of the building.

APPLICANT'S RESPONSE:_____

13. Open storage of materials and equipment shall be surrounded and screened with a solid wall or fence (screening also applies to gates). This fence shall be at least 6 feet in height and materials shall not be stacked above the height of the fence.

(**Note:** Fences taller than 6 feet are allowed in commercial and industrial zones but they will require a building permit.)

APPLICANT'S RESPONSE:_____

14. Areas used for outside storage shall be treated with a permanent dust binder or other permanent dust control measure consistent with the regulations of the San Joaquin Valley Air Pollution Control District.

(**Note:** All passenger vehicle-parking areas must be paved.)

APPLICANT'S RESPONSE:_____

15. Outside work, storage, sales and display of merchandise and materials is prohibited. All activities and all storage of merchandise and materials shall be conducted and/or contained within an enclosed building.

    (**Note:** This does not include outdoor seating areas for restaurants.)

    APPLICANT'S RESPONSE:_____

16. Refuse collection bin enclosures and container areas are subject to all required structural setback from street frontages, and shall not reduce any parking, loading or landscaping areas as required by the Zoning Ordinance.

    APPLICANT'S RESPONSE:_____

17. In the event a previously undocumented oil/gas well is uncovered or discovered on the project, the developer is responsible to contact the California Geologic Energy Management Division (CalGEM). The developer is responsible for any remedial operations on the well required by CalGEM. The developer shall also be subject to provisions of BMC Section 15.66.080.B.

    APPLICANT'S RESPONSE:_____

18. The developer shall meet all regulations of the San Joaquin Valley Air Pollution Control District (Regulation VIII) concerning dust suppression during construction of the project. Methods include, but are not limited to; use of water or chemical stabilizer/suppressants to control dust emission from disturbed area, stock piles, and access ways; covering or wetting materials that are transported off-site; limit construction-related speed to 15 mph on all unpaved areas/washing of construction vehicles before they enter public streets to minimize carryout/track out; and cease grading and earth moving during periods of high winds (20 mph or more).

    APPLICANT'S RESPONSE:_____

19. Prior to receiving final building or site occupancy, you must contact the Planning Division (staff contact noted above) for final inspection and approval of the landscaping, parking lot, lighting and other related site improvements. Inspections will not be conducted until all required items have been installed. Any deviations from the approved plans without prior approval from the Planning Division may result in reconstruction and delays in obtaining a building or site occupancy.

    APPLICANT'S RESPONSE:_____

20. All mitigation measures included in the adopted Mitigated Negative Declaration for CUP No. 20-0379 are hereby incorporated.

    APPLICANT'S RESPONSE:_____

C. FIRE DEPARTMENT (2101 H Street)
(Staff contact - Ernie Medina; 661-326-3682 or EMedina@bakersfieldcity.us)

1. Show on the final building plans the following items:

   a. All fire lanes. Any modifications shall be approved by the Fire Department. Fire lane identification signs shall be installed every 100 feet with red curbing when curbing is required. All work shall be completed before occupancy of any building or portion of any building is allowed.

   b. All fire hydrants, both offsite (nearest to site) and on-site. *Include flow data on all hydrants.* Hydrants shall be in good working condition and are subject to testing for verification. Fire flow requirements must be met prior to construction commencing on the project site. Please provide two (2) sets of the water plans stamped by a licensed Registered Civil Engineer to the Fire Department and two (2) sets to the Water Resources Department (1000 Buena Vista Road, Bakersfield, CA. 93311; 661-326-3715).

      (**Note:** Show: 1) distance to the nearest hydrant; and 2) distance from that hydrant to the farthest point of the project site.)

   c. All fire sprinkler and/or stand pipe systems, fire alarms and commercial hood systems. These suppression systems require review and permits by the Fire Department. The Fire Department will issue guidelines for these various items as they may apply to this project.

   d. Project address, including suite number if applicable. If the project is within a shopping or business center, note the name and address of the center.

   e. Name and phone number of the appropriate contact person.

   APPLICANT'S RESPONSE:_____

2. The developer must pay required fees to and request an inspection from the Water Resources Department (1000 Buena Vista Road, Bakersfield, CA, phone: 661-326-3715) for any underground sprinkler feeds at least 2 full business days before they are buried. The Prevention Services Division (2101 H Street, Bakersfield CA, Ph. 661/326-3979) must complete all on-site inspections of fire sprinkler systems and fire alarm systems before any building is occupied.

   APPLICANT'S RESPONSE:_____

3. Where fire apparatus access roads or a water supply for fire protection are required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction.

   APPLICANT'S RESPONSE:_____

4. Facilities, buildings or portions of buildings hereafter constructed shall be accessible to fire department apparatus by way of an *approved fire apparatus access road* with an asphalt, concrete or other driving surface approved by the fire chief. Must be capable of supporting the imposed load of fire apparatus weighing at least 75,000 pounds and shall be surfaced with the first lift of asphalt as to provide all-weather driving capabilities. All access (Permanent and temporary) to and around any building under construction must be a least 20 feet wide (26 feet wide where building height exceeds 30 feet), with an overhead clearance of 13 feet 6 inches, and contain no obstruction. The fire apparatus access road shall extend to within 150 feet of all portions of the facility and all portions of the exterior walls of the first story of the building as measured by an approved route around the exterior of the building or facility.

   APPLICANT'S RESPONSE:_____

5. Turning Radius: The minimum turning radius shall be thirty-seven feet.

   APPLICANT'S RESPONSE:_____

6. The developer shall submit two (2) sets of plans for permits and approvals from the Fire Department for fuel tanks or related facilities before they are installed on the site. Please contact the Prevention Services Division at 661-326-3979 for further information.

   APPLICANT'S RESPONSE:_____

7. If you handle hazardous materials or hazardous waste on the site, the Prevention Services Division may require a hazardous material management and/or risk management plan before you can begin operations. Please contact them at 661-326-3979 for further information.

   APPLICANT'S RESPONSE:_____

8. If you store hazardous materials on the site in either an underground or a permanent aboveground storage tank, a permit from the Prevention Services Division is required to install and operate these tanks. The Prevention Services Division may also require a Spill Prevention Control and Countermeasure Plan for storage of petroleum products above ground in quantities of 1,320 gallons or more. Please contact them at 661-326-3979 for further information.

   APPLICANT'S RESPONSE:_____

9. All projects must comply with the current California Fire Code and current City of Bakersfield Municipal Code.

   APPLICANT'S RESPONSE:_____

10. If cooking appliances are added to existing residential units, then a fire suppression system shall be installed subject to approval by the Fire Department.

    APPLICANT'S RESPONSE:_____

D. WATER RESOURCES (1000 Buena Vista Road)
(Staff contact - Tylor Hester; 661-326-3715 or THester@bakersfieldcity.us)

1. Property is located outside of the City of Bakersfield domestic water service area, therefore, only pipelines and appurtenances related to fire water are subject to review.

   APPLICANT'S RESPONSE:_____

2. If the property requires a dedicated fire water service line, Developer shall submit two (2) sets of utility plans signed by a California Registered Civil Engineer to the Water Resources Department showing all offsite and onsite improvements, including connections to the existing water main and underground fire waterlines and related apparatuses. Include any existing nearby on or off-site hydrants on the plans. Plans shall be submitted along with applicable plan check fees and any other associated fees per the current fee schedule. Plans shall comply with current City Standards and Specifications, California Fire Code, and City of Bakersfield Municipal Code. City Standards and Specifications are available for download from the City's website at www.bakersfieldcity.us/gov/depts./water_resources.

   APPLICANT'S RESPONSE:_____

3. Developer shall pay the required Water Resources Fire Service Inspection Fees and submit an *Inspection Request Form* for any underground fire waterlines and their apparatuses at least two (2) full business days before permanent construction. The form is available for download from the City's website at www.bakersfieldcity.us/gov/depts/water_resources/fees.htm

   APPLICANT'S RESPONSE:_____

E. PUBLIC WORKS - ENGINEERING (1501 Truxtun Avenue)
(Staff contact – Susanna Kormendi; 661-326-3997 or skormendi@bakersfieldcity.us)

1. The developer shall construct curbs, gutters, cross gutters, sidewalks, and street/alley paving along Taft Hwy, Grewal Street, and Buhlar Street according to adopted city standards. These improvements shall be shown on the final building plans submitted to the Building Division before any building permits will be issued.

   APPLICANT'S RESPONSE:_____

2. The developer shall install required streetlights along Taft Hwy, Grewal Street, and Buhlar Street as per standards ST 23.6 and ST 23.7. The developer shall be responsible for providing the labor and materials necessary to energize all newly installed streetlights before occupancy of the building or site. These improvements shall be shown on the final building plans submitted to the Building Division before any building permits will be issued. Submit street light location plan to Public Works Department for street light number.

   APPLICANT'S RESPONSE:_____

3. The developer shall install new connection(s) to the public sewer system. This connection shall be shown on the final building plans submitted to the Building Division before any building permits will be issued.

   APPLICANT'S RESPONSE:_____

4. Show on the final building plans all existing connection(s) to the public sewer system.

   APPLICANT'S RESPONSE:_____

5. All on-site areas required to be paved (i.e. parking lots, access drives, loading areas, etc.) shall consist of concrete, asphaltic concrete (Type B. A. C.) or other paved street material approved by the City Engineer. Pavement shall be a minimum thickness of 2 inches over 3 inches of approved base material (i.e. Class II A. B.) if concrete is used, it shall be a minimum thickness of 4 inches per Municipal Code Section 17.58.060.A. This paving standard shall be noted on the final building plans submitted to the Building Division before any building permits will be issued.

   APPLICANT'S RESPONSE:_____

6. If a grading plan is required by the Building Division, building permits will not be issued until the grading plan is approved by **both** the Public Works Department and the Building Division.

   APPLICANT'S RESPONSE:_____

7. All storm water generated on the project site, including the street frontage shall be retained onsite unless otherwise allowed by the Public Works Department (please contact the Public Works Department – Subdivisions at 661-326-3576).

   APPLICANT'S RESPONSE:_____

8. If the project generates industrial waste, it shall be subject to the requirements of the Industrial Waste Ordinance. An industrial waste permit must be obtained from the Public Works Department before issuance of the building permit. To find out what type of waste is considered industrial, please contact the Wastewater Treatment Superintendent at 661-326-3249.

   APPLICANT'S RESPONSE:_____

9. Before any building or site can be occupied, the developer must reconstruct or repair substandard off-site street improvements that front the site to adopted city standards as directed by the City Engineer. Please call the Construction Superintendent at 661-326-3049 to schedule a site inspection to find out what improvements may be required prior to submitting a grading plan. Any off-site/frontage improvements or repairs required during the site inspection shall be shown on the grading plan.

   APPLICANT'S RESPONSE:_____

10. A street permit from the City of Bakersfield Public Works Department, or CalTrans along Taft Hwy, shall be obtained before any work can be done within the public right-of-way (streets, alleys, easements). Please include a copy of this site plan review decision to the department at the time you apply for this permit.

    APPLICANT'S RESPONSE:_____

11. A sewer connection fee shall be paid at the time a building permit is issued. We will base this fee at the rate in effect at the time a building permit is issued.

    APPLICANT'S RESPONSE:_____

12. If the project is subject to the provisions of the National Pollutant Discharge Elimination System (NPDES), a "Notice of Intent" (NOI) to comply with the terms of the General Permit to Discharge Storm Water Associated with Construction Activity (SWRCB Order No. 2009-009-DWQ as amended by Order No. 2010-0014-DWQ and 2012-0006-DWQ) must be filed with the State Water Resources Control Board in Sacramento before the beginning of any construction activity. Compliance with the general permit required that a Storm Water Pollution Prevention Plan (SWPPP) be prepared, continuously carried out, and always be available for public inspection during normal construction hours.

    APPLICANT'S RESPONSE:_____

13. Prior to the issuance of each building permit, or if no building permit is required, the first required City approval prior to construction, the developer/owner shall pay a Transportation Impact Fee (TIF) for regional facilities. This fee will be based on the rate in effect at the time the applicable approval is issued or in accordance with the Subdivision Map Act, as applicable. The Public Works Department will calculate an estimate of the total fee upon submittal of construction plans for the project.

    APPLICANT'S RESPONSE:_____

14. The developer shall either construct the equivalent full width landscaped median island in Taft Hwy along the development's frontage or pay their proportionate share (1/2-width) of the total cost for the future construction of the median. Median islands shall be designed by the first development that occurs along an applicable street frontage. That developer shall either construct the full width landscaped median island or pay the median island fee. The median island fee shall be satisfied by fulfilling one of the following options: (1) Pay the standard fee of $100 per linear foot; or (2) Pay the calculated fee based upon actual cost estimates prepared by the Project Engineer, which shall be reviewed and approved by the City Engineer. If the median island is not constructed by the first development along an applicable street frontage, the second development along that street frontage shall construct the full width landscaped median island.

    APPLICANT'S RESPONSE:_____

15. The developer shall form a new Maintenance District. Undeveloped parcels within an existing Maintenance District are required to update Maintenance District documents. Updated documents, including Proposition 218 Ballot and Covenant, shall be signed and notarized. If there are questions, contact Louis Rodriguez at 661-326-3571.

    (**Note:** If already within a maintenance district, may need to update the maintenance district form.)

    APPLICANT'S RESPONSE:_____

16. The developer shall install a full sized manhole in each sewer line except residential development before it connects to the sewer main. This manhole is to be located within the property being developed and must be easily accessible by City workers.

    APPLICANT'S RESPONSE:_____

17. This project may be located within a Planned Sewer Area. Please contact the Public Works Department – Subdivisions at 661-326-3576 to determine what fees may apply.

    APPLICANT'S RESPONSE:_____

18. This project may be located within a Planned Drainage Area. Please contact the Public Works Department – Subdivisions at 661-326-3576 to determine what fees may apply.

    APPLICANT'S RESPONSE:_____

19. This project may be subject to Bridge and Major Thoroughfare fees. Please contact the Public Works Department – Subdivisions at 661-326-3576 to determine what fees may apply.

    APPLICANT'S RESPONSE:_____

F. <u>PUBLIC WORKS - TRAFFIC (1501 Truxtun Avenue)</u>
(Staff contact – Susanna Kormendi; 661-326-3997 or skormendi@bakersfieldcity.us)

1. Show on the final building plans 36' to 42' wide (top-to-top) drive approach(es). Drive approaches must be centered on drive aisles. All dimensions shall be shown on the final building plans (Standard ST-4).

   APPLICANT'S RESPONSE:_____

2. Refer to Standard T-17 for minimum driveway spacing. Adjust plan accordingly.

   APPLICANT'S RESPONSE:_____

3. Two-way drive aisles shall be a minimum width of 24 feet. If perpendicular (90º) parking spaces are proposed where a vehicle must back into these aisles, the minimum aisle width shall be 25 feet. All drive aisle dimension shall be shown on the final building plans.

   APPLICANT'S RESPONSE:_____

4. Walls, fences, or trash enclosures within 10 feet of a sidewalk at an alley or driveway shall not exceed 3 feet in height above the curb flow line. You must either revise the circulation design or show on the final building plans that the maximum fence/wall height will not exceed three feet.

   APPLICANT'S RESPONSE:_____

5. The developer shall dedicate additional road right-of-way to the City of Bakersfield along Taft Hwy as per Taft Hwy Resolution.

   APPLICANT'S RESPONSE:_____

6. The developer shall construct additional roadway, including expanded intersection and/or right turn lanes, along Taft Hwy expressway street width according to adopted city standards.

   APPLICANT'S RESPONSE:_____

7. The developer shall dedicate any sidewalk extending out of the right of way to the City of Bakersfield for the pedestrian way along all arterial streets. This must be conducted with a separate instrument or final map.

   APPLICANT'S RESPONSE:_____

G. <u>PUBLIC WORKS - SOLID WASTE (4101 Truxtun Avenue)</u>
(Staff Contact – Richard Gutierrez; 661-326-3114 or rmgutierrez@bakersfieldcity.us)

1. You must contact the staff person noted above before building permits can be issued or work begins on the property to establish the level and type of service necessary for the collection of refuse and/or recycled materials. Collection locations must provide enough containment area for the refuse that is generated without violating required zoning or setback restrictions (see Planning Division conditions). Levels of service are based on how often collection occurs as follows:

   ☐ Cart service -- 1 cubic yard/week or less 1 time per week
   ☒ Front loader bin services -- 1 cubic yard/week - 12 cubic yards/day
   ☐ Roll-off compactor service -- More than 12 cubic yards/day

   APPLICANT'S RESPONSE:_____

2. Show on the final building plans refuse/recycle bin enclosures. Each enclosure shall be designed according to adopted city standard (Detail # ST-27 and ST-28), at the size checked below ☑. Before occupancy of the building or site is allowed, 4, 3-cubic yard front loading type refuse/recycle bin(s) shall be placed within the required enclosure(s).

☐ 6' deep x 8' wide (1 bin) ☐ 8' deep x 15' wide (3 bins)
☐ 8' deep x 10' wide (2 bins) ☒ 8' deep x 20' wide (4 bins)
☐ 8' deep x 10' wide; on skids for direct stab only (1-6 yard recycling bin)

(**Note:** All measurements above are curb-to-curb dimensions inside the enclosure. If both refuse and recycling containers are to be combined in the same enclosure area, this area must be expanded in size to accommodate multiple containers/bins - contact the staff person above for the appropriate enclosure size.)

APPLICANT'S RESPONSE:_____

3. Examples of enclosure styles can be found on (Detail # ST-32).

APPLICANT'S RESPONSE:_____

4. Facilities that require infectious waste services shall obtain approval for separate infectious waste storage areas from the Kern County Health Department. In no instances shall the refuse bin area be used for infectious waste containment purposes.

APPLICANT'S RESPONSE:_____

5. Facilities that require grease containment must provide a storage location that is separate from the refuse bin location. This shall be shown on the final building plans. If a grease interceptor is to be used instead of a grease containment bin, the plans must still show the location of an adequately sized enclosure should a grease containment bin be required at a future date. The grease containment bin shall not share the same enclosure as the refuse/recyclable/organic bin enclosure.

APPLICANT'S RESPONSE:_____

6. Facilities with existing refuse service must improve the service location area(s) according to adopted City standards (Detail # ST-27 and ST-28). These improvements shall be clearly shown on the final building plans.

APPLICANT'S RESPONSE:_____

7. If utilities are incorporated into the enclosure design, they shall not interfere with space provided for refuse bins and must provide sufficient protection measures to guard the utilities from damage.

APPLICANT'S RESPONSE:_____

8. Enclosures shall not be located in an area that would cause refuse trucks to interfere with drive thru traffic flow entering or exiting the site, drive thru lanes, etc.

   APPLICANT'S RESPONSE:_____

9. Businesses are required to have sufficient capacity of refuse/recycling/organic material storage to go without service for 1 day (Sunday). At any time refuse/recycling/organic services become an issue, businesses shall construct a second refuse enclosure to meet the demand. The second enclosure shall be approved by the City prior to construction.

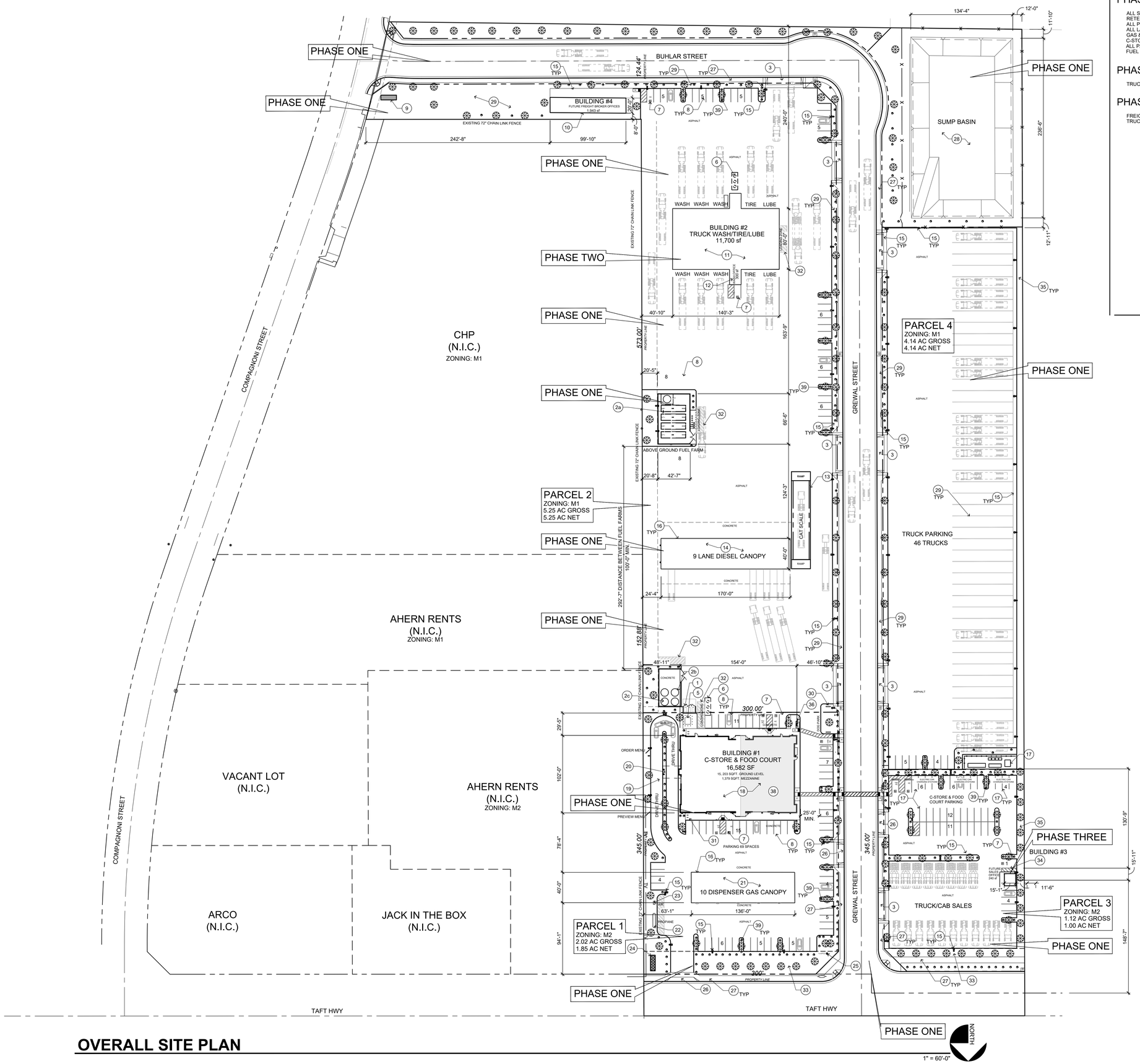
   APPLICANT'S RESPONSE:_____

10. Revise the site plan to make the trash enclosure accessible to the refuse truck. City trucks may not drive down dead end corridors, nor back-up long distances; therefore, a turn-around area shall be provided.

    APPLICANT'S RESPONSE:_____

Appendix B:

Site Plans



OVERALL SITE PLAN

PHASING SCHEDULE

PHASE 1 EST. COMPLETION MARCH 31, 2022

ALL STREETS
RETENTION SUMP
ALL PAVING, CURBS AND GUTTERS
ALL LANDSCAPING
GAS & DIESEL CANOPIES
C-STORE AND FOOD COURT
ALL PARKING - AUTOS AND TRUCKS
FUEL FARM

PHASE 2 EST. COMPLETION SEPTEMBER 30, 2022

TRUCK WASH AND TIRE REPAIR BUILDING

PHASE 3 EST. COMPLETION MARCH 31, 2023

FREIGHT BROKER OFFICE BUILDING
TRUCK SALES BUILDING

KEYED NOTES
(APPLIES TO SHEET SP1.0 - SP1.2)

1. TRASH ENCLOSURE
2a. ABOVE GROUND FUEL FARM BY OTHERS
(4) 12,000 GAL DIESEL
(1) 9,000 GAL DEF
2b. ABOVE GROUND FUEL TANKS BY OTHERS
(1) 12,000 GAL DIESEL
(1) 12,000 GAL BIO-DIESEL
2c. ABOVE GROUND FUEL TANKS BY OTHERS
(1) 15,000 GAL 87 OCTANE
(1) 15,000 GAL 9K PREMIUM / 8K DIESEL SPLIT
3. TRUCK DRIVEWAY PER COB DETAILS
4. NOT USED
5. PROPOSED PG & E ELECTRICAL TRANSFORMER
6. GREASE TRAP INTERCEPTOR
7. ACCESSIBLE PARKING PER CALIFORNIA BUILDING CODE TITLE 24 STANDARDS
8. PARKING 9'X18' PER COB STANDARDS
9. 60' HIGH MONUMENT SIGN ON COMPAGNONI ST. BY OTHERS
10. FUTURE FREIGHT BROKER OFFICE UNDER SEPARATE PERMIT
11. TRUCK WASH / LUBE / TIRE BUILDING BY OTHERS UNDER SEPARATE PERMIT
12. TRUCK WASH OFFICE BY OTHERS UNDER SEPARATE PERMIT
13. CAT TRUCK SCALE BY OTHERS UNDER SEPARATE PERMIT
14. 9 LANE DIESEL CANOPY AND DISPENSERS BY OTHERS UNDER SEPARATE PERMIT
15. 30' HIGH LED POLE - PARKING LOT LIGHTING 20,000 LUMENS PER HEAD - REFER TO PLAN FOR CONFIGURATION.
16. LED LIGHTING MOUNTED ON UNDERSIDE OF CANOPY - SEE ELECTRICAL DRAWINGS
17. ELECTRIC VEHICLE CHARGING STATIONS (17) AND EQUIPMENT BY OTHERS
18. CONVENIENCE STORE & FOOD COURT
19. DRIVE-THRU LANE PER COB STANDARDS
20. DRIVE-THRU CANOPY
21. AUTOMOBILE GAS CANOPY AND DISPENSERS BY OTHERS
22. 1000 GALLON PROPANE TANK WITH PIPE BOLLARDS BY OTHERS
23. AIR DISPENSER ON CONCRETE CURB
24. 80' HIGH MONUMENT SIGH ON TAFT HIGHWAY BY OTHERS
25. 100' FLAGPOLE WITH LIGHTING BY OTHERS
26. 30' WIDE CAR DRIVEWAY
27. 60" WIDE SIDEWALK
28. DRAINAGE SUMP
29. 96" LANDSCAPED AREA ALONG STREET
30. DOG PARK WITH PET FRIENDLY ARTIFICIAL TURF
31. BICYCLE RACK
32. 10' X 35' LOADING ZONE
33. 30' LANDSCAPE ZONE ALONG TAFT HIGHWAY
34. FUTURE TRUCK SALES OFFICE
35. 10' LANDSCAPE BARRIER
36. FUEL VENT STACKS BY OTHERS
37. PROVIDE WHEEL STOP TO PREVENT ENCROACHMENT IN ACCESSIBLE ROUTE PER CBC 11B-502.7.2
38. SHADED AREA INDICATES RETAIL PORTION OF BUILDING
39. 5'-0" LANDSCAPING ISLAND PER 6 PARKING SPACES

PROJECT SUMMARY

PROJECT ADDRESS	2201 TAFT HIGHWAY BAKERSFIELD, CALIFORNIA 93313
APN'S / ZONING	184-160-14 ZONING - M2 184-160-13 ZONING - M1 184-160-43 ZONING - M1
BUILDING AREA BUILDING #1	16,582 S.F.
BUILDING AREA BUILDING #2	11,700 S.F.
BUILDING AREA BUILDING #3	240 S.F.
BUILDING AREA BUILDING #4	1,943 S.F.
SITE AREA	16 ACRES (GROSS)

PARKING SUMMARY

REQUIRED

BUILDING #1 - 16,582 SQFT.
(GROUND AND MEZZANINE LEVEL)

RESTAURANT @ 1 /75	7,238 / 75 S.F. =	97
CONVENIENCE STORE @ 1 /200	9,344 / 200 S.F. =	47
CREDIT (44' + DRIVE-THRU LANE)	=	-2
CREDIT (9 DIESEL PUMPS)	=	-9
CREDIT (2:1) VEHICLES AT FUEL PUMPS	10 (2) =	- 20
TOTAL		113

BUILDING #2 - TRUCK WASH with OFFICE

SERVICE AREA @ 1 / 500	11,400 / 500 S.F. =	23
OFFICE @ 1 /300	300 / 300 S.F. =	1
TOTAL		24

BUILDING #3 - TRUCK SALES OFFICE

SERVICE AREA @ 1 / 4,000	19,460 / 4,000 S.F. =	4
OFFICE @ 1 /250	240 / 250 S.F. =	1
TOTAL		5

BUILDING #4 - FREIGHT BROKER OFFICE

OFFICE @ 1 /250	1,943 / 250 S.F. =	8

TOTAL REQUIRED 150 SPACES

ACCESSIBLE SPACES (PER 2019 CBC TABLE 11B-208.2)
WHERE 151 to 200 PROVIDED, 5 SPACES REQUIRED

VAN SPACES (PER 2019 CBC 11B-208.2.4)
1 REQUIRED PER 6 REQUIRED ACCESSIBLE SPACES

PROVIDED

STANDARD STALLS (9'-0" x 18'-0")	134
(EV) ELECTRICAL VEHICLE (9'-0" x 18'-0")	12
ACCESSIBLE STALLS	9
ACCESSIBLE (EV) STALLS	2
TOTAL PROVIDED	157 SPACES

SURPLUS PARKING STALLS = 7 SPACES

TRUCK PARKING STALLS = 46 SPACES

SCALE: 1"=60'-0"
DRAWN BY: CLF
DATE: 07.09.2021
PROJECT NUMBER: 20-132

#	DATE:	DESCRIPTION:

pilot

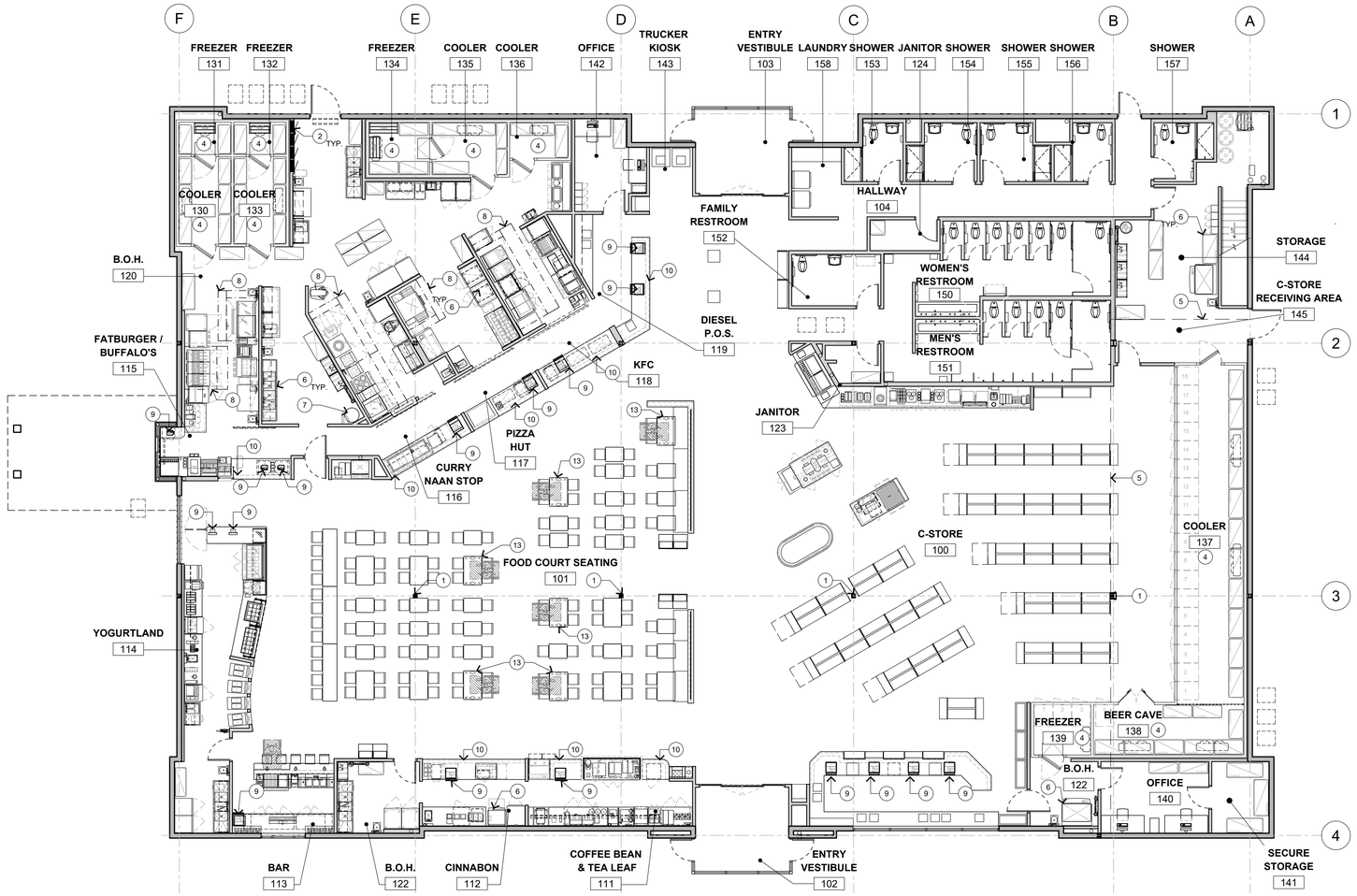
PROJECT: PILOT - TRAVEL PLAZA - BAKERSFIELD
2201 TAFT HIGHWAY
BAKERSFIELD, CALIFORNIA 93313

SHEET TITLE: OVERALL SITE PLAN

ideation DESIGN GROUP
4696 EAST WASHINGTON STREET PHOENIX, ARIZONA 85034
tel 602.792.1731 fax 602.792.1846
INTERIOR DESIGN I FOODSERVICE DESIGN I ARCHITECTURE

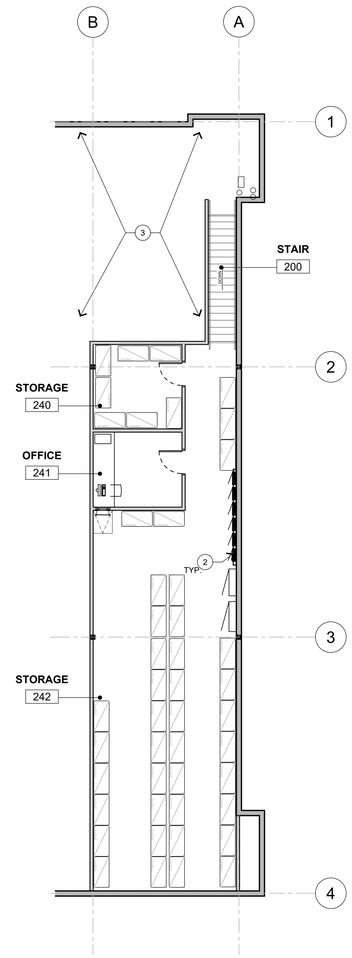
CUP SUBMITTAL : 07.09.2021

SHEET NO: CUP-SP



FIXTURE / FURNITURE PLAN

1/8" = 1'-0"



FFP - MEZZANINE

1/8" = 1'-0"

KEYED NOTES
(APPLIES TO SHEET A2.0 - A2.2)

1. STRUCTURAL COLUMN, SEE STRUCTURAL DRAWINGS
2. ELECTRICAL PANELS. MAINTAIN 4'-0" CLEAR IN FRONT REFER TO ELECTRICAL DRAWINGS.
3. OPEN TO BELOW
4. WALK-IN COOLER / FREEZER BY OTHERS.
5. DASHED LINE INDICATES MEZZANINE ABOVE.
6. FOOD SERVICE EQUIPMENT
7. WATER HEATER ON PLATFORM ABOVE MOPSINK.
8. LINE OF EXHAUST HOOD, ABOVE.
9. POS SYSTEM.
10. DIEWALL BELOW.
11. MENU BOARD BY SIGN VENDOR UNDER SEPARATE PERMIT.
12. WALL MOUNTED TV/ DIGITAL MENU BOARD.
13. WHEELCHAIR ACCESSIBLE DINING @ +30" A.F.F.

GENERAL NOTES

1. CONTRACTOR AND ALL VENDORS SHALL VISIT THE SITE TO VERIFY DIMENSIONS AND CONDITIONS PRIOR TO THE FABRICATION OR MANUFACTURE OF MILLWORK, FURNITURE, AND FIXTURES.
2. CONTRACTOR IS RESPONSIBLE FOR SCHEDULING AND COORDINATING WITH ALL OWNER'S VENDORS.
3. MILLWORK CONTRACTOR MUST OBTAIN ALL RELEVANT EQUIPMENT CUT SHEETS PRIOR TO FABRICATION. THE MILLWORK CONTRACTOR SHALL COORDINATE WITH ALL TRADES IMPACTING THE MILLWORK PRIOR TO FABRICATION OR INSTALLATION.
4. ALL MATERIALS SHALL MEET THE FLAME SPREAD INDEX AND DEVELOPED SMOKE REQUIREMENTS MANDATED BY THE AUTHORITIES HAVING JURISDICTION. REFER TO GENERAL FINISH NOTES ON GN7 FOR MORE INFORMATION.
5. IT IS THE INTENT THAT THIS PROJECT IS IN COMPLIANCE WITH ALL FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS. THE GENERAL CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY UPON THE DISCOVERY OF ANY DISCREPANCIES BETWEEN THE CONSTRUCTION DOCUMENTS AND THE EXISTING CONDITIONS OF THE SPACE. ANY WORK IN QUESTION SHALL NOT COMMENCE UNTIL WRITTEN CLARIFICATION IS ISSUED BY THE ARCHITECT.

SCALE:	1/8"=1'-0"
DRAWN BY:	CF/LC
DATE:	07.09.2021
PROJECT NUMBER:	20-132

#	DATE:	DESCRIPTION:

pilot

PROJECT:

PILOT - TRAVEL PLAZA - BAKERSFIELD
2201 TAFT HIGHWAY
BAKERSFIELD, CALIFORNIA 93313

SHEET TITLE

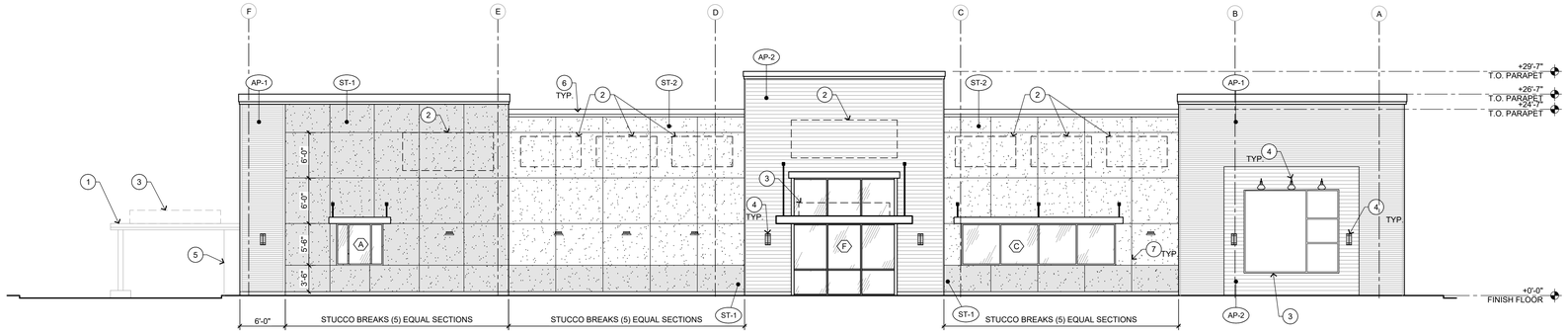
FIXTURE / FURNITURE PLAN - C-STORE & FOOD COURT

ideation DESIGN GROUP
4806 EAST WASHINGTON STREET PHOENIX, ARIZONA, 85034
tel: 602.792.1793 fax: 602.792.1846
INTERIOR DESIGN I FOODSERVICE DESIGN I ARCHITECTURE

CUP SUBMITTAL : 07.09.2021

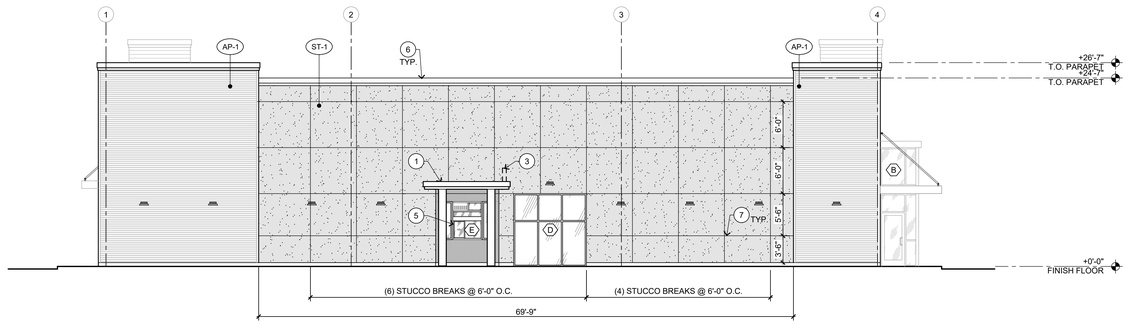
SHEET NO:

CUP-A1.0



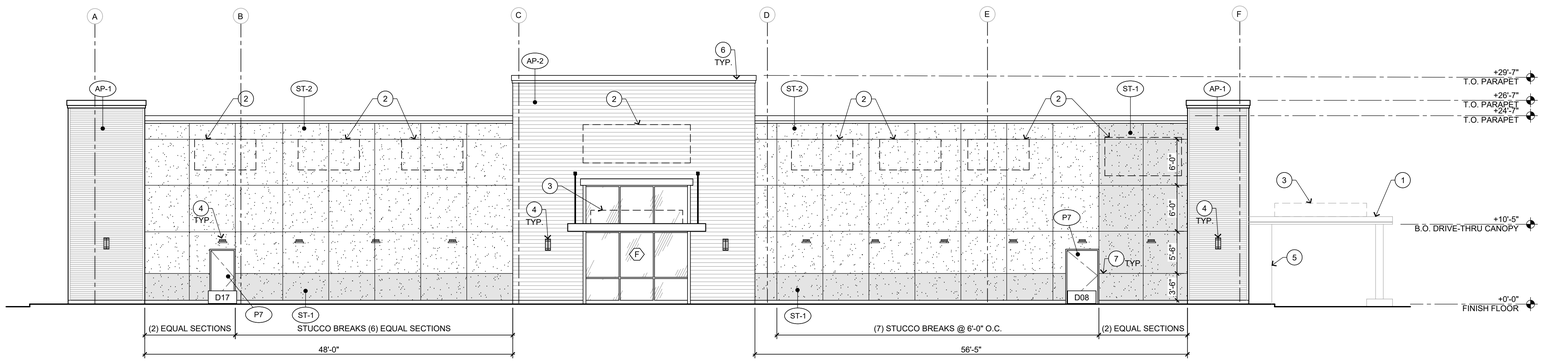
A EXTERIOR ELEVATION - NORTH

SCALE: 1/8" = 1'-0"



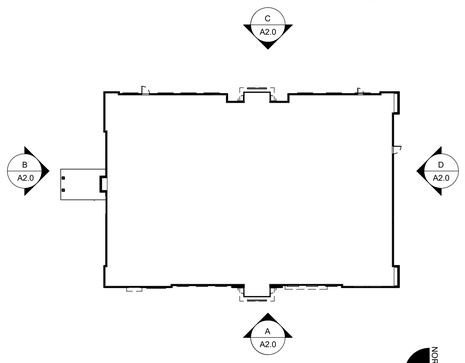
B EXTERIOR ELEVATION - EAST

SCALE: 1/8" = 1'-0"



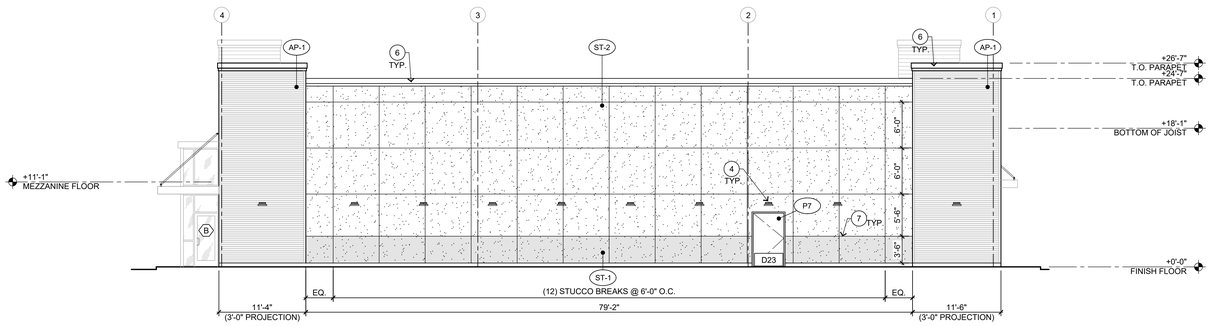
C EXTERIOR ELEVATION - SOUTH

SCALE: 1/8" = 1'-0"



KEY PLAN

N.T.S.



D EXTERIOR ELEVATION - WEST

SCALE: 1/8" = 1'-0"

KEYED NOTES
(APPLIES TO THIS SHEET ONLY)

1. DRIVE-THRU CANOPY ROOF / STRUCTURE
2. INTERNALLY ILLUMINATED SIGNAGE BY SIGN VENDOR, UNDER SEPARATE PERMIT.
3. NON-ILLUMINATED SIGNAGE BY SIGN VENDOR, UNDER SEPARATE PERMIT.
4. EXTERIOR LIGHTING.
5. DRIVE-THRU WINDOW
6. METAL COPING
7. AESTHETIC REVEAL
8. ROOF DRAIN LEADER - DRAIN TO DAYLIGHT AT EDGE OF SIDEWALK

GENERAL NOTES

1. DEVELOPMENT AND USE OF THIS SITE WILL CONFORM WITH ALL APPLICABLE CODES AND ORDINANCES.

SCALE:	1/8"=1'-0"
DRAWN BY:	CLF
DATE:	07.09.2021
PROJECT NUMBER:	20-132

#	DATE:	DESCRIPTION:

pilot

PROJECT:

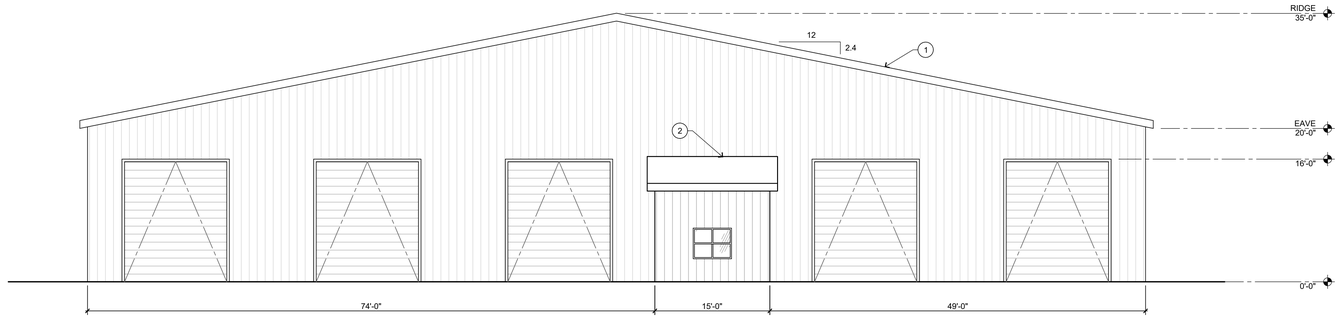
PILOT - TRAVEL PLAZA - BAKERSFIELD
2201 TAFT HIGHWAY
BAKERSFIELD, CALIFORNIA 93313

SHEET TITLE:
EXTERIOR ELEVATIONS - PHASE 1
C-STORE & FOOD COURT

ideation DESIGN GROUP
4095 EAST WASHINGTON STREET
tel 602.792.1781
PHOENIX, ARIZONA, 85034
fax 602.792.1846
INTERIOR DESIGN | FOODSERVICE DESIGN | ARCHITECTURE

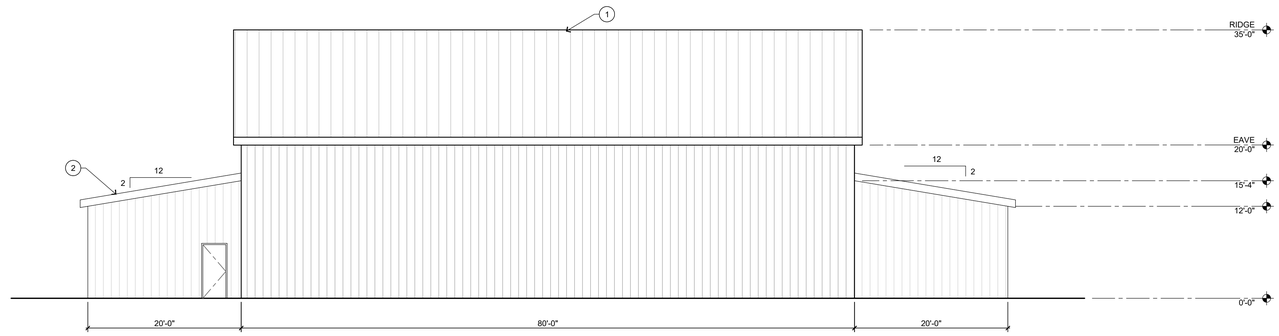
CUP SUBMITTAL : 07.09.2021

SHEET NO:
CUP - A2.0



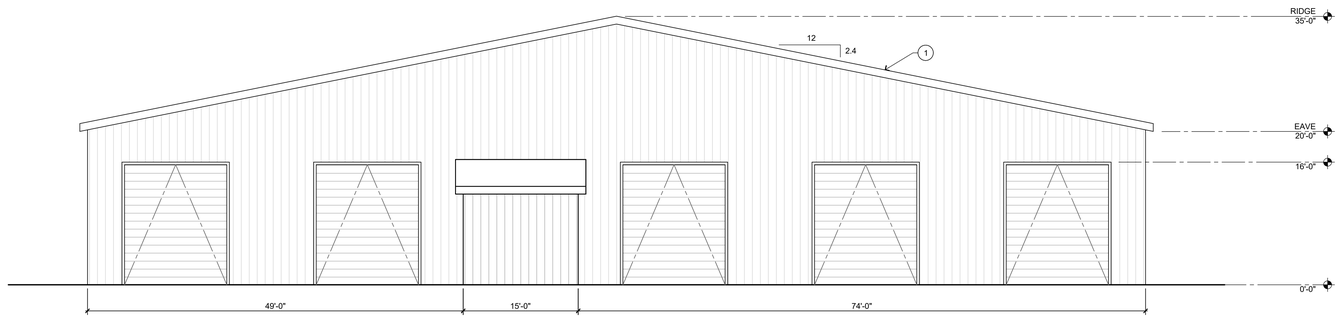
E EXTERIOR ELEVATION - NORTH

SCALE: 1/8" = 1'-0"



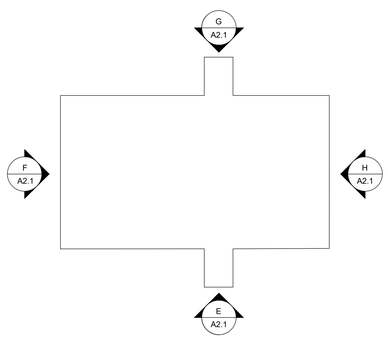
F EXTERIOR ELEVATION - EAST

SCALE: 1/8" = 1'-0"



G EXTERIOR ELEVATION - SOUTH

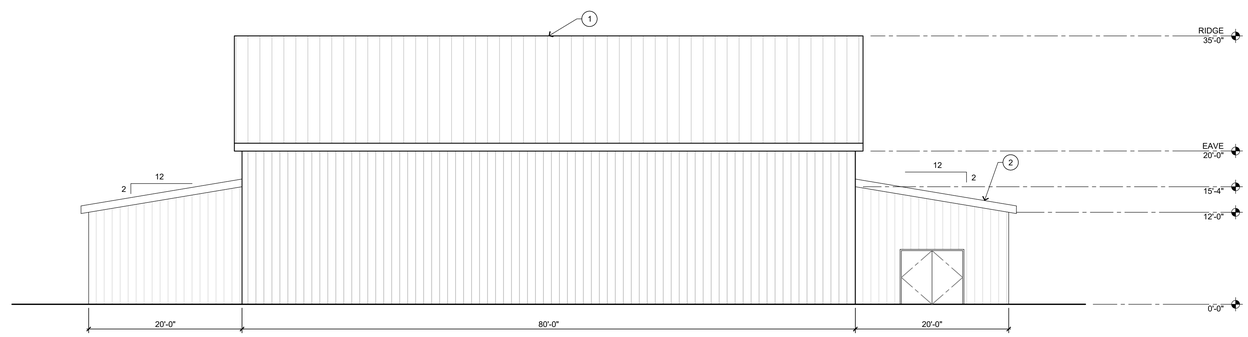
SCALE: 1/8" = 1'-0"



KEY PLAN

N.T.S.

NORTH



H EXTERIOR ELEVATION - WEST

SCALE: 1/8" = 1'-0"

KEYED NOTES
(APPLIES TO THIS SHEET ONLY)

1. TRUCK WASH / LUBE / TIRE BUILDING BY OTHERS UNDER SEPARATE PERMIT
2. TRUCK WASH OFFICE BY OTHERS UNDER SEPARATE PERMIT

GENERAL NOTES

1. DEVELOPMENT AND USE OF THIS SITE WILL CONFORM WITH ALL APPLICABLE CODES AND ORDINANCES.

SCALE:	1/8"=1'-0"
DRAWN BY:	CLF
DATE:	07.09.2021
PROJECT NUMBER:	20-132

#	DATE:	DESCRIPTION:

pilot

PROJECT:

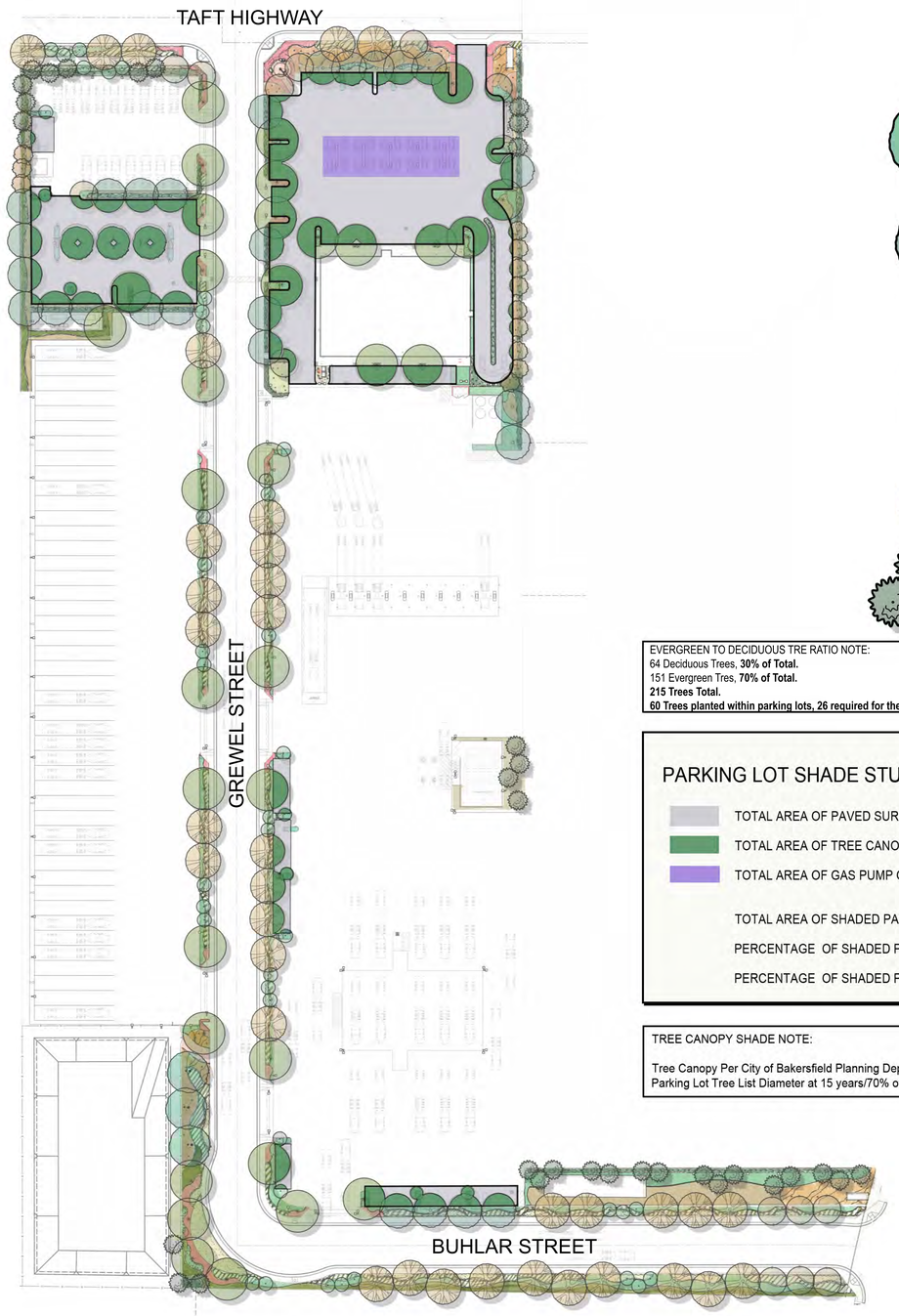
PILOT - TRAVEL PLAZA - BAKERSFIELD
2201 TAFT HIGHWAY
BAKERSFIELD, CALIFORNIA 93313

SHEET TITLE:
EXTERIOR ELEVATIONS - PHASE 2
TRUCK WASH / TIRE / LUBE

ideation DESIGN GROUP
4095 EAST WASHINGTON STREET
tel 602.792.1793 fax 602.792.1946
INTERIOR DESIGN | FOODSERVICE DESIGN | ARCHITECTURE

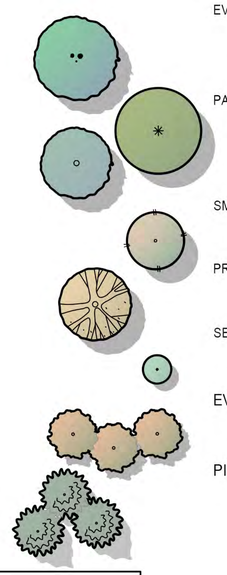
CUP SUBMITTAL : 07.09.2021

SHEET NO:
CUP A2.1



PARKING LOT SHADE STUDY

PLANT PALETTE:



BOTANICAL NAME	COMMON NAME	SIZE	WUCOLS	CANOPY DIAMETER (15 YRS/70% MATURITY)
TREES				
EVERGREEN MULTI-TRUNK SPECIMEN TREE				
Quercus agrifolia	Coast Live Oak	36" Box	Very Low	35' DIA.
PARKING LOT SHADE TREES				
Pistacia chinensis	Chinese Pistache	24" Box	Low	42' DIA.
Quercus suber	Cork Oak	24" Box	Low	35' DIA.
SMALL ACCENT TREE				
Arbutus marina	Strawberry Tree	24" Box	Moderate	28' DIA.
PRIMARY DECIDUOUS STREET TREE				
Platanus racemosa	California Sycamore	24" Box	Moderate	35' DIA.
SECONDARY EVERGREEN STREET TREE				
Magnolia g. 'St. Mary'	Southern Magnolia	24" Box	Moderate	14' DIA.
EVERGREEN SCREENING TREE				
Prunus ilicifolia	Holly Leaf Cherry	24" Box	Moderate	18' DIA.
PINE TREE				
Pinus b. var. eldarica	Eldar Pine	24" Box	Low	18' DIA.

EVERGREEN TO DECIDUOUS TRE RATIO NOTE:
64 Deciduous Trees, **30% of Total.**
151 Evergreen Tres, **70% of Total.**
215 Trees Total.
60 Trees planted within parking lots, 26 required for the 153 stalls.

PARKING LOT SHADE STUDY

TOTAL AREA OF PAVED SURFACE =	73, 781 Sq. Ft.
TOTAL AREA OF TREE CANOPY SHADE =	25, 005 Sq. Ft.
TOTAL AREA OF GAS PUMP OVERHEAD COVER =	5, 648 Sq. Ft.
TOTAL AREA OF SHADED PAVED SURFACE	30, 653 Sq. Ft.
PERCENTAGE OF SHADED PAVED SURFACE AREA =	41.5%
PERCENTAGE OF SHADED PAVED SURFACE REQUIRED =	40%

TREE CANOPY SHADE NOTE:

Tree Canopy Per City of Bakersfield Planning Department Master Parking Lot Tree List Diameter at 15 years/70% of maturity

WATER EFFICIENT LANDSCAPE WORKSHE

Non-Residential Landscape Projects

Reference ETo for the area **ETo=** 52.4

Estimated Total Water Use (ETWU):
ETWU is calculated using the following formula: (Eto) (.62) (ETAF) (LA) where ETWU ETA

Hydrozone # / Planting Description	Plant Factor (PF)	Irrigation Method	Irrigation Efficiency (IE)	ETAF (PF/IE)	Landscape Area (sq. ft.)	ETAF x Landscape Area	Estimated Total Water Use (ETWU) gallons/yr
Regular Landscape Areas							
HZ1 - Low Shrub	0.2	Dripline	0.81	0.25	39,082	9650	313505
HZ2 - Mod Shrub	0.4	Dripline	0.81	0.49	39,082	19300	627010
HZ3 - Turf	0.8	Spray	0.75	1.07	460	491	15941
			0.81	0.00	0	0	0
HZ4 - Low Tree	0.5	Bubbler	0.81	0.62	2,500	1543	50136
HZ5 - Mod Tree	0.5	Bubbler	0.81	0.62	2,525	1559	50637
				Totals	83,649	32542	
Special Landscape Areas							
HZ7 - Edible				1	0	0	0
HZ8 - Recreation Areas				1	0	0	0
				Totals	0	0	
				Estimated Total Water Use in gallons per year, ETWU Total			1057229
				Maximum Annual Water Allowance in gallons per year, MAWA Total			1222315
MAWA calculation: (Eto) (.62) [(ETAF)(LA) + ((1-ETAF) x S						MAWA - ETWU=	165686

where Non-Residential MAWA ETAF factor is 0.45

ETAF Calculations

Regular Landscape Areas

Total ETAF x Area	32542
Total Area	83,649
Average ETAF	0.39

Average ETAF for Regular Landscape Areas must be 0.45 or below for non-residential areas.

All Landscape Areas

Total ETAF x Area	32542
Total Landscape Area (LA)	83,649
Sitewide ETAF	0.39

SHRUBS AND GROUNDCOVERS

TALL HEDGE (48" MIN. AT DRIVE THRU)				
Arbutus u. 'Compacta'	•	Strawberry Tree	15 Gal.	Low
Heteromeles arbutifolia	•	Toyon	15 Gal.	Low
Myrica californica	•	Pacific Wax Myrtle	15 Gal.	Moderate
Rhamnus c. 'Eve Case'	•	Coffeeberry	15 Gal.	Low
BACKGROUND				
Artemesia californica	•	California Sage Brush	5 Gal.	Low
Baccharis 'Centennial'	•	Baccharis	5 Gal.	Low
Salvia leucophylla	•	Purple Sage	5 Gal.	Low
MIDGROUND				
Callistemon 'Little John'	•	Dwarf Bottle Brush	5 Gal.	Low
Nandina domestica	•	Heavenly Bamboo	5 Gal.	Moderate
Rhamnus c. 'Mound San Bruno'	•	Coffeeberry	5 Gal.	Low
FOREGROUND				
Dianella revoluta	•	Flax Lily	5 Gal.	Low
Festuca glauca	•	Blue Fescue	5 Gal.	Low
Iris douglasiana	•	Douglas Iris	5 Gal.	Low
Achillea x 'Moonshine'	•	Yarrow	5 Gal.	Low
Epilobium canum	•	California fuchia	5 Gal.	Low
Penstemon eatonii	•	Firecracker Penstemon	5 Gal.	Low
Salvia 'Bees Bliss'	•	Bee's Bliss Sage	5 Gal.	Low
GROUNDCOVER				
Arctostaphylos uva-ursi	•	Bearberry	5 Gal.	Low
Berberis a. 'Compacta'	•	Oregon Grape	5 Gal.	Low
Myoporum parvifolium	•	Myoporum	5 Gal.	Low
Juniperus h. 'Wiltonii'	•	Juniperus	5 Gal.	Moderate
Rosmarinus o. 'Prostratus'	•	Rosemary	5 Gal.	Moderate
Trachelospermum j.	•	Star Jasmine	5 Gal.	moderate
ACCENT SHRUBS				
Rosa 'Flower Carpet'	•	Red Groundcover Rose	5 Gal.	Low
Dianella t. 'Variegata'	•	Tasman Flax Lily	5 Gal.	Moderate
Hesperaloe parviflora	•	Red Yucca	5 Gal.	Low
TURF AND GRASSES				
Festuca mairei	•	Atlas Fescue	5 Gal.	Low
Muhlenbergia dubia	•	Pine Muhly	5 Gal.	Low
TURF				

KEY MAP

N.T.S.

REFRESH TRAVEL PLAZA

MULTI-USE TRAVELER'S FACILITY - CONCEPTUAL LANDSCAPE DESIGN

2201 TAFT HIGHWAY, BAKERSFIELD, CA.

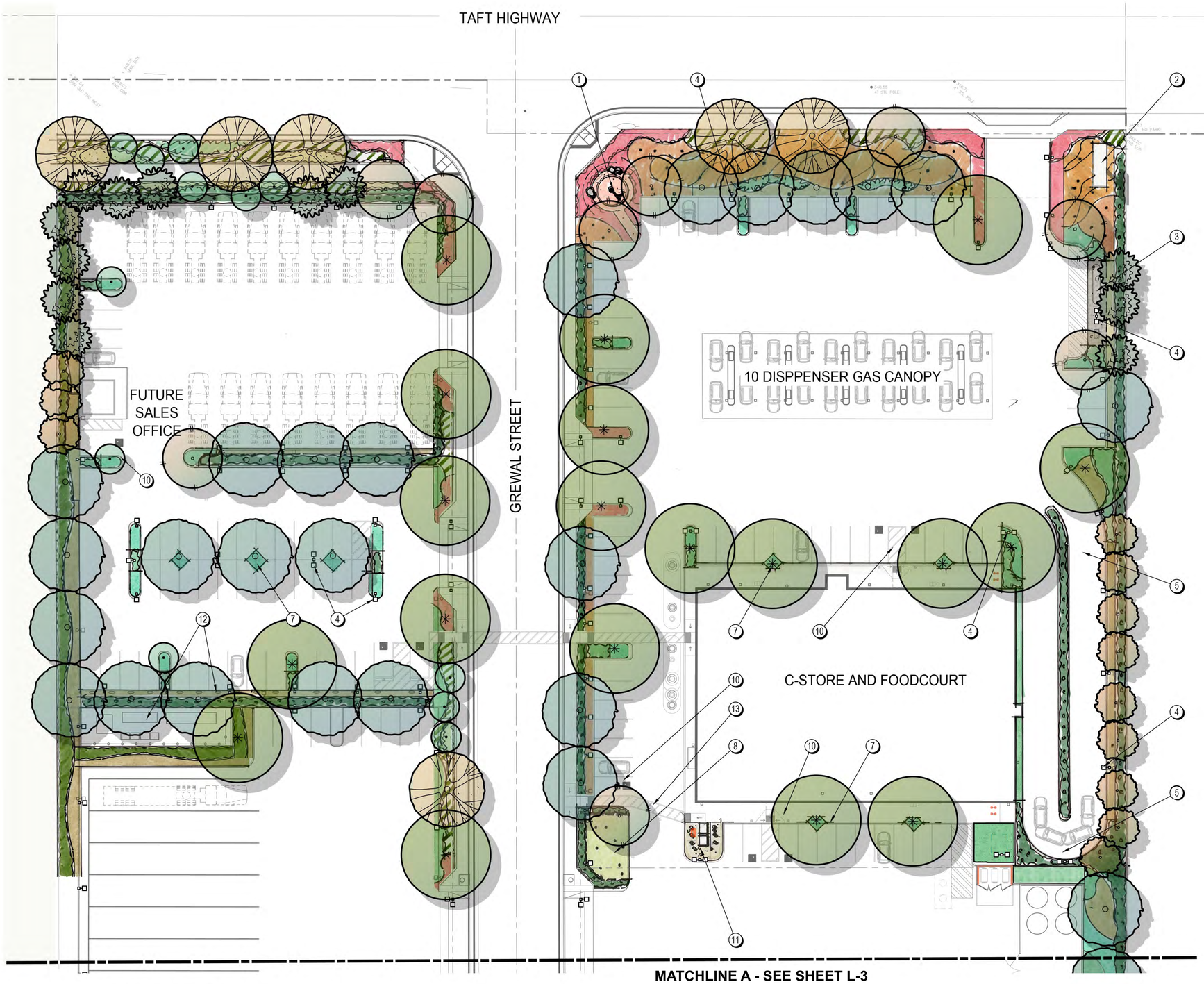
0 30' 60' 120' 240'
SCALE: 1" = 60'

NORTH

SCALE: 1" = 60'
DATE: JUNE 2021
ADG JOB #: 2105

ARCHITERRA DESIGN GROUP
LANDSCAPE ARCHITECTURE AND PLANNING
10221-A TRADEMARK ST., RANCHO CUCAMONGA, CALIFORNIA 91730 PH: (909) 464-2600

L-1



MATCHLINE A - SEE SHEET L-3

PLANT PALETTE:

BOTANICAL NAME	COMMON NAME	SIZE	WUCOLS	CANOPY DIAMETER (15 YRS/70% MATURITY)
TREES				
EVERGREEN MULTI-TRUNK SPECIMEN TREE				
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Rhamnus c. 'Eve Case'	Coffeeberry	15 Gal.	Low
BACKGROUND			
Artemesia californica	California Sage Brush	5 Gal.	Low
Baccharis 'Centennial'	Baccharis	5 Gal.	Low
Salvia leucophylla	Purple Sage	5 Gal.	Low
MIDGROUND			
Callistemon 'Little John'	Dwarf Bottle Brush	5 Gal.	Low
Nandina domestica	Heavenly Bamboo	5 Gal.	Moderate
Rhamnus c. 'Mound San Bruno'	Coffeeberry	5 Gal.	Low
FOREGROUND			
Dianella revoluta	Flax Lily	5 Gal.	Low
Festuca glauca	Blue Fescue	5 Gal.	Low
Iris douglasiana	Douglas Iris	5 Gal.	Low
Achillea x 'Moonshine'	Yarrow	5 Gal.	Low
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Rosmarinus o. 'Prostratus'	Rosemary	5 Gal.	Moderate
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TURF			

FEATURE LEGEND:

1. Decomposed Granite access path at Flag Pole Area. Flag Pole by Others.
2. Monument Sign by Others.
3. Gravel Layer with Concrete Curb at Propane and Air Tank Location.
4. Light Standards by Others.
5. Drive Thru Aisle.
6. Trash Enclosure by Others.
7. Diamond Tree Planters. (Maintain 4' Wide Minimum Access Path Back of Planter) By Others.
8. Dog Park with Pet Waste Station. By Others.
9. Decomposed Granite Maintenance Access Path with Edging at Adjacent Retention Basin
10. Accessible Parking Stall with Loading Zone and Curb Ramps. By Others.
11. Above Ground Utility Box.
12. Electric Vehicle Parking Stalls and Transformer Location. By Others.
13. Accessible Crosswalk from Grewal Street.

REFRESH TRAVEL PLAZA

MULTI-USE TRAVELER'S FACILITY - CONCEPTUAL LANDSCAPE DESIGN

2201 TAFT HIGHWAY, BAKERSFIELD, CA.

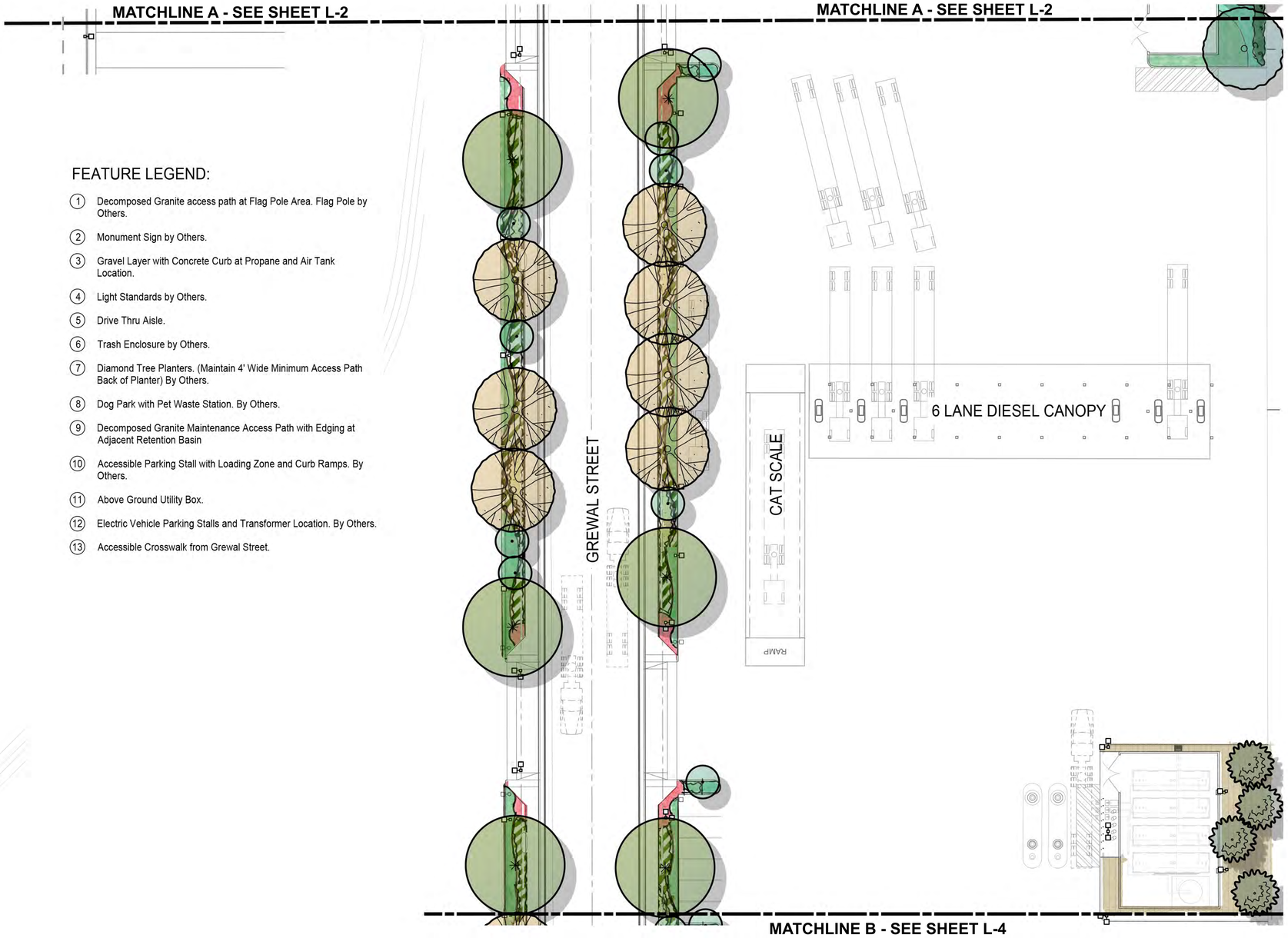
0 10' 20' 40' 80'
SCALE: 1" = 20'

NORTH

SCALE: 1" = 20'
DATE: JUNE 2021
ADG JOB #: 2105

ARCHITERRA DESIGN GROUP
LANDSCAPE ARCHITECTURE AND PLANNING
10221-A TRADEMARK ST., RANCHO CUCAMONGA, CALIFORNIA 91730 PH: (909) 484-2800

L-2



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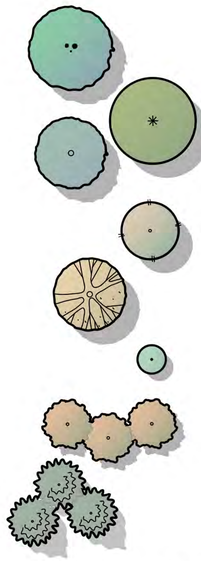

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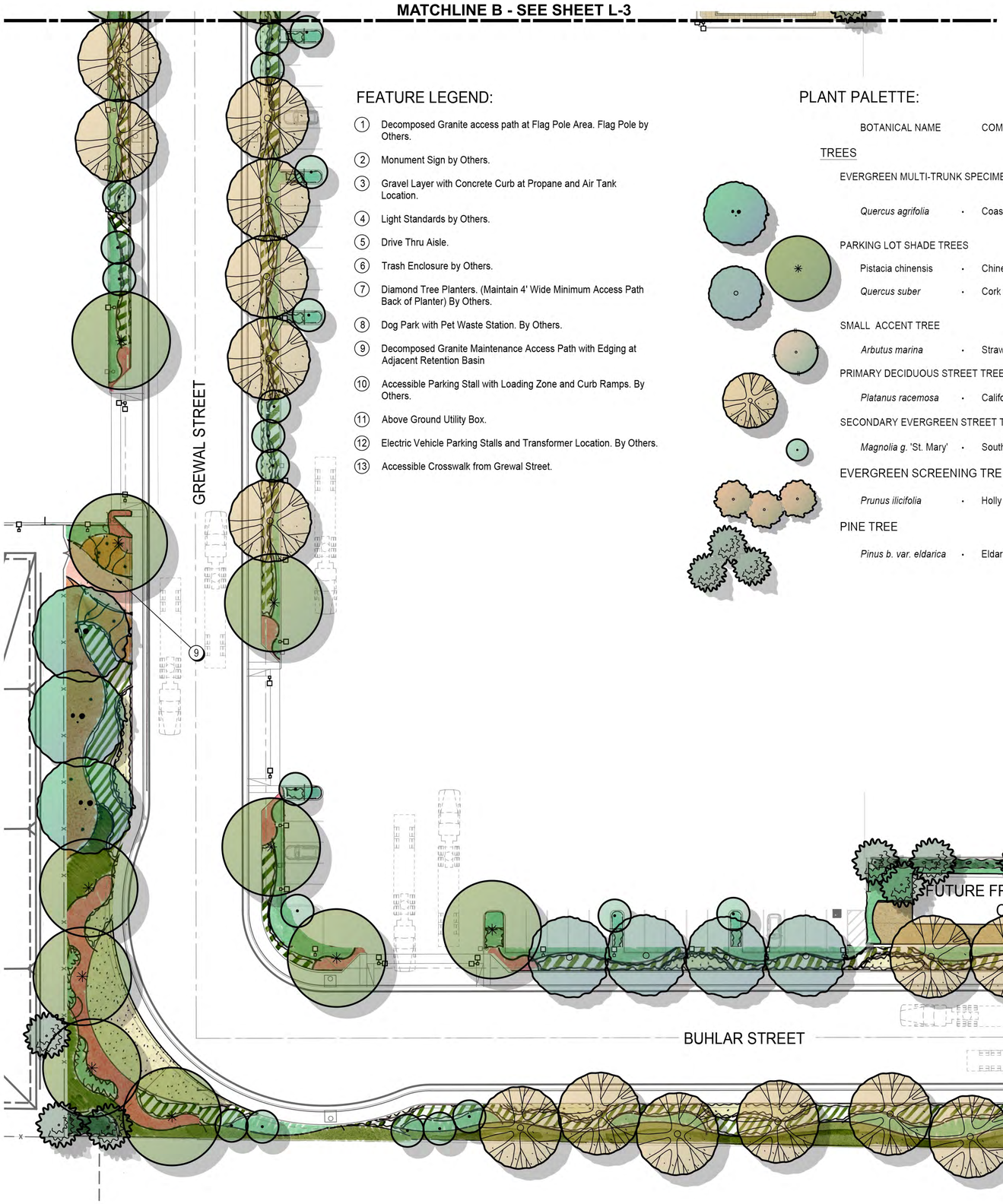
L-3



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NORTH

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ARCHITERRA DESIGN GROUP
LANDSCAPE ARCHITECTURE AND PLANNING
10221-A TRADEMARK ST., RANCHO CUCAMONGA, CALIFORNIA 91730 PH: (909) 466-2600

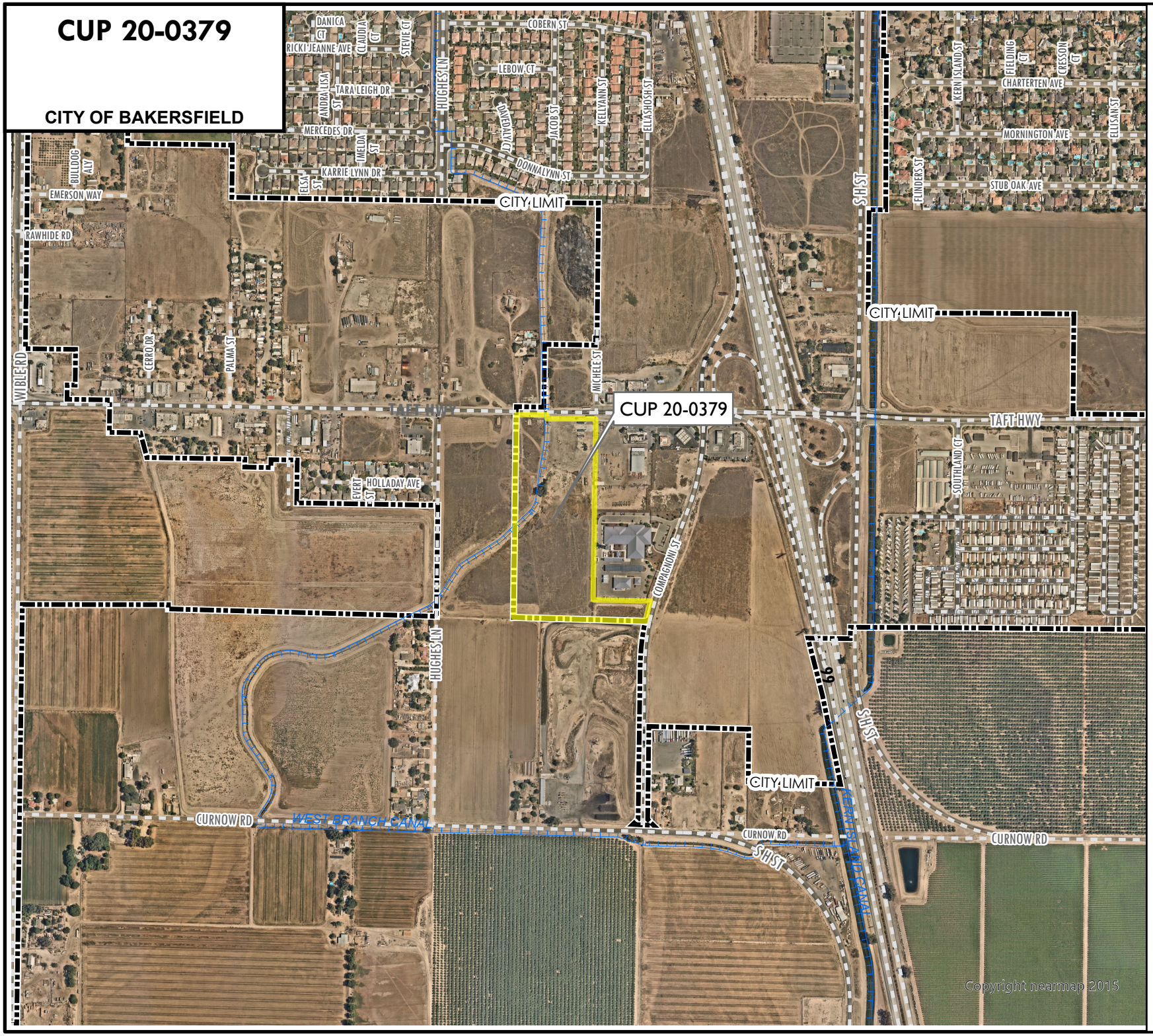
L-4

Appendix C:

Maps

CUP 20-0379

CITY OF BAKERSFIELD



AERIAL

BAKERSFIELD

Feet

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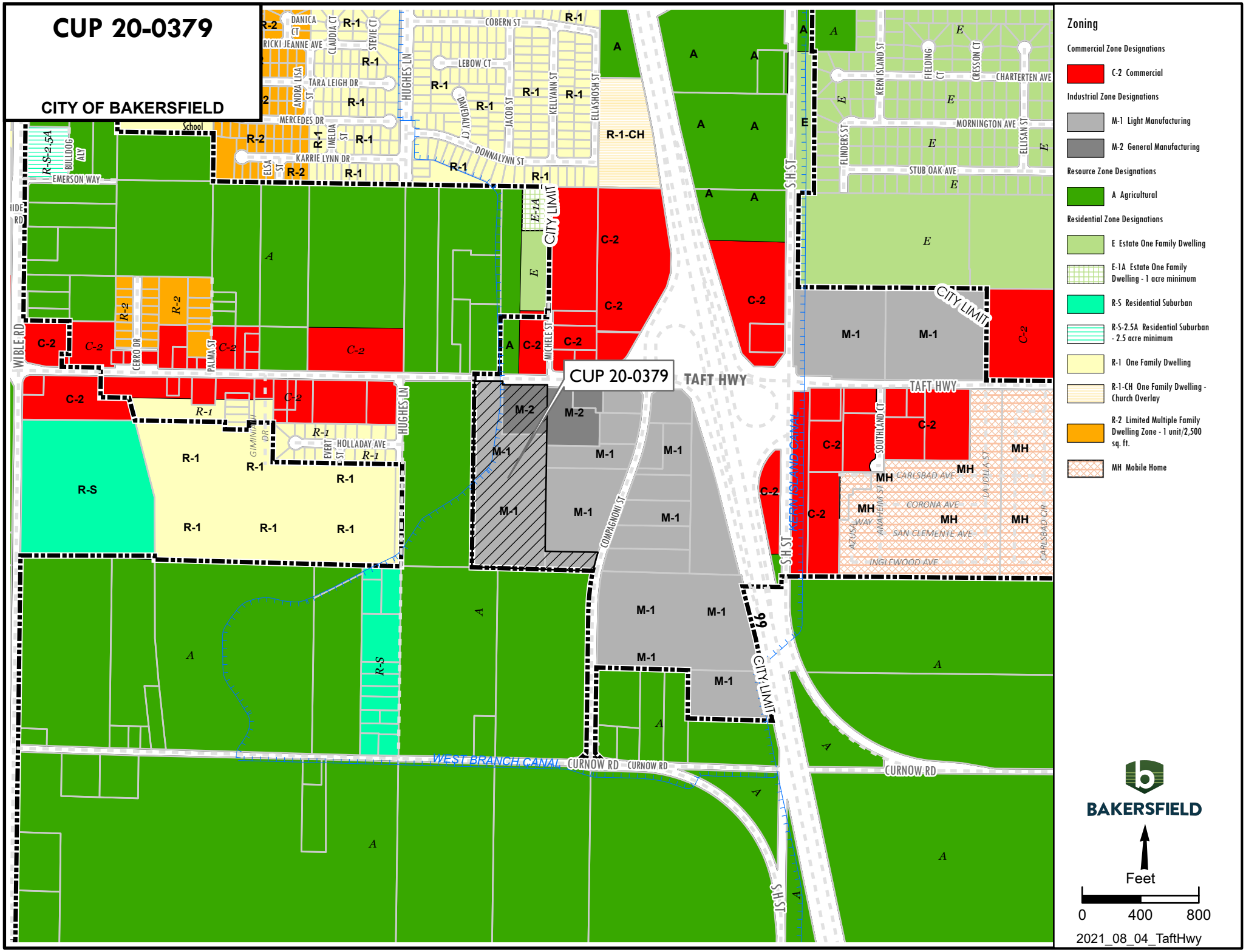
2021_08_04_TaftHwy

CUP 20-0379

CITY OF BAKERSFIELD



CUP 20-0379

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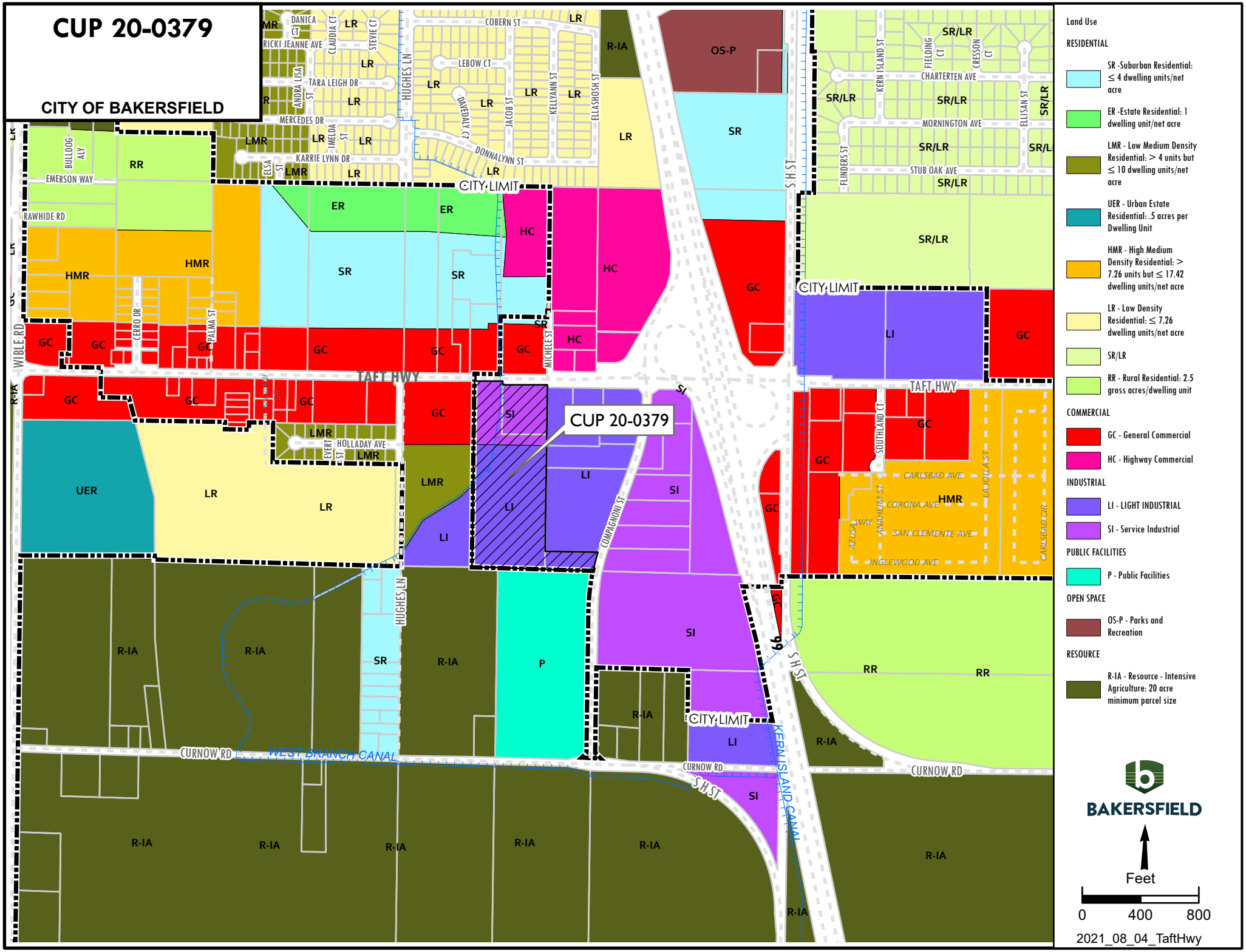

Appendix D:

Air Quality

Analysis

TAFT HIGHWAY PILOT TRUCK CENTER PROJECT

AIR QUALITY/GREENHOUSE GAS STUDY

Prepared for:

LAV // Pinnacle Engineering
12418 Rosedale Highway, Suite A
Bakersfield, CA 93312

Prepared by:

BIRDSEYE
PLANNING GROUP

June 2021

PILOT TRUCK CENTER PROJECT
BAKERSFIELD, CALIFORNIA

AIR QUALITY and GREENHOUSE GAS STUDY

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Cover Letter

PROJECT DESCRIPTION 1

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Appendices

Appendix A CalEEMod Air Quality and Greenhouse Gas Emissions Model Results – Summer/Annual Emissions

PILOT TRUCK CENTER PROJECT
BAKERSFIELD, CALIFORNIA

AIR QUALITY and GREENHOUSE GAS STUDY

This report is an analysis of the potential air quality and greenhouse gas impacts associated with the proposed Pilot Truck Center Project in Bakersfield, California. This report has been prepared by Birdseye Planning Group (BPG) under contract to the project applicant to support preparation of the environmental documentation pursuant to the California Environmental Quality Act (CEQA). This study analyzes the potential for temporary impacts associated with construction activity and long-term impacts associated with operation of the proposed project.

PROJECT DESCRIPTION

The Pilot Truck Center would be located on a 16-acre site at 2201 Taft Highway in the City of Bakersfield, California (APN 184-160-13, -14 and -43). The site is on the southeast corner of Taft Highway and Grewal Street (to be constructed and southwest of the Michele Street intersection (see Figure 1 – Vicinity Map). The project would construct a total of four buildings. Building 1 would be a restaurant/convenience store (16,582 square feet); Building 2 would be truck wash/office (11,700 square feet); Building 3 would be a truck sales office (240 square feet) and Building 4 would be a freight broker office (1,943). A nine-lane truck fueling station/canopy and 10-dispenser gasoline station/canopy will be constructed. A total of 150 parking spaces are required. A total of 152 spaces would be provided. A stormwater basin would be constructed at the southwest corner of the site. To accommodate the fueling facilities, two 12,000 gallon and two 15,000-gallon underground fuel tanks would be installed. A total of four 12,000 gallon tanks and one 9,000 gallon above-ground tank would also be installed

The project will construct Grewal Street which would serve as the primary access street running north/south generally through the center of the site. As proposed, truck/trailer parking would be developed on the west side of Grewal Street and the remainder of the facility would be located on the east side. Buhlar Street would be constructed along the southern site boundary to provide secondary site access between Grewal Street to the west and Compangoni Street to the east.. The preliminary site plan is shown on Figure 2 – Proposed Site Plan.

The site is zoned Light Manufacturing (M-1) (APN 184-160-13, and -43) and General Manufacturing (M-2) (APN 184-160-14) (PD). A truck fueling and storage facility is currently in operation on the project site. Adjacent land uses are vacant land and a gas station/convenience store to the north. Several single-family residences are located northwest of the site. An equipment rental yard, California Highway Patrol facility, fast-food restaurant and two gas station/convenience stores are located to the east, vacant land and then retail and single-family residential are located to the west and vacant land is south of the site. The proposed Project is expected to be begin construction in early 2022 and be operational in 2023.

Figure 1—Project Site

- Project Site

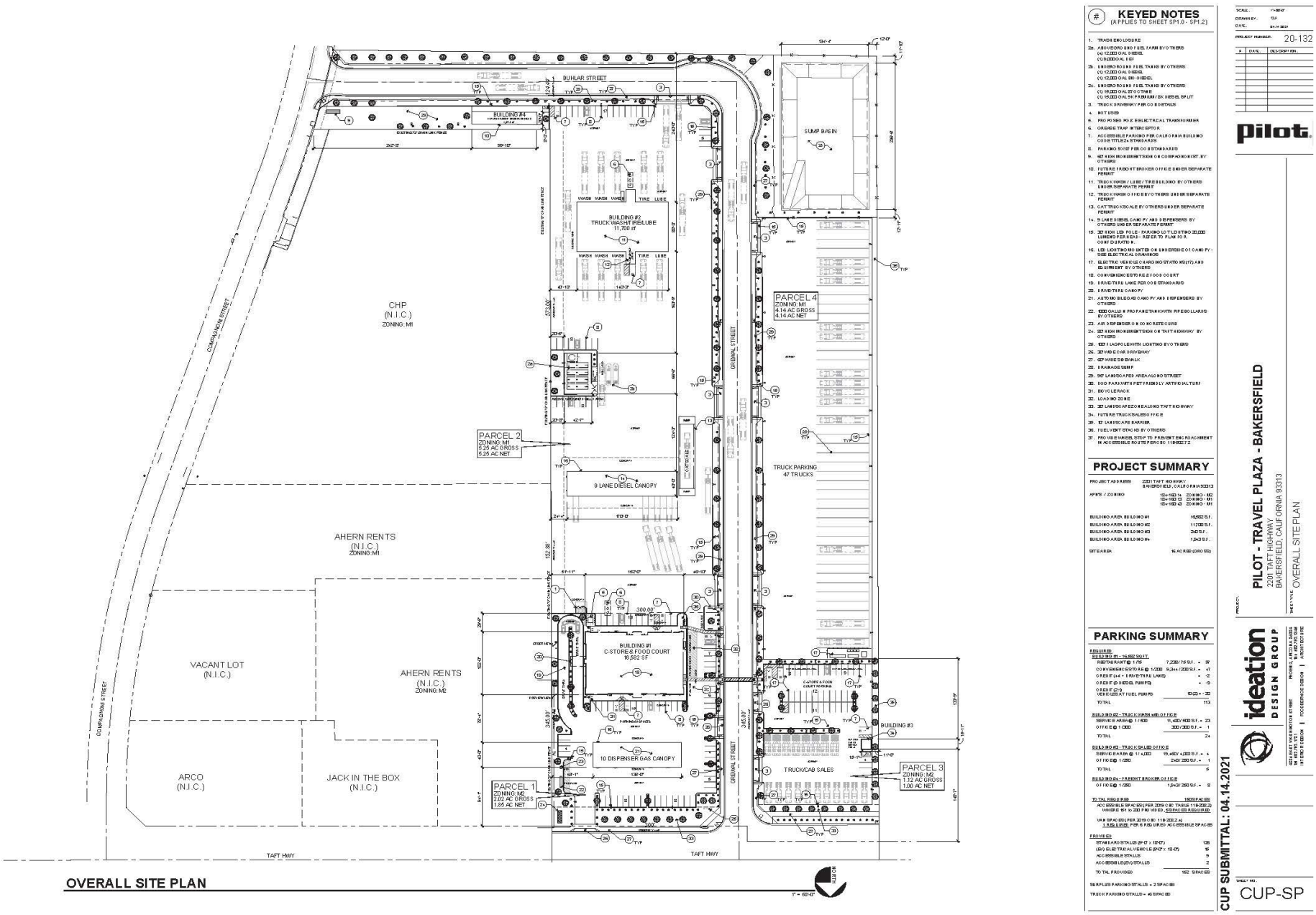

Figure 2—Site Plan

SETTING

Air Pollution Regulation

The federal and state governments have been empowered by the federal and state Clean Air Acts to regulate emissions of airborne pollutants and have established ambient air quality standards for the protection of public health. The EPA is the federal agency designated to administer air quality regulation, while the California Air Resources Board (ARB) is the state equivalent in California. Federal and state standards have been established for six criteria pollutants, including ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulates less than 10 and 2.5 microns in diameter (PM_{10} and $PM_{2.5}$), and lead (Pb). California has also set standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles. Table 1 lists the current federal and state standards for each of these pollutants. Standards have been set at levels intended to be protective of public health. California standards are generally more restrictive than federal standards for each of these pollutants except lead and the eight-hour average for CO.

Table 1
State and Federal Ambient Air Quality Standards

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS[1]		NATIONAL STANDARDS[2]		
		Concentration[3]	Method[4]	Primary[3, 5]	Secondary[3, 6]	Method[7]
Ozone[8] (O_3)	1 hour	0.09 ppm (180 µg/m³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 hours	0.070 ppm (137µg/m³)		0.070 ppm (137 µg/m³)		
Carbon Monoxide (CO)	8 hours	9.0 ppm (10 mg/m³)	Non-Dispersive Infrared Spectroscopy (NDIR)	9 ppm (10 mg/m³)	--	Non-Dispersive Infrared Spectroscopy (NDIR)
	1 hour	20 ppm (23 mg/m³)		35 ppm (40 mg/m³)		
Nitrogen Dioxide (NO_2)[10]	Annual Average	0.030 ppm (57 µg/m³)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 hour	0.18 ppm (339 µg/m³)		100 ppb (188 µg/m³)	--	
Sulfur Dioxide (SO_2)[11]	Annual Average	--	Ultraviolet Fluorescence	0.03 ppm (80 µg/m³)	--	Pararosaniline
	24 hours	0.04 ppm (105 µg/m³)		0.14 ppm (365 µg/m³)	--	
	3 hours	--		--	0.5 ppm (1300 µg/m³)	
	1 hour	0.25 ppm (655 µg/m³)		75 ppb (196 µg/m³)	--	
Respirable	24 hours	50 µg/m³		150 µg/m³	150 µg/m³	

POLLUTANT	AVERAGE TIME	CALIFORNIA STANDARDS[1]		NATIONAL STANDARDS[2]		
		Concentration[3]	Method[4]	Primary[3, 5]	Secondary[3, 6]	Method[7]
Particulate Matter (PM_{10})[9]	Annual Arithmetic Mean	20 μg/m³	Gravimetric or Beta Attenuation	--	--	Inertial Separation and Gravimetric Analysis
Fine Particulate Matter ($PM_{2.5}$)[9]	Annual Arithmetic Mean	12 μg/m³	Gravimetric or Beta Attenuation	12 μg/m³	15 μg/m³	Inertial Separation and Gravimetric Analysis
	24 hours	--		35 μg/m³	Same as Primary Standard	
Sulfates	24 hours	25 μg/m³	Ion Chromatography	--	--	--
Lead[12, 13] (Pb)	30-day Average	1.5 μg/m³	Atomic Absorption	--	--	High Volume Sampler and Atomic Absorption
	Calendar Quarter	--		1.5 μg/m³	Same as Primary Standard	
	3-month Rolling Average	--		0.15 μg/m³		
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm (42 μg/m³)	Ultraviolet Fluorescence	--	--	--
Vinyl Chloride[12]	24 hours	0.010 ppm (26 μg/m³)	Gas Chromatography	--	--	--

Notes:

ppm = parts per million
μg/m³ = micrograms per cubic meter
mg/m³ = milligrams per cubic meter
Source: California Air Resources Board 2017

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM_{10}, $PM_{2.5}$, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM_{10}, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 μg/m³ is equal to or less than one. For $PM_{2.5}$, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air

quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual $PM_{2.5}$ primary standard was lowered from 15 μg/ m^3 to 12.0 μg/ m^3. The existing national 24-hour $PM_{2.5}$ standards (primary and secondary) were retained at 35 μg/ m^3, as was the annual secondary standard of 15 μg/ m^3. The existing 24-hour PM_{10} standards (primary and secondary) of 150 μg/ m^3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.
12. The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 μg/ m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Local control in air quality management is provided by the ARB through county-level or regional (multi-county) Air Pollution Control Districts (APCDs). The ARB establishes air quality standards and is responsible for control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. The ARB has established 15 air basins statewide. The project site is located within the San Joaquin Valley Air Basin. Air quality conditions in the Basin are under the jurisdiction of the San Joaquin Valley Air Pollution

Control District (SJVAPCD). The SJVAPCD is required to monitor air pollutant levels to ensure that air quality standards are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the local air basin is classified as being in "attainment" or "non-attainment."

The Basin, in which the project area is located, is a non-attainment area for both the federal and state standards for ozone and $PM_{2.5}$ and the state PM_{10} standard. The Basin is in attainment for the state and federal standards for nitrogen dioxide, and carbon monoxide. Characteristics of ozone, carbon monoxide, nitrogen dioxide, and suspended particulates are described below.

Ozone. Ozone is produced by a photochemical reaction (triggered by sunlight) between nitrogen oxides (NO_X) and reactive organic gases (ROG)[1]. Nitrogen oxides are formed during the combustion of fuels, while reactive organic compounds are formed during combustion and evaporation of organic solvents. Because ozone requires sunlight to form, it mostly occurs in concentrations considered serious between the months of April and October. Ozone is a pungent, colorless, toxic gas with direct health effects on humans including respiratory and eye irritation and possible changes in lung functions. Groups most sensitive to ozone include children, the elderly, people with respiratory disorders, and people who exercise strenuously outdoors.

Carbon Monoxide. Carbon monoxide is a local pollutant that is found in high concentrations only near the source. The major source of carbon monoxide, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes. Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, carbon monoxide reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity and impaired mental abilities.

Nitrogen Dioxide. Nitrogen dioxide (NO_2) is a by-product of fuel combustion, with the primary source being motor vehicles and industrial boilers and furnaces. The principal form of nitrogen oxide produced by combustion is nitric oxide (NO), but NO reacts rapidly to form NO_2, creating the mixture of NO and NO_2 commonly called NO_X. Nitrogen dioxide is an acute irritant. A relationship between NO_2 and chronic pulmonary fibrosis may exist, and an increase in bronchitis in young children at concentrations below 0.3 parts per million (ppm) may occur. Nitrogen dioxide absorbs blue light and causes a reddish-brown cast to the atmosphere and reduced visibility. It can also contribute to the formation of PM_{10} and acid rain.

Suspended Particulates. PM_{10} is particulate matter measuring no more than 10 microns in diameter, while $PM_{2.5}$ is fine particulate matter measuring no more than 2.5 microns in

[1] *Organic compound precursors of ozone are routinely described by a number of variations of three terms: hydrocarbons (HC), organic gases (OG), and organic compounds (OC). These terms are often modified by adjectives such as total, reactive, or volatile, and result in a rather confusing array of acronyms: HC, THC (total hydrocarbons), RHC (reactive hydrocarbons), TOG (total organic gases), ROG (reactive organic gases), TOC (total organic compounds), ROC (reactive organic compounds), and VOC (volatile organic compounds). While most of these differ in some significant way from a chemical perspective, from an air quality perspective two groups are important: non-photochemically reactive in the lower atmosphere, or photochemically reactive in the lower atmosphere (HC, RHC, ROG, ROC, and VOC).*

diameter. Suspended particulates are mostly dust particles, nitrates and sulfates. Both PM_{10} and $PM_{2.5}$ are by-products of fuel combustion and wind erosion of soil and unpaved roads and are directly emitted into the atmosphere through these processes. Suspended particulates are also created in the atmosphere through chemical reactions. The characteristics, sources, and potential health effects associated with the small particulates (those between 2.5 and 10 microns in diameter) and fine particulates ($PM_{2.5}$) can be very different. The small particulates generally come from windblown dust and dust kicked up from mobile sources. The fine particulates are generally associated with combustion processes as well as being formed in the atmosphere as a secondary pollutant through chemical reactions. Fine particulate matter is more likely to penetrate deeply into the lungs and poses a health threat to all groups, but particularly to the elderly, children, and those with respiratory problems. More than half of the small and fine particulate matter that is inhaled into the lungs remains there. These materials can damage health by interfering with the body's mechanisms for clearing the respiratory tract or by acting as carriers of an absorbed toxic substance.

Toxic Air Contaminants/Diesel Particulate Matter. Hazardous air pollutants, also known as toxic air pollutants (TACs) or air toxics, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. Examples of toxic air pollutants include:

- benzene, which is found in gasoline;
- perchloroethylene, which is emitted from some dry-cleaning facilities; and
- methylene chloride, which is used as a solvent.

Transportation related emissions are focused on particulate matter constituents within diesel exhaust and TAC constituents that comprise a portion of total organic gas (TOG) emissions from both diesel and gasoline fueled vehicles. Diesel engine emissions are comprised of exhaust particulate matter and TOGs which are collectively defined for the purpose of an HRA, as Diesel Particulate Matter (DPM). DPM and TOG emissions from both diesel and gasoline fueled vehicles is typically composed of carbon particles and carcinogenic substances including polycyclic aromatic hydrocarbons, benzene, formaldehyde, acetaldehyde, acrolein, and 1,3-butadiene. Diesel exhaust also contains gaseous pollutants, including volatile organic compounds and oxides of nitrogen (NO_x). Information on TAC and DPM is provided herein for reference only. The project would not be a sensitive air emission receptor; however, the operation of vehicles, including heavy trucks, would generate DPM and TACs. Further, operation of the fueling station would generate evaporative emissions.

The California Air Resources Board has provided guidance for siting new residential uses in proximity to TAC sources. The primary goal of this document is to provide information for use in making decisions related to siting new residential projects. While it is understood that the project is a truck center, it is useful to address the criteria here for the purposes of considering public health impacts. With respect to siting residences in proximity to fueling facilities, CARB recommends not siting residential uses within 300 feet of a large fueling station (i.e., 3.6 million gallons per year or greater) and within 50 feet of a typical gas dispending facility. The nearest

residences to the site are located approximately 405 feet west on the west side of Hughes Lane. This is beyond the recommended distance; thus, operation of the fueling facility is not expected to cause a potential health risk for the residential properties located nearest the site.

Sulfur Dioxide. Sulfur Dioxide(SO2) is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. The SJVAB is in attainment of both the Federal and California standards for SO2. However, like airborne NOx, suspended SOx particles contribute to the poor visibility that sometimes occurs in the Valley. These SOx particles can also combine with other pollutants to form PM2.5. The prevalence of low-sulfur fuel use in the Valley has minimized problems from this pollutant.

Lead. Lead (Pb) is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage; it can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract.

Gasoline-powered automobile engines were a major source of airborne lead which resulted from the combustion to leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of lead have dropped dramatically. Lead concentrations were last systematically measured in the SJVAB in 1989, when the average concentrations were approximately five percent of the State lead standard. Lead levels remain well below applicable standards, and the SJVAB is designated in attainment for lead.

Hydrogen Sulfide. Hydrogen Sulfide (H2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. Hydrogen sulfide is extremely hazardous in high concentrations; especially in enclosed spaces (800 ppm can cause death). OSHA regulates workplace exposure to H2S.

Sulfates. Sulfates (SO4 2-) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO2) during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features. The ARB sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility, and, due to the fact that they are usually acidic, can harm ecosystems and damage materials and property. Data collected in the SJVAB demonstrate levels of sulfates significantly less than the health standards.

Visibility Reducing Particles. These are a mixture of suspended particulate matter consisting of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. The standard

is intended to limit the frequency and severity of visibility impairment due to regional haze and is equivalent to a 10-mile nominal visual range.

Vinyl Chloride. (Vinyl Chloride (C2H3Cl, also known as VCM) is a colorless gas that does not occur naturally. It is formed when other substances such as trichloroethane, trichloroethylene, and tetrachloro-ethylene are broken down. Vinyl chloride is used to make polyvinyl chloride (PVC) which is used to make a variety of plastic products, including pipes, wire and cable coatings, and packaging materials.

Regional Climate and Local Air Quality

San Joaquin Valley Air Basin. The project site is in the San Joaquin Valley Air Basin (SJVAB), which is defined by the Sierra Nevada mountains in the east (averaging 8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (averaging 6,000 to 8,000 feet in elevation). The San Joaquin Valley is flat, with a slight downward gradient to the northwest, and opens to the sea at the Carquinez Strait, where the San Joaquin-Sacramento Delta empties into San Francisco Bay.

Although marine air generally flows into the SJVAB from the San Joaquin River Delta, the region's topographic features restrict air movement through and out of the SJVAB. The Coastal Range hinders wind access into the San Joaquin Valley from the west, the Tehachapi range prevents southerly passage of airflow, and the high Sierra Nevada range is a significant barrier to the east. These topographic features result in weak airflow, which becomes blocked vertically by high barometric pressure over the San Joaquin Valley. Consequently, the SJVAB is highly susceptible to air pollutant accumulation over time.

Air pollutant emissions in the SJVAB are generated by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. Air pollutants can also be generated by the natural environment, such as when high winds suspend fine dust particles.

Attainment Status. The EPA and the ARB designate air basins where ambient air quality standards are exceeded as "nonattainment" areas. If standards are met, the area is designated an "attainment" area. If there is inadequate or inconclusive data to make a definitive attainment designation, they are considered "unclassified." National nonattainment areas are further designated marginal, moderate, serious, severe, or extreme as a function of deviation from standards.

Each standard has a different definition, or "form" of what constitutes attainment, based on specific air quality statistics. For example, the federal 8-hour CO standard is not to be exceeded more than once per year; therefore, an area is in attainment of the CO standard if no more than one 8-hour ambient air monitoring values exceeds the threshold per year. In contrast, the federal annual PM2.5 standard is met if the three-year average of the annual average PM2.5 concentration is less than or equal to the standard. The San Joaquin Valley Air Basin is designated nonattainment for ozone, PM10, and PM2.5.

Ambient Air Quality. The SJVAPCD operates and maintains an expansive network of air monitoring sites throughout the eight counties of the San Joaquin Valley. A total of 24 sites are currently operated directly by the District or in collaboration with the California Air Resources Board. In addition, CARB also independently operates a number of air monitoring stations in the Valley, along with additional sites operated by the National Park Service and tribal nations. In total, 38 air monitoring sites are currently in operation in the San Joaquin Valley.

The purpose of the monitoring stations is to measure ambient concentrations of the pollutants and determine whether the ambient air quality meets the California state and federal standards. The air quality monitoring station located nearest to the project site is the Bakersfield Municipal Airport station, located approximately 4.7 miles north of the project site at 2000 South Union Avenue. Ozone and nitrogen oxide data were obtained from this station. PM10 and PM2.5 data were obtained from the Bakersfield Station at 5558 California Avenue located approximately 6.5 miles northwest of the project site. Monitoring data are shown in Table 2. As shown, both the federal and state ozone standards were exceeded at the Bakersfield Municipal Airport monitoring station during each of the last three years. The federal PM_{10} standard was not exceeded during the last three years. The state PM_{10} and $PM_{2.5}$ standards were also exceeded.

San Joaquin Valley Air Pollution Control District

The District is responsible for controlling emissions primarily from stationary sources. The District, in coordination with the eight countywide transportation agencies, is also responsible for developing, updating, and implementing air quality attainment plans for the Air Basin. The District also has roles under CEQA.

Ozone Plans

As referenced, the Air Basin is designated nonattainment of state and federal health-based air quality standards for ozone. To meet Clean Air Act requirements for the one-hour ozone standard, the District adopted an Extreme Ozone Attainment Demonstration Plan in 2004, with an attainment date of 2010. Although the EPA revoked the federal 1-hour ozone standard effective June 15, 2005 and replaced it with an 8-hour standard, the requirement to submit a plan for that standard remained in effect for the San Joaquin Valley.

The EPA originally classified the Air Basin as serious nonattainment for the 1997 federal 8-hour ozone standard with an attainment date of 2013. On April 30, 2007, the District's Governing Board adopted the 2007 Ozone Plan, which contained analysis showing a 2013 attainment target

Table 2
Ambient Air Quality Data

Pollutant	2017	2018	2019
Ozone, ppm – First High 8-Hour Average (2015 Standard)	0.101	0.098	0.080
Number of days of above 2015 standard (>0.070 ppm)	55	54	19
Nitrogen Dioxide, ppm – First High National	62.5	57.1	64.3
Nitrogen Dioxide, ppm – First High State	62	57	64
Days above the State standard (>0.18 ppm)	0	0	0
Days above the national standard (>100 ppb)	0	0	0
Particulate Matter <10 microns, $\mu g/m^3$ First High Federal	138	136.1	116.3
Particulate Matter <10 microns, $\mu g/m^3$ First High State	143.6	142	125.9
Estimated number of days greater than national 24-hour standard (>150 $\mu g/m^3$)	0	0	0
Estimated number of days greater than state standard (>50 $\mu g/m^3$)	98.7	*	108.1
Particulate Matter <2.5 microns, $\mu g/m^3$ First High	101.8	98.5	59.1
Annual average (exceedances of 12 $\mu g/m^3$ standard not reported)	30.2	40.3	12.3
Number of samples of Federal exceedances (>12 $\mu g/m^3$)	*	*	*

Note – Nitrogen Dioxide and Ozone data from Bakersfield Municipal Airport monitoring station
PM10 and PM2.5 data from the Bakersfield California Street monitoring station
**Data insufficient to determine the value*
Source: California Air Resources Board, 2017, 2018, 2019 Annual Air Quality Data Summaries available at https://www.arb.ca.gov/adam/topfour/topfourdisplay.php

to be infeasible. The 2007 Ozone Plan details the plan for achieving attainment on schedule with an "extreme nonattainment" deadline of 2024. At its adoption of the 2007 Ozone Plan, the District also requested a reclassification to extreme nonattainment. ARB approved the plan in June 2007, and the EPA approved the request for reclassification to extreme nonattainment on April 15, 2010.

The 2007 Ozone Plan contains measures to reduce ozone and particulate matter precursor emissions to bring the Basin into attainment with the federal 8-hour ozone standard. The 2007 Ozone Plan calls for a 75 percent reduction of NO_X and a 25 percent reduction of reactive organic gases (ROG). The District Governing Board adopted the 2007 Ozone Plan on April 30, 2007. The ARB approved the plan on June 14, 2007. The 2007 Ozone Plan requires yet to be determined "Advanced Technology" to achieve additional reductions after 2021, to attain the standard at all monitoring stations in the Air Basin by 2024 as allowed for areas designated extreme nonattainment by the federal Clean Air Act.

The Air Basin is designated an extreme ozone nonattainment area for the EPA's 2008 8-hour ozone standard of 75 ppb. The District's Governing Board approved the 2016 Plan for the 2008

8-Hour Ozone Standard on June 16, 2016. The ARB approved the attainment demonstration plan for the San Joaquin Valley on July 21, 2016 and transmitted the plan to EPA on August 24, 2016. The comprehensive strategy in this plan will reduce NOx emissions by over 60 percent between 2012 and 2031 and will bring the San Joaquin Valley into attainment of the EPA's 2008 8-hour ozone standard by December 31, 2031. The 2016 Ozone Plan predicts attainment of the 2008 standard by 2031 (SJVAPCD 2018a).

The EPA Administrator signed the Final Rule revising the 8-hour ozone standard to 70 ppm on October 1, 2015. The new standard will require the SJVAPCD to prepare a new attainment to achieve the more stringent emission level within 20 years from the effective date of designation (EPA 2018). State ozone standards do not have an attainment deadline but require implementation of all feasible measures to achieve attainment at the earliest date possible. This is achieved through compliance with the federal deadlines and control measure requirements.

Particulate Matter Plans

The SJVAB was designated nonattainment of state and federal health-based air quality standards for PM_{10}. The Air Basin is also designated nonattainment of state and federal standards for $PM_{2.5}$. To meet Clean Air Act requirements for the PM_{10} standard, the SJVAPCD adopted a PM_{10} Attainment Demonstration Plan (Amended 2003 PM_{10} Plan and 2006 PM_{10} Plan), which had an attainment date of 2010. The District adopted the 2007 PM_{10} Maintenance Plan in September 2007 to assure the San Joaquin Valley's continued attainment of the EPA's PM_{10} standard. The EPA designated the valley as an attainment/maintenance area for PM_{10} on September 25, 2008. Although the San Joaquin Valley has exceeded the standard since then, those days were considered exceptional events that are not considered a violation of the standard for attainment purposes.

The 2008 $PM_{2.5}$ Plan builds upon the comprehensive strategy adopted in the 2007 Ozone Plan to bring the Air Basin into attainment of the 1997 national standards for $PM_{2.5}$. The EPA has identified NO_X and SO_2 as precursors that must be addressed in air quality plans for the 1997 $PM_{2.5}$ standards. The EPA issued final approval of the 2008 $PM_{2.5}$ Plan on November 9, 2011, which became effective on January 9, 2012. The EPA also granted California's request to extend the attainment deadline for the San Joaquin Valley to April 5, 2015 and approved commitments to measures and reductions by the District and the ARB.

In December 2012, the District adopted the 2012 $PM_{2.5}$ Plan to bring the San Joaquin Valley into attainment of the EPA's 2006 24-hour $PM_{2.5}$ standard of 35 $\mu g/m^3$. The ARB approved the District's 2012 $PM_{2.5}$ Plan for the 2006 standard at a public hearing on January 24, 2013 (SJVAPCD 2012). This plan intended to bring the Valley into attainment with the standard by 2019, with the expectation that most areas will achieve attainment before that time.

The 2015 Plan for the 1997 $PM_{2.5}$ Standard approved by the District Governing Board on April 16, 2015—is intended to bring the Valley into attainment of the EPA's 1997 $PM_{2.5}$ standard no later than December 31, 2020. The plan was required to request reclassification to Serious nonattainment and to extend the attainment date from 2018 to 2020 (SJVAPCD 2015).

The 2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard was adopted on September 15, 2016. This plan includes an attainment impracticability demonstration and request for reclassification of the Valley from Moderate nonattainment to Serious nonattainment (SJVAPCD 2017b).

The SJVAPCD adopted the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards on November 15, 2018. This plan demonstrates attainment of the federal $PM_{2.5}$ standards (SJVAPCD 2018a).

SJVAPCD Rules and Regulations

The following SJVAPCD rules and regulations are applicable to the project:

Rule 2201—New and Modified Stationary Source Review Rule. This requires the review of new and modified Stationary Sources of air pollution and to provide mechanisms including emission trade-offs by which Authorities to Construct such sources may be granted, without interfering with the attainment or maintenance of Ambient Air Quality Standards. Permits may be required if the project includes a diesel emergency generator.

Rule 4002—National Emissions Standards for Hazardous Air Pollutants. The purpose of the rule is to incorporate the National Emission Standards for Hazardous Air Pollutants from Part 61, Chapter I, Subchapter C, Title 40, Code of Federal Regulations and the National Emission Standards for Hazardous Air Pollutants for Source Categories from Part 63, Chapter I, Subchapter C, Title 40, Code of Federal Regulations to protect the health and safety of the public from hazardous air pollutants, such as asbestos.

Rule 4102—Nuisance. The purpose of this rule is to protect the health and safety of the public and applies to any source operation that emits or may emit air contaminants or other materials.

Rule 4601—Architectural Coatings. The purpose of this rule is to limit Volatile Organic Compounds (VOC) emissions from architectural coatings. Emissions are reduced by limits on VOC content and providing requirements on coatings storage, cleanup, and labeling. Only compliant components are available for purchase in the San Joaquin Valley.

Rule 4641—Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations. The purpose of this rule is to limit VOC emissions from asphalt paving and maintenance operations. This regulation is enforced by the asphalt provider.

Rule 4621—Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants. The purpose of this rule is to limit VOC emissions from stationary storage containers. The project's fuel storage tanks will be compliant with this rule.

Rule 4622—Gasoline Transfer into Motor Vehicle Fuel Tanks. The purpose of this rule is to limit emissions of gasoline vapors from the transfer of gasoline into motor vehicle fuel tanks. The fuel pumps will utilize vapor recovery systems that will be compliant with this rule.

Regulation VIII—Fugitive PM10 Prohibitions. Rules 8011–8081 are designed to reduce PM_{10} emissions (predominantly fugitive dust) generated during construction and demolition activities, road construction, bulk materials storage, from use of paved and unpaved roads and carry-out/track-out.

Sensitive Receptors

Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. These are areas where the occupants are more susceptible to the adverse effects of exposure to air pollutants. Ambient air quality standards have been established to represent the levels of air quality considered sufficient, with an adequate margin of safety, to protect public health and welfare as well that segment of the public most susceptible to respiratory distress, such as children under 14; the elderly over 65; persons engaged in strenuous work or exercise; and people with cardiovascular and chronic respiratory diseases. Nearby sensitive receptors are single-family residences located on the west side of Hughes Lane along Holladay Avenue approximately 405 feet west of the site and single-family residences located approximately 475 feet north of the site. A single-family residence is also located approximately 570 feet northwest of the site. Single-family residences are also located southwest of the site along Hughes Lane. The nearest residence is approximately 490 feet west of the southwestern corner of the site.

AIR QUALITY IMPACT ANALYSIS

Methodology and Significance Thresholds

This air quality analysis conforms to the methodologies recommended in the San Joaquin Valley Unified Air Pollution Control District Guidance for Assessing and Mitigating Air Quality Impacts (GAMAQI) March 2015. The GAMAQI includes recommended methodologies for assessing air emissions and provides thresholds for determining the significance of both construction and operation of proposed projects. All emissions were calculated using the California Emissions Estimator Model (CalEEMod) software version 2016.3.2.

Construction activities such as clearing, grading and excavation would generate diesel and dust emissions. Construction equipment that would generate criteria air pollutants includes excavators, graders, dump trucks, and loaders. It was assumed that all construction equipment used would be diesel-powered. Construction emissions associated with development of the proposed project by estimating the types of equipment (including the number) that would be used on-site during each of the construction phases. Construction emissions are analyzed using the regional thresholds established by the SJVAPCD and provided in the GAMAQI.

Operational emissions include mobile source emissions, energy emissions, and area source emissions. Mobile source emissions are generated by motor vehicle trips and heavy truck trips associated with operation of the project. Emissions attributed to energy use include electricity and natural gas consumption for space and water heating. Area source emissions are generated by landscape maintenance equipment, consumer products and architectural coatings (i.e.,

paints). To determine whether a regional air quality impact would occur, the increase in emissions would be compared with the SJVAPCD recommended regional thresholds for operational emissions.

Significance Thresholds. Based on Appendix G of the *CEQA Guidelines*, a project would have a significant air quality impact if it would:

a) *Conflict with or obstruct implementation of the applicable air quality plan;*

b) *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?*

c) *Expose sensitive receptors to substantial pollutant concentrations; or*

d) *Result in other emissions such as those leading to odors adversely affecting a substantial number of people.*

The SJVAPCD has developed specific quantitative thresholds that apply to projects within the San Joaquin Valley Air Basin. As stated in Section 8.4.2 of the GAMAQI, impacts to air quality result from emissions generated during short-term activities (construction) and long-term activities (operations). Construction-related emissions consist mainly of exhaust emissions (NOx and PM) from construction equipment and other mobile sources, and fugitive dust emissions from earth moving activities. Operational emissions are source specific and consist of permitted equipment and activities and non-permitted equipment and activities.

The following significance thresholds apply to short-term construction activities and long-term operational emissions. Project emissions that are less than the thresholds would be less than significant for the purpose of CEQA review:

- *10 tons per year of ROG*
- *10 tons per year of NO_X*
- *100 tons per year of CO*
- *27 tons per year of SOx*
- *15 tons per year of PM_{10}*
- *15 tons per year of $PM_{2.5}$*

When assessing the significance of project-related impacts on air quality, impacts are considered potentially significant when on-site emission increases from construction activities or operational activities exceed the 100 pounds per day screening level of any criteria pollutant after implementation of all enforceable mitigation measures. Under such circumstance, SJVAPCD recommends that an ambient air quality analysis be performed.

Construction Emissions

Project construction would generate temporary air pollutant emissions. These impacts are associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction vehicles, work crew vehicle trips in addition to ROG that would be released during the drying phase upon application of paint and other architectural coatings. Construction would generally consist of demolition, site preparation, grading, construction of the proposed buildings, paving, and architectural coating (i.e., paint) application.

This analysis assumes that graded/excavated soils would be balanced on the project site and that no soil import or export would be required. The project would be required to comply with SJVAPCD Regulation VIII which identifies measures to reduce fugitive dust from ground disturbing activities and emissions associated with heavy equipment operation.

Regulation VIII—Fugitive PM_{10} Prohibitions. Regulation VIII is one of the primary strategies from the 2006 PM10 Plan for reducing the PM10 emissions that are part of fugitive dust. Projects over 10 acres are required to file a Dust Control Plan (DCP) containing dust control practices sufficient to comply with Regulation VIII, Section 5.2, Table 8021-1 (see Table 3 below). Because the site is over 10 acres in size, a Dust Control Plan would be required per Regulation VIII, Section 6.3.

Table 3
Control Measure Options for Construction, Excavation, Extraction and Other Earthmoving Activities

A. Pre-Activity	A1 Pre-water site sufficient to limit VDE to 20% opacity, and A2 Phase work to reduce the amount of disturbed surface area at any one time.
B. During Active Operations:	B1 Apply water or chemical/organic stabilizers/suppressants sufficient to limit VDE to 20% opacity; or B2 Construct and maintain wind barriers sufficient to limit VDE to 20% opacity. If utilizing wind barriers, control measure B1 above shall also be implemented. B3 Apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit VDE to 20% opacity and meet the conditions of a stabilized unpaved road surface.
C. Temporary Stabilization During Period of Inactivity	C1 Restrict vehicular access to the area; and C2 Apply water or chemical/organic stabilizers/suppressants, sufficient to comply with the conditions of a stabilized surface. If an area having 0.5 acres or more of disturbed surface area remains unused for seven or more days, the area must comply with the conditions for a stabilized surface area as defined in section 3.58 of Rule 8011.

In addition to those requirements shown above, the following sections would also apply to the project:

Regulation VIII, Section 5.3: Speed Limitations and Posting of Speed Limit Signs on Uncontrolled Unpaved Access/Haul Roads on Construction Sites

Subsection 5.3.1. An owner/operator shall limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.

Subsection 5.3.2. An owner/operator shall post speed limit signs that meet State and Federal Department of Transportation standards at each uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.

Regulation VIII, Section 5.4: Wind Generated Fugitive Dust Requirements

Subsection 5.4.1. Cease outdoor construction, excavation, extraction, and other earthmoving activities that disturb the soil whenever VDE exceeds 20% opacity. Indoor activities such as electrical, plumbing, dry wall installation, painting, and any other activity that does not cause any disturbances to the soil are not subject to this requirement.

Subsection 5.4.2. Continue operation of water trucks/devices when outdoor construction excavation, extraction, and other earthmoving activities cease, unless unsafe to do so. Construction emissions modeling for demolition, site preparation, grading, building construction, paving, and architectural coating application is based on the overall scope of the proposed development and construction phasing which is expected to begin early 2022 and extend through early 2023. The total area disturbed as a result of the project would be 16 acres with construction of the commercial buildings, fueling station, parking areas and stormwater basins. For modeling purposes, it was assumed the site would be watered two times daily. In addition to Regulation VIII requirements, emissions modeling also assumed compliance with Rule 4601 – Architectural Coatings. The rule requires flat paints to meet a standard of 50 grams per liter (g/L) and gloss paints 100 g/L by 2012 for an average rate of 65 g/L. Most of the coatings used for non-residential painting are flat paints; thus, 50 g/L was assumed for modeling purposes. Table 4 summarizes the estimated maximum mitigated daily emissions of pollutants occurring during construction.

Table 4
Estimated Maximum Mitigated Daily Construction Emissions

Construction Phase		Maximum Emissions (lbs/day)				
	ROG	NO_x	CO	SOx	PM_{10}	$PM_{2.5}$
2022 lbs/day	3.7	38.8	29.5	0.08	9.8	5.9
2023 lbs/day	20.9	23.9	24.7	0.08	3.9	1.5
SJVAPCD Regional Thresholds	*100*	*100*	*100*	*100*	*100*	*100*
Threshold Exceeded	**No**	**No**	**No**	**No**	**No**	**No**

As shown in Table 4, construction of the proposed project would not exceed the SJVAPCD screening threshold. No mitigation in addition to compliance with SJVAPCD Regulation VIII and Rule 4601 would be required to reduce construction emissions to less than significant.

Construction-Related Toxic Air Contaminant Impacts

The greatest potential for toxic air contaminant emissions would be related to diesel particulate emissions associated with heavy equipment operations during construction of the proposed project. Health effects from carcinogenic air toxics are usually described in terms of "individual cancer risk". The California Office of Environmental Health Hazard Assessment (OEHHA) health risk guidance states that a residential receptor should be evaluated based on a 30-year exposure period. "Individual Cancer Risk" is the likelihood that a person exposed to concentrations of toxic air contaminants over a 70-year lifetime will contract cancer, based on the use of standard risk-assessment methodology. Given the short-term construction schedule, the proposed project would not result in a long-term (i.e., 30 or 70 year) exposure to a substantial source of toxic air contaminant emissions; and thus, would not be exposed to the related individual cancer risk. Further, per the GAMAQI, SJVAPCD recommends that an ambient air quality analysis be performed only when the increase in on-site emissions from construction activities exceeds the 100 pounds per day screening level for any criteria pollutant, after implementation of all enforceable mitigation measures. As shown in Table 4 above, construction emissions would not exceed 100 pounds per day. Therefore, no significant short-term toxic air contaminant impacts would occur during construction of the proposed project.

Construction-Related Odor Impacts

Potential sources of odor during construction activities include equipment exhaust and activities such as paving. The objectionable odors that may be produced during the construction process would occur periodically and end when construction is completed. No significant impact related to odors would occur during construction of the proposed project per threshold (e) referenced above.

Operational Impacts

Regional Pollutant Emissions

An analysis of maximum daily emissions during operation was conducted to determine if emissions would exceed 100 pounds per day for any pollutant of concern. The maximum daily operational emissions would occur at project buildout. The built-out project was modeled for 2022, which is the estimated year of first occupancy. Table 5 summarizes emissions associated with operation of the proposed project. Operational emissions include emissions from electricity consumption (energy sources), vehicle trips (mobile sources), and area sources including landscape equipment and architectural coating emissions as the structures are repainted over the life of the project.

The majority of operational emissions are associated with vehicle trips to and from the project site. Trip volumes were based on trip generation factors for a convenience store with a food court and a fueling facility. Multiple model runs were performed to quantify primary vehicle emissions associated with vehicles traveling to/from the site and Highway 99 (approximately ½ mile), diverted link trips and heavy truck trips with the trip lengths and vehicle fleet mix adjusted to calculate emissions associated with the car/light truck separate from the heavy truck trips. The combined emissions reflect the total mobile emissions. Pass by trips (i.e., existing traffic) are not new trips generated by the project; and thus, are not reflected in the overall operational emissions calculations. Emissions sources addressed are summarized as follows:

Motor Vehicle Emissions. Motor vehicle emissions refer to exhaust and road dust emissions from the automobiles that would travel to and from the project residences. Project trip generation rates were obtained from LLV//Pinnacle Engineering (April 2021). Highway commercial uses such as truck stops provide services primarily to those traveling by the site to other destinations. In this case the trips are considered primary trips and diverted link trips. A primary trip is one from Highway 99 to the site and then back to the highway. A diverted link trip is a trip that requires a short travel distance from the traveler's route to access the project site. A pass-by trip accounts for vehicles already on the roadway network that stop at the project site as they pass-by. As stated, these emissions are not included in the total. For modeling purposes, primary trips are those occurring between Highway 99 and the site while diverted link trips are those originating in the general area and travel to the site.

The vehicle fleet mix is defined as the mix of motor vehicle classes active during the operation of the project. Emission factors are assigned to the expected vehicle mix as a function of vehicle class, speed, and fuel use (gasoline and diesel-powered vehicles). As stated, the fleet mix was adjusted to calculate primary trips/diverted link trips. A separate modeling run was performed to calculate emissions associated with heavy truck trips. The analysis is based on Caltrans fleet percentages for each truck type and truck specific trip generation rates for similar projects.

Architectural Coatings (Painting). Paints release VOC emissions during application and drying. The buildings in the project would be repainted on occasion. The project is required to comply with the SJVAPCD Rule 4601—Architectural Coatings. The rule required flat paints to meet a standard of 50 grams per liter (g/l) and gloss paints 100 g/l by 2012 for an average rate of 65 g/l. Most of the coatings used for non-residential painting are flat paints; thus, 50 g/L was assumed for modeling purposes.

Consumer Products. Consumer products are various solvents used in non-industrial applications, which emit VOCs during use. Consumer Products are generally defined as detergents; cleaning compounds; polishes; floor finishes; cosmetics; personal care products; home, lawn, and garden products; disinfectants; sanitizers; aerosol paints; and automotive specialty products. The default emission factor developed for CalEEMod was used.

Landscape Equipment. This category assumes use of equipment including lawnmowers/trimmers, blowers and related maintenance equipment. Default emission rates developed for CalEEMod were used for modeling purposes.

Electricity. Electricity used by the project (for lighting, etc.) would result in emissions from the power plants that would generate electricity distributed on the electrical power grid. Electricity emissions estimates are only used in the GHG analysis. CalEEMod was used to estimate these emissions from the project.

Natural Gas. The project would generate emissions from the combustion of natural gas for water heaters, heat, etc. CalEEMod has two categories for natural gas consumption - Title 24 and non-Title 24. CalEEMod defaults were used.

Water and Wastewater. GHG emissions are emitted from the use of electricity to pump water to the project and to treat wastewater. CalEEMod defaults were used.

Solid Waste. GHG emissions would be generated from the decomposition of solid waste generated by the project. CalEEMod was used to estimate the GHG emissions from this source.

As shown in Table 5, the net change in emissions would not exceed the 100 pound daily SJVAPCD screening threshold for ROG, NO_X, CO, SO_X, PM_{10} or $PM_{2.5}$. Therefore, the project's regional air quality impacts (including impacts related to criteria pollutants, sensitive receptors and violations of air quality standards) would be less than significant per threshold b. Further, the project would not contribute to a cumulatively considerable impact. Impacts relative to threshold c would be less than significant.

Table 5
Estimated Operational Emissions

	Estimated Emissions (lbs/day)					
	ROG	**NO_X**	**CO**	**SO_X**	**PM_{10}**	**$PM_{2.5}$**
Proposed Project						
Area	0.95	0.01	0.02	0.0	0.01	0.01
Energy	0.03	0.3	0.25	0.01	0.02	0.02
Mobile - Primary	6.5	1.4	18.7	0.01	1.9	0.5
Mobile – Diverted Link	6.5	1.7	19.0	0.02	1.9	0.5
Mobile – Heavy Truck	1.4	51.8	6.8	0.12	0.9	0.27
Maximum lbs/day	**15.4**	**55.2**	**44.7**	**0.16**	**4.74**	**6.03**
SJVAPCD Thresholds	**100**	**100**	**100**	**100**	**100**	**100**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

See Appendix for CalEEMod version. 2016.3.2 computer model outputt. Summer emissions shown.

Carbon Monoxide Hotspot Evaluation

Localized high levels of CO are associated with traffic congestion and idling or slow-moving vehicles. The SJVAPCD provides screening criteria to determine when to quantify local CO concentrations based on impacts to the level of service (LOS) of intersections in the project vicinity. Advances in emission controls have resulted in attainment of the CO standard throughout California. Recent CO hotspot modeling found that only extremely high traffic volumes could result in a CO hotspot. Traffic volumes at intersections exceeding 44,000 vehicles per hour have been used as a screening criterion to determine if additional modeling should be conducted. Based on Caltrans 2017 traffic count data, peak hour volumes on Taft Highway at the Highway 99 intersection is approximately 1,350. This is less than the 44,000 vehicle per hour screening threshold. The addition of baseline traffic (approximately 4,575 daily trips [3,750 vehicle trips and 825 truck trips]) to baseline volumes would not exceed 44,000 peak hour volumes. No CO hotspots are anticipated. Impacts associated with threshold c would be less than significant.

Objectionable Odors

The primary source of odors during operation would be operation of the restaurant. During operation, the project would be subject to SJVAPCD Rule 4692 which addresses restaurant emissions, specifically from chain-driven char-broilers. Rule 4692 requires the use of a catalytic oxidizer control device approved by the SJVAPCD to control emission. With the implementation of Rule 4692, odors would be less than significant per threshold (d).

Consistency with Air Quality Plans.

The CEQA Guidelines state that a significant impact would occur if the project would conflict with or obstruct implementation of the applicable air quality plan. As stated in the GAMAQI, project emissions that do not exceed SJVAPCD emission thresholds would not conflict with or obstruct the applicable air quality plan (AQP). Additional criterion are focused on whether the project is consistent with current zoning and General Plan land use designations and whether control measures designed to minimize air emissions are implemented. The criterion are summarized below. Thus, the following evaluation proposes the following criteria for determining project consistency with the current AQPs:

1. *Will the project result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay timely attainment of air quality standards or the interim emission reductions specified in the AQPs?*

This measure is determined by comparison to the regional and localized thresholds identified by the SJVAPCD for Regional and Local Air Pollutants.

2. *Will the project comply with applicable control measures in the AQPs?*

The primary control measures applicable to development projects is Regulation VIII—Fugitive PM_{10} Prohibitions and Rule 9510 Indirect Source Review.

Criterion 1 - Contribution to Air Quality Violations
Regional air quality impacts and attainment of the state and federal air quality standards result from cumulative impacts of all emission sources within the air basin. Individual projects are generally not large enough to contribute measurably to an existing violation of air quality standards. Because the region is nonattainment for $PM_{2.5}$, PM_{10} and ozone, projects that generate ozone precursor pollutants (ROG and NO_X), PM_{10}, or $PM_{2.5}$ in excess of the SJVAPCD screening thresholds may contribute to violations of the applicable standards and conflict with the attainment plans. As discussed, emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ associated with the construction and operation of the project would not exceed the screening thresholds nor would it cause a CO hotspot or otherwise violate CO standards. Therefore, the project would not contribute to air quality violations.

Criterion 2 - Compliance with Applicable Control Measures
The AQMP contains control measures, which are enforceable requirements through the adoption of rules and regulations. A description of rules and regulations that apply to this project is provided below.

Regulation VIII—Fugitive PM_{10} Prohibitions focuses on controlling fugitive dust emissions during construction activities. Projects over 10 acres are required to file a Dust Control Plan (DCP) containing dust control practices sufficient to comply with Regulation VIII. As stated, the project would comply with dust control requirements provided as part of Regulation VIII and prepare a Dust Control Plan.

Rule 2201—New and Modified Stationary Source Review Rule. The review of new and modified Stationary Sources of air pollution and to provide mechanisms including emission trade-offs by which Authorities to Construct such sources may be granted, without interfering with the attainment or maintenance of Ambient Air Quality Standards. Permits are required for gasoline storage and fueling operations. The restaurant may require permits per SJVAPCD Rule 4692 depending on the type of grills used.

Rule 4102—Nuisance. The purpose of this rule is to protect the health and safety of the public and applies to any source operation that emits or may emit air contaminants or other materials. Agricultural activities are exempt from the nuisance rule.

Rule 4621—Gasoline Transfer into Stationary Storage Containers, Delivery Vessels, and Bulk Plants. The purpose of this rule is to limit VOC emissions from stationary storage containers. The fuel storage tanks would be required to comply with this rule.

Rule 4622—Gasoline Transfer into Motor Vehicle Fuel Tanks. The purpose of this rule is to limit emissions of gasoline vapors from the transfer of gasoline into motor vehicle fuel tanks.

The fuel pumps will utilize vapor recovery systems; and thus, would be compliant with this rule.

The project would not generate daily emissions in excess of the daily screening thresholds. Secondly, the project would be compliant with applicable SJVAPCD rules and regulations. Further, the project would be compliant with existing zoning and General Plan land use designations for the site provided a Conditional Use Permit is obtained. Therefore, the project complies with this criterion and would not conflict with or obstruct implementation of applicable air quality attainment plans per threshold (a).

GREENHOUSE GAS EMISSION DISCUSSION

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). GHGs are present in the atmosphere naturally, are released by natural sources, or are formed from secondary reactions taking place in the atmosphere. The gases that are widely seen as the principal contributors to human-induced climate change include carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), fluorinated gases such as hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). Water vapor is excluded from the list of GHGs because it is short-lived in the atmosphere and its atmospheric concentrations are largely determined by natural processes, such as oceanic evaporation.

GHGs are emitted by both natural processes and human activities. Of these gases, CO_2 and CH_4 are emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills. Man-made GHGs, many of which have greater heat-absorption potential than CO_2, include fluorinated gases and sulfur hexafluoride (SF_6) (California Environmental Protection Agency [CalEPA], 2006). Different types of GHGs have varying global warming potentials (GWPs). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emissions, referred to as "carbon dioxide equivalent" (CO_2E), and is the amount of a GHG emitted multiplied by its GWP. Carbon dioxide has a GWP of one. By contrast, methane (CH_4) has a GWP of 28, meaning its global warming effect is 28 times greater than carbon dioxide on a molecule per molecule basis (IPCC, 2014).

Total U.S. GHG emissions were 6,577 MMT CO_2E in 2019 (U.S. EPA, February 2021). Total U.S. emissions decreased from 2018 to 2019 by 1.8 percent primarily as a result of less fossil fuel combustion. Total U.S. emissions have increased by 2.0 percent from 1990 to 2019, down from a high of 15.7 percent above 1990 levels in 2007. Emissions decreased from 2018 to 2019 by 1.7 percent (116.0 MMT CO2e). Net emissions (including sinks) were 5,788 MMT CO2e. Overall, net emissions decreased 1.8 percent from 2018 to 2019 and decreased 12.9 percent from 2005 levels. The decline reflects many long-term trends, including population, economic growth, energy market trends, technological changes including energy efficiency and carbon intensity of energy fuel choices. Between 2018 and 2019, the decrease in total greenhouse gas emissions was largely

driven by the decrease in CO2 emissions from fossil fuel combustion. The decrease in CO2 emissions from fossil fuel combustion was a result of a 1.3 percent decrease in total energy use and reflects a continued shift from coal to less carbon intensive natural gas and renewables. (U.S. EPA, February 2021).

In 2018, statewide emissions from GHG emitting activities statewide were 425 million metric tons of carbon dioxide equivalent (MMTCO2e), 0.8 MMTCO2e higher than 2017 levels and 6 MMTCO2e below the 2020 GHG Limit of 431 MMTCO2e. California statewide GHG emissions dropped below the 2020 GHG Limit in 2016 and have remained below the 2020 GHG Limit since then. Transportation emissions decreased in 2018 compared to the previous year, which is the first year over year decrease since 2013. Since 2008, California's electricity sector has followed an overall downward trend in emissions. In 2018, solar power generation has continued to grow. Emissions from high-GWP gases increased 2.3 percent in 2018 (2000-2018 average year-over year increase is 6.8 percent), continuing the increasing trend as Ozone Depleting Substances (ODS) are phased out under the 1987 Montreal Protocol.

The largest source of GHG in California is transportation, contributing 39.9 percent of the state's total GHG emissions. The industrial sector is the second largest source, contributing 21 percent of the state's GHG emissions. California emissions result in part to its geographic size and large population compared to other states. However, a factor that reduces California's per capita fuel use and GHG emissions, as compared to other states, is its relatively mild climate. In July 2017, California's state legislature passed Assembly Bill (AB) 398 to reauthorize and extend until 2030 the state's economy-wide greenhouse gas (GHG) reduction program. The bill sets a new GHG target of at least 40% below the 1990 level of emissions by 2030.

California Regulations

In 2005, former Governor Schwarzenegger issued Executive Order (EO) S-3-05, establishing statewide GHG emissions reduction targets. EO S-3-05 states that by 2020, emissions shall be reduced to 1990 levels; and by 2050, emissions shall be reduced to 80 percent of 1990 levels (CalEPA, 2006). In response to EO S-3-05, CalEPA created the Climate Action Team (CAT), which in March 2006 published the Climate Action Team Report (the "2006 CAT Report") (CalEPA, 2006). The 2006 CAT Report recommended various strategies that the state could pursue to reduce GHG emissions. These strategies could be implemented by various state agencies to ensure that the emission reduction targets in EO S-3-05 are met and can be met with existing authority of the state agencies. The strategies include the reduction of passenger and light duty truck emissions, the reduction of idling times for diesel trucks, an overhaul of shipping technology/infrastructure, increased use of alternative fuels, increased recycling, and landfill methane capture.

Assembly Bill 32 and CARB's Scoping Plan

To further the goals established in EO S-3-05, the Legislature passed Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 requires California to reduce its GHG emissions to 1990 levels by 2020. Under AB 32, CARB is responsible for and is recognized as

having the expertise to carry out and develop the programs and requirements necessary to achieve the GHG emissions reduction mandate of AB 32. Under AB 32, CARB must adopt regulations requiring the reporting and verification of statewide GHG emissions from specified sources. This program is used to monitor and enforce compliance with established standards. CARB also is required to adopt rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emission reductions. AB 32 authorized CARB to adopt market-based compliance mechanisms to meet the specified requirements. Finally, CARB is ultimately responsible for monitoring compliance and enforcing any rule, regulation, order, emission limitation, emission reduction measure, or market-based compliance mechanism adopted.

In 2007, CARB approved a limit on the statewide GHG emissions level for year 2020 consistent with the determined 1990 baseline (427 MMT CO_2E). CARB's adoption of this limit is in accordance with Health and Safety Code, Section 38550.

Further, in 2008, CARB adopted the Scoping Plan in accordance with Health and Safety Code, Section 38561. The Scoping Plan establishes an overall framework for the measures that will be adopted to reduce California's GHG emissions for various emission sources/sectors to 1990 levels by 2020. The Scoping Plan evaluates opportunities for sector-specific reductions, integrates all CARB and Climate Action Team early actions and additional GHG reduction features by both entities, identifies additional measures to be pursued as regulations, and outlines the role of a cap-and-trade program. The key elements of the Scoping Plan include the following (CARB 2008):

1. Expanding and strengthening existing energy efficiency programs, as well as building and appliance standards;
2. Achieving a statewide renewable energy mix of 33%;
3. Developing a California cap-and-trade program that links with other Western Climate Initiative partner programs to create a regional market system and caps sources contributing 85% of California's GHG emissions;
4. Establishing targets for transportation-related GHG emissions for regions throughout California, and pursuing policies and incentives to achieve those targets;
5. Adopting and implementing measures pursuant to existing state laws and policies, including California's clean car standards, goods movement measures, and the Low Carbon Fuel Standard; and
6. Creating targeted fees, including a public goods charge on water use, fees on high GWP gases, and a fee to fund the administrative costs of the State of California's long-term commitment to AB 32 implementation.

In the Scoping Plan (CARB 2008), CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of approximately 28.5% from the otherwise projected 2020 emissions level (i.e., those emissions that would occur in 2020) absent GHG reducing laws and regulations (referred to as Business-As-Usual (BAU)). To calculate this percentage reduction, CARB assumed that all new electricity generation would be supplied by

natural gas plants, no further regulatory action would impact vehicle fuel efficiency, and building energy efficiency codes would be held at 2005 standards.

In the 2011 Final Supplement to the AB 32 Scoping Plan Functional Equivalent Document (CARB 2011a), CARB revised its estimates of the projected 2020 emissions level in light of the economic recession and the availability of updated information about GHG reduction regulations. Based on the new economic data, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of 21.7% (down from 28.5%) from the BAU conditions. When the 2020 emissions level projection was updated to account for newly implemented regulatory measures, including Pavley I (model years 2009–2016) and the Renewables Portfolio Standard (RPS) (12% to 20%), CARB determined that achieving the 1990 emissions level in 2020 would require a reduction in GHG emissions of 16% (down from 28.5%) from the BAU conditions.

In 2014, CARB adopted the First Update to the Climate Change Scoping Plan: Building on the Framework (First Update; CARB 2014). The stated purpose of the First Update is to "highlight California's success to date in reducing its GHG emissions and lay the foundation for establishing a broad framework for continued emission reductions beyond 2020, on the path to 80% below 1990 levels by 2050" (CARB 2014a). The First Update found that California is on track to meet the 2020 emissions reduction mandate established by AB 32 and noted that California could reduce emissions further by 2030 to levels needed to stay on track to reduce emissions to 80% below 1990 levels by 2050 if the state realizes the expected benefits of existing policy goals.

In conjunction with the First Update, CARB identified "six key focus areas comprising major components of the state's economy to evaluate and describe the larger transformative actions that will be needed to meet the state's more expansive emission reduction needs by 2050" (CARB 2014). Those six areas are (1) energy, (2) transportation (vehicles/equipment, sustainable communities, housing, fuels, and infrastructure), (3) agriculture, (4) water, (5) waste management, and (6) natural and working lands. The First Update identifies key recommended actions for each sector that will facilitate achievement of EO S-3-05's 2050 reduction goal (CARB 2014).

Based on CARB's research efforts presented in the First Update, it has a "strong sense of the mix of technologies needed to reduce emissions through 2050" (CARB 2014). Those technologies include energy demand reduction through efficiency and activity changes; large-scale electrification of on-road vehicles, buildings, and industrial machinery; decarbonizing electricity and fuel supplies; and the rapid market penetration of efficient and clean energy technologies. As part of the First Update, CARB recalculated the state's 1990 emissions level using more recent GWPs identified by the IPCC. Using the recalculated 1990 emissions level (431 MMT CO_2E) and the revised 2020-emissions-level projection identified in the 2011 Final Supplement, CARB determined that achieving the 1990 emissions level by 2020 would require a reduction in GHG emissions of approximately 15% (instead of 28.5% or 16%) from the BAU conditions (CARB 2014).

In January 2017, CARB released, *The 2017 Climate Change Scoping Plan Update (*Second Update; CARB 2017), for public review and comment. This update proposes CARB's strategy for achieving the state's 2030 GHG target as established in Senate Bill (SB) 32 (discussed below), including continuing the Cap-and-Trade Program through 2030, and includes a new approach to reduce GHGs from refineries by 20%. The Second Update incorporates approaches to cutting short-lived climate pollutants (SLCPs) under the Short-Lived Climate Pollutant Reduction Strategy (a planning document that was adopted by CARB in March 2017), acknowledges the need for reducing emissions in agriculture, and highlights the work underway to ensure that California's natural and working lands increasingly sequester carbon. During development of the Second Update, CARB held a number of public workshops in the Natural and Working Lands, Agriculture, Energy, and Transportation sectors to inform development of the 2030 Scoping Plan Update (CARB 2016). The Second Update has not been considered by CARB's Governing Board at the time this analysis was prepared.

Executive Order S-01-07 was enacted on January 18, 2007. The order mandates that a Low Carbon Fuel Standard ("LCFS") for transportation fuels be established for California to reduce the carbon intensity of California's transportation fuels by at least 10 percent by 2020.

Other regulations affecting state and local GHG planning and policy development are summarized as follows:

Assembly Bill 939 and Senate Bill 1374

Assembly Bill 939 (AB 939) requires that each jurisdiction in California to divert at least 50 percent of its waste away from landfills, whether through waste reduction, recycling or other means. Senate Bill 1374 (SB 1374) requires the California Integrated Waste Management Board to adopt a model ordinance by March 1, 2004 suitable for adoption by any local agency to require 50 to 75 percent diversion of construction and demolition of waste materials from landfills.

Senate Bill 1368

Senate Bill 1368 (SB 1368) is the companion Bill of AB 32 and was adopted September, 2006. SB 1368 required the California Public Utilities Commission (CPUC) to establish a performance standard for baseload generation of GHG emissions by investor-owned utilities by February 1, 2007 and for local publicly owned utilities by June 30, 2007. These standards could not exceed the GHG emissions rate from a baseload combined-cycle, natural gas-fired plant. Furthermore, the legislation states that all electricity provided to the State, including imported electricity, must be generated by plants that meet the standards set by California Public Utilities Commission (CPUC) and California Energy Commission (CEC).

Senate Bill 97

Senate Bill 97 (SB 97) was adopted August 2007 and acknowledges that climate change is an environmental issue that requires analysis under CEQA. SB 97 directed the Governor's Office of Planning and Research (OPR), which is part of the State Natural Resources Agency, to prepare, develop, and transmit to CARB guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions, as required by CEQA, by July 1, 2009. The Natural Resources Agency

was required to certify and adopt those guidelines by January 1, 2010. Pursuant to the requirements of SB 97 as stated above, on December 30, 2009 the Natural Resources Agency adopted amendments to the state CEQA guidelines that address GHG emissions. The CEQA Guidelines Amendments changed sections of the CEQA Guidelines and incorporated GHG language throughout the Guidelines. However, no GHG emissions thresholds of significance were provided and no specific mitigation measures were identified. The GHG emission reduction amendments went into effect on March 18, 2010 and are summarized below:

- Climate action plans and other greenhouse gas reduction plans can be used to determine whether a project has significant impacts, based upon its compliance with the plan.

- Local governments are encouraged to quantify the greenhouse gas emissions of proposed projects, noting that they have the freedom to select the models and methodologies that best meet their needs and circumstances. The section also recommends consideration of several qualitative factors that may be used in the determination of significance, such as the extent to which the given project complies with state, regional, or local GHG reduction plans and policies. OPR does not set or dictate specific thresholds of significance. Consistent with existing CEQA Guidelines, OPR encourages local governments to develop and publish their own thresholds of significance for GHG impacts assessment.
- When creating their own thresholds of significance, local governments may consider the thresholds of significance adopted or recommended by other public agencies, or recommended by experts.

- New amendments include guidelines for determining methods to mitigate the effects of greenhouse gas emissions in Appendix F of the CEQA Guidelines.

- OPR is clear to state that "to qualify as mitigation, specific measures from an existing plan must be identified and incorporated into the project; general compliance with a plan, by itself, is not mitigation."

- OPR's emphasizes the advantages of analyzing GHG impacts on an institutional, programmatic level. OPR therefore approves tiering of environmental analyses and highlights some benefits of such an approach.

- Environmental impact reports (EIRs) must specifically consider a project's energy use and energy efficiency potential.

Senate Bills 1078, 107, and X1-2 and Executive Orders S-14-08 and S-21-09
Senate Bill 1078 (SB 1078) requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 20 percent of their supply from renewable sources by 2017. Senate Bill 107 (SB 107) changed the target date to 2010. Executive Order S-14-08 was signed on November 2008 and expands the State's Renewable Energy Standard to 33 percent renewable energy by 2020. Executive Order S-21-09 directed CARB to

adopt regulations by July 31, 2010 to enforce S-14-08. Senate Bill X1-2 codifies the 33 percent renewable energy requirement by 2020.

California Code of Regulations (CCR) Title 24, Part 6
CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

The Energy Commission adopted 2008 Standards on April 23, 2008 and Building Standards Commission approved them for publication on September 11, 2008. These updates became effective on August 1, 2009. All buildings for which an application for a building permit is submitted on or after July 1, 2014 must follow the 2013 standards. The 2013 commercial standards are estimated to be 30 percent more efficient than the 2008 standards; 2013 residential standards are at least 25 percent more efficient. Energy efficient buildings require less electricity; therefore, increased energy efficiency reduces fossil fuel consumption and decreases greenhouse gas emissions.

Senate Bill 375
Senate Bill 375 (SB 375) was adopted in September 2008 and aligns regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPO) to adopt a sustainable communities strategy (SCS) or alternate planning strategy (APS) that will prescribe land use allocation in that MPOs Regional Transportation Plan (RTP). CARB, in consultation with each MPO, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years but can be updated every four years if advancements in emissions technologies affect the reduction strategies to achieve the targets. CARB is also charged with reviewing each MPO's sustainable community's strategy or alternate planning strategy for consistency with its assigned targets.

The proposed project is located within the Kern Council of Governments (COG) jurisdiction, which has authority to develop the SCS or APS. For the Kern COG region, beginning October 2018, the targets set by CARB are at 5 percent below 2005 per capita GHG emissions levels by 2020 and 10 percent below 2005 per capita GHG emissions levels by 2035. On August 18, 2018, the Kern COG adopted the 2018 Regional Transportation Plan / Sustainable Communities Strategy (RTP/SCS), which meets the CARB emission reduction requirements.

City and County land use policies, including General Plans, are not required to be consistent with the RTP and associated SCS or APS. However, CEQA incentivizes, through streamlining and other provisions, qualified projects that are consistent with an approved SCS or APS and categorized as "transit priority projects."

Senate Bill X7-7

Senate Bill X7-7 (SB X7-7), enacted on November 9, 2009, mandates water conservation targets and efficiency improvements for urban and agricultural water suppliers. SB X7-7 requires the Department of Water Resources (DWR) to develop a task force and technical panel to develop alternative best management practices for the water sector. Additionally, SB X7-7 required the DWR to develop criteria for baseline uses for residential, commercial, and industrial uses for both indoor and landscaped area uses. The DWR was also required to develop targets and regulations that achieve a statewide 20 percent reduction in water usage.

California Green Building Standards

Title 24, Part 6. Title 24 of the California Code of Regulations was established in 1978 and serves to enhance and regulate California's building standards. While not initially promulgated to reduce GHG emissions, Part 6 of Title 24 specifically establishes Building Energy Efficiency Standards that are designed to ensure new and existing buildings in California achieve energy efficiency and preserve outdoor and indoor environmental quality. These energy efficiency standards are reviewed every few years by the Building Standards Commission and the California Energy Commission (CEC) (and revised if necessary) (California Public Resources Code, Section 25402(b)(1)). The regulations receive input from members of industry, as well as the public, with the goal of "reducing of wasteful, uneconomic, inefficient, or unnecessary consumption of energy" (California Public Resources Code, Section 25402). These regulations are carefully scrutinized and analyzed for technological and economic feasibility (California Public Resources Code, Section 25402(d)) and cost effectiveness (California Public Resources Code, Sections 25402(b)(2) and (b)(3)). These standards are updated to consider and incorporate new energy efficient technologies and construction methods. As a result, these standards save energy, increase electricity supply reliability, increase indoor comfort, avoid the need to construct new power plants, and help preserve the environment.

The 2019 Title 24 building energy efficiency standards and became effective on January 1, 2020. In general, single-family homes built to the 2019 standards are anticipated to use approximately 7% less energy for lighting, heating, cooling, ventilation, and water heating than those built to the 2016 standards, and nonresidential buildings built to the 2019 standards will use an estimated 5% less energy than those built to the 2013 standards (CEC 2015a).

Title 24, Part 11. In addition to the CEC's efforts, in 2008, the California Building Standards Commission adopted the nation's first green building standards. The California Green Building Standards Code (Part 11 of Title 24) is commonly referred to as "CALGreen," and establishes minimum mandatory standards and voluntary standards pertaining to the planning and design of sustainable site development, energy efficiency (in excess of the California Energy Code requirements), water conservation, material conservation, and interior air quality. The CALGreen standards took effect in January 2011 and instituted mandatory minimum environmental performance standards for all ground-up, new construction of commercial, low-rise residential, and state-owned buildings and schools and hospitals. The CALGreen 2019 standards became effective on January 1, 2020. The mandatory standards require the following (24 CCR Part 11):

- Mandatory reduction in indoor water use through compliance with specified flow rates for plumbing fixtures and fittings;
- Mandatory reduction in outdoor water use through compliance with a local water efficient landscaping ordinance or the California Department of Water Resources' Model Water Efficient Landscape Ordinance;
- Diversion of 65% of construction and demolition waste from landfills;
- Mandatory inspections of energy systems to ensure optimal working efficiency;
- Inclusion of electric vehicle charging stations or designated spaces capable of supporting future charging stations; and
- Low-pollutant-emitting exterior and interior finish materials, such as paints, carpets, vinyl flooring, and particle board.

The CALGreen standards also include voluntary efficiency measures that are provided at two separate tiers and implemented at the discretion of local agencies and applicants. CALGreen's Tier 1 standards call for a 15% improvement in energy requirements, stricter water conservation, 65% diversion of construction and demolition waste, 10% recycled content in building materials, 20% permeable paving, 20% cement reduction, and cool/solar-reflective roofs. CALGreen's more rigorous Tier 2 standards call for a 30% improvement in energy requirements, stricter water conservation, 75% diversion of construction and demolition waste, 15% recycled content in building materials, 30% permeable paving, 25% cement reduction, and cool/solar-reflective roofs (24 CCR Part 11).

The California Public Utilities Commission, CEC, and CARB also have a shared, established goal of achieving zero net energy (ZNE) for new construction in California. The key policy timelines include the following: (1) all new residential construction in California will be ZNE by 2020, and (2) all new commercial construction in California will be ZNE by 2030 (CPUC 2013).[2] As most recently defined by the CEC in its 2015 Integrated Energy Policy Report (CEC 2015b), a ZNE code building is "one where the value of the energy produced by on-site renewable energy resources is equal to the value of the energy consumed annually by the building" using the CEC's Time Dependent Valuation metric.

Title 20. Title 20 of the California Code of Regulations requires manufacturers of appliances to meet state and federal standards for energy and water efficiency. Performance of appliances must be certified through the CEC to demonstrate compliance with standards. New appliances regulated under Title 20 include refrigerators, refrigerator-freezers, and freezers; room air conditioners and room air-conditioning heat pumps; central air conditioners; spot air conditioners; vented gas space heaters; gas pool heaters; plumbing fittings and plumbing fixtures; fluorescent lamp ballasts; lamps; emergency lighting; traffic signal modules; dishwaters; clothes washers and dryers; cooking products; electric motors; low voltage dry-type distribution transformers; power supplies; televisions and consumer audio and video

[2] It is expected that achievement of the ZNE goal will occur through revisions to the Title 24 standards.

equipment; and battery charger systems. Title 20 presents protocols for testing for each type of appliance covered under the regulations and appliances must meet the standards for energy performance, energy design, water performance, and water design. Title 20 contains three types of standards for appliances: federal and state standards for federally regulated appliances, state standards for federally regulated appliances, and state standards for non-federally regulated appliances.

Executive Order B-30-15

EO B-30-15 (April 2015) identified an interim GHG reduction target in support of targets previously identified under S-3-05 and AB 32. EO B-30-15 set an interim target goal of reducing statewide GHG emissions to 40% below 1990 levels by 2030 to keep California on its trajectory toward meeting or exceeding the long-term goal of reducing statewide GHG emissions to 80% below 1990 levels by 2050 as set forth in EO S-3-05. To facilitate achievement of this goal, EO B-30-15 calls for an update to CARB's Scoping Plan to express the 2030 target in terms of MMT CO2E. EO B-30-15 also calls for state agencies to continue to develop and implement GHG emission reduction programs in support of the reduction targets. EO B-30-15 does not require local agencies to take any action to meet the new interim GHG reduction target.

Senate Bill 32 and Assembly Bill 197

SB 32 and AB 197 (enacted in 2016) are companion bills that set new statewide GHG reduction targets, make changes to CARB's membership, increase legislative oversight of CARB's climate change–based activities, and expand dissemination of GHG and other air quality–related emissions data to enhance transparency and accountability. More specifically, SB 32 codified the 2030 emissions reduction goal of EO B-30-15 by requiring CARB to ensure that statewide GHG emissions are reduced to 40% below 1990 levels by 2030. AB 197 established the Joint Legislative Committee on Climate Change Policies, consisting of at least three members of the Senate and three members of the Assembly, in order to provide ongoing oversight over implementation of the state's climate policies. AB 197 added two members of the Legislature to CARB as nonvoting members; requires CARB to make available and update (at least annually via its website) emissions data for GHGs, criteria air pollutants, and toxic air contaminants from reporting facilities; and requires CARB to identify specific information for GHG emissions reduction measures when updating the Scoping Plan.

SB 350— Clean Energy and Pollution Reduction Act of 2015

In October 2015, the legislature approved and the Governor signed SB 350, which reaffirms California's commitment to reducing its GHG emissions and addressing climate change. Key provisions include an increase in the renewables portfolio standard (RPS), higher energy efficiency requirements for buildings, initial strategies towards a regional electricity grid, and improved infrastructure for electric vehicle charging stations. Provisions for a 50 percent reduction in the use of petroleum statewide were removed from the Bill because of opposition and concern that it would prevent the Bill's passage. Specifically, SB 350 requires the following to reduce statewide GHG emissions:

- Increase the amount of electricity procured from renewable energy sources from 33 percent to 50 percent by 2030, with interim targets of 40 percent by 2024, and 25 percent by 2027.

- Double the energy efficiency in existing buildings by 2030. This target will be achieved through the California Public Utility Commission (CPUC), the California Energy Commission (CEC), and local publicly-owned utilities.

- Reorganize the Independent System Operator (ISO) to develop more regional electrify transmission markets and to improve accessibility in these markets, which will facilitate the growth of renewable energy markets in the western United States (California Leginfo 2015).

SB 100
On September 10, 2018, Governor Brown signed SB 100, which raises California's RPS requirements to 60 percent by 2030, with interim targets, and 100 percent by 2045. The bill also establishes a state policy that eligible renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity to California end-use customers and 100 percent of electricity procured to serve all state agencies by December 31, 2045. Under the bill, the state cannot increase carbon emissions elsewhere in the western grid or allow resource shuffling to achieve the 100 percent carbon-free electricity target.

Executive Order B-55-18
On September 10, 2018, Governor Brown signed Executive Order B-55-2018 which established a new statewide goal to achieve carbon neutrality as soon as possible and no later than 2045. The executive order also states that California will achieve and maintain net negative emissions thereafter.

AB 2127
AB 2127 promotes better planning for EV infrastructure build-out across all vehicle classes. AB 2127 would help the state meet the goal of 5 million zero-emission vehicles (ZEV) on the road by 2030.

Local Regulations and CEQA Requirements
As referenced, pursuant to the requirements of SB 97, the Resources Agency has adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. The adopted CEQA Guidelines provide general regulatory guidance on the analysis and mitigation of GHG emissions in CEQA documents, but contain no suggested thresholds of significance for GHG emissions. Instead, lead agencies are given the discretion to set quantitative or qualitative thresholds for the assessment and mitigation of GHGs and climate change impacts. The general approach to developing a Threshold of Significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions needed to move the state towards climate stabilization. If a project would generate GHG

emissions above the threshold level, its contribution to cumulative impacts would be considered significant.

To date, the Bay Area Air Quality Management District (BAAQMD), the South Coast Air Quality Management District (SCAQMD), and the San Joaquin Air Pollution Control District (SJVAPCD) have adopted quantitative significance thresholds for GHGs. However, in March 2013 the Bay Area's thresholds were overruled by the Alameda County Superior Court (*California Building Industry Association v. Bay Area Air Quality Management District*), on the basis that adoption of the thresholds constitutes a "project" under CEQA, but did not receive the appropriate environmental review. As a result, BAAQMD has elected to not recommend specific GHG thresholds for use in CEQA documents.

The City of Bakersfield has not adopted its own GHG thresholds or prepared a Climate Action Plan that can be used as a basis for determining project significance. The City assesses GHG emissions using a threshold approach adopted by the SJVAPCD, which required projects to meet a 29 percent reduction from BAU in accordance with SJVAPCD methodologies. The SJVAPCD's *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* includes thresholds based on whether the project will reduce or mitigate GHG levels by 29 percent from BAU levels compared with 2005 levels by 2020 (SJVAPCD 2009b).

The GHG reduction level for the State to reach 1990 emission levels by 2020 was reduced to 21.7 percent from BAU in 2020 in the 2014 First Update to the Scoping Plan to account for slower than projected growth after the 2008 recession (ARB 2014). In addition, the State has reported that the 2016 greenhouse gas inventory was below the 2020 target for the first time and was even lower in 2017 (ARB 2018a). Furthermore, the 2017 Scoping Plan states that California is on track to achieve the 2020 target (ARB 2017a). This means that the State's strategy has successfully reduced GHG emissions while accommodating the growth in population and vehicle miles traveled that occurred in the State since 2005.

The project is expected to commence operations in 2023. This date is beyond the AB 32 2020 milestone year and the SJVAPCD and other agencies have not developed a new threshold based on SB 32 2030 targets. Therefore, this analysis uses a significance approach based on continued progress toward later goals. The analysis of the project's reduction from BAU based on emissions in 2023 compared with the 21.7 percent reduction is used as one measure of significance. This approach provides estimates of project emissions in the new milestone year compared with the existing threshold to address Considerations 1 and 2 above.

Newhall Ranch

On November 30, 2015, the California Supreme Court issued its decision in *Newhall Ranch,* invalidating the GHG analysis for a large master planned residential development in Los Angeles County consisting of over 20,000 residential dwelling units and other uses. In particular, the Court upheld use of the statewide emissions reduction goal in AB 32 as a significance criterion, use of the Scoping Plan's BAU model "as a comparative tool for

evaluating efficiency and conservation efforts" of the Project and a comparison of the project's expected emissions to a BAU model rather than a baseline of pre-project conditions.

The substantial evidence needed to support a project BAU threshold is derived from data used to develop the Scoping Plan inventory and control strategy, and from analyses conducted by the ARB to track progress in achieving the AB 32 2020 target. The critical factor in determining the appropriate project threshold is whether the State requires additional reductions beyond those achieved by existing regulations to achieve the target. If no additional reductions are required from individual projects, no nexus exists to require a project to mitigate its emissions. In that case, the percentage reductions achieved by projects through compliance with regulations is the amount needed to reach the AB 32 target.

The Scoping Plan reduction from BAU accounts for growth projected in the State and assumes that existing development would continue to emit GHGs at the same rate that occurred in the base year (2002-2004 average). The State's regulatory program targets both new and existing development because motor vehicle fuel efficiency and emissions from electricity generation, the two most important strategies, obtain reductions equally from existing and new sources. This is because all vehicles use cleaner low carbon fuels and consumers purchase vehicles subject to the fuel efficiency regulations. Further, all consumers purchase cleaner energy from the grid that is produced by an increasing percentage of renewable energy. This includes regulations on mobile sources such as the Pavley standards that apply to all vehicles purchased in California, the Low Carbon Fuel Standard (LCFS) that applies to all fuel used in California, and the Renewable Portfolio Standard and Renewable Energy Standard that applies to utilities providing electricity. The reduction strategy requires new development to do more than existing development by implementing building energy efficiency and related requirements. For example, new projects are subject to current Title 24 Energy Efficiency standards and water conservation mandates.

The 2019 Title 24 standards which become effective in January 2020, makes progress towards achieving net zero energy use through requirements for on-site renewable generation for most projects. In this case, project buildings would be constructed after 2020 and would be required to comply with 2019 Title 24 standards. As suggested by the Court, a project BAU analysis was prepared for this project to assess consistency with AB 32's goal demonstrating compliance with regulatory programs designed to reduce greenhouse gas emissions. The analysis herein shows the extent to which the project complies with adopted regulations and the amount that will be achieved through project design features. No additional reductions are required from new development beyond regulations for the State to achieve its 2020 target. The recently adopted 2030 target will require a reduction from 431 MTCO2e to 260 MTCO2e, or 40 percent from 1990 levels. After accounting for projected growth of approximately 0.8 percent per year, an average decrease of 5.2 percent per year from the State GHG inventory will be needed cumulatively to achieve the goal. No project-specific reductions have been identified. All GHG emission sources within development projects are subject to GHG regulations. Therefore, this analysis demonstrates consistency with the measures implemented to achieve the 2020 target and shows progress toward achieving the 2030 target.

CLIMATE CHANGE IMPACT ANALYSIS

Thresholds of Significance

Pursuant to the requirements of SB 97, the Resources Agency adopted amendments to the State CEQA Guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions in March 2010. These guidelines are used in evaluating the cumulative significance of GHG emissions from the proposed project. According to the adopted CEQA Guidelines, impacts related to GHG emissions from the proposed project would be significant if the project would:

- *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; and/or*
- *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.*

The vast majority of individual projects do not generate sufficient GHG emissions to create a project-specific impact through a direct influence to climate change; therefore, the issue of climate change typically involves an analysis of whether a project's contribution towards an impact is cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15355).

For future projects, the significance of GHG emissions may be evaluated based on locally adopted quantitative thresholds, or consistency with a regional GHG reduction plan (such as a Climate Action Plan). In the absence of an approved Climate Action Plan, the proposed project is evaluated based on the percentage reduction in BAU emissions and compared to the 21.7 percent statewide goal referenced above.

Methodology

GHG emissions associated with construction and operation of the proposed project and existing development have been estimated using California Emissions Estimator Model (CalEEMod) version 2016.3.2.

<u>Construction Emissions</u>

Construction of the proposed project would generate temporary GHG emissions primarily associated with the operation of construction equipment and truck trips. Site preparation and grading typically generate the greatest emission quantities because the use of heavy equipment is greatest during this phase of construction. Emissions associated with the construction period were estimated based on the projected maximum amount of equipment that would be used on-site at one time. Air districts such as the SCAQMD have recommended amortizing construction-related emissions over a 30-year period to calculate annual emissions. Complete CalEEMod results and assumptions can be viewed in the Appendix.

Operational Emissions

Default values used in CalEEMod version 2016.3.2 are based on the California Energy Commission (CEC) sponsored California Commercial End Use Survey (CEUS) and Residential Appliance Saturation Survey (RASS) studies. CalEEMod provides operational emissions of CO_2, N_2O and CH_4. This methodology has been subjected to peer review by numerous public and private stakeholders, and in particular by the CEC; and therefore, is considered reasonable and reliable for use in GHG impact analysis pursuant to CEQA. It is also recommended by CAPCOA (January 2008).

Emissions associated with area sources (i.e., consumer products, landscape maintenance, and architectural coating) were calculated in CalEEMod based on standard emission rates from CARB, USEPA, and district supplied emission factor values (CalEEMod User Guide, 2016). Emissions from waste generation were also calculated in CalEEMod and are based on the IPCC's methods for quantifying GHG emissions from solid waste using the degradable organic content of waste (CalEEMod User Guide, 2016). Waste disposal rates by land use and overall composition of municipal solid waste in California was primarily based on data provided by the California Department of Resources Recycling and Recovery (CalRecycle).

Emissions from water and wastewater usage calculated in CalEEMod were based on the default electricity intensity from the CEC's 2006 Refining Estimates of Water-Related Energy Use in California using the average values for Northern and Southern California. Emissions from mobile sources were quantified based on trip generation estimates included in CalEEMod version 2016.3.2 for commercial projects.

Estimate of GHG Emissions

Construction Emissions

Construction activity is assumed to occur over a period of approximately 12 months beginning in mid-2022 and concluding in early 2023. Based on CalEEMod results, construction activity for the project would generate an estimated 1,274 metric tons of carbon dioxide equivalent (CO_2E), as shown in Table 6. Amortized over a 30-year period (the assumed life of the project), construction of the proposed project would generate 42 metric tons of CO_2E per year.

Operational Indirect and Stationary Direct Emissions

Long-term emissions relate to energy use, solid waste, water use, and transportation. Each source is discussed below and includes the emissions associated with existing development and the anticipated emissions that would result from the proposed project.

Table 6
Estimated Construction Related Greenhouse Gas Emissions

Year	Annual Emissions (metric tons CO_2E)
2022	882
2023	392
Total	**1,274**
Amortized over 30 years	**42 metric tons per year**

See Appendix for CalEEMod software program output for new construction.

Energy Use. Operation of onsite development would consume both electricity and natural gas (see Appendix for CalEEMod results). The generation of electricity through combustion of fossil fuels typically yields CO_2, and to a smaller extent, N_2O and CH_4. Natural gas emissions can be calculated using default values from the CEC sponsored CEUS and RASS studies which are built into CalEEMod. As shown in Table 7, the overall net increase in energy use at the project site would result in approximately 159 metric tons of CO_2E per year.

Water Use Emissions**.** The CalEEMod results indicate that the project would use approximately 3.4 million gallons of water per year. Based on the amount of electricity generated to supply and convey this amount of water, as shown in Table 8, the project would generate approximately 10 metric tons of CO_2E per year.

Solid Waste Emissions. For solid waste generated onsite, AB 341 mandates that municipal recycling programs be implemented to reduce the volume of solid waste disposed in landfills by 75%. However, AB 341 does not apply to businesses. The CalEEMod results indicate that the project would result in approximately 63 metric tons of CO_2E per year associated with solid waste disposed within landfills.

Transportation Emissions. Mobile source GHG emissions were estimated using the primary trips, diverted link trips and heavy truck trips calculated for the project. As shown in Table 9, the estimated mobile emissions of GHGs for the project based on the estimated annual VMT of 1,230,235 would be 2,728 MT CO_2E associated with primary, diverted link and heavy truck trips.

Combined Construction, Stationary and Mobile Source Emissions

Table 10 combines the net new construction, operational, and mobile GHG emissions associated with the proposed project. As discussed above, temporary emissions associated with construction activity (approximately 1,274 metric tons CO_2E) are amortized over 30 years (the anticipated life of the project).

Table 7
Estimated Annual Energy-Related Greenhouse Gas Emissions

Emission Source	Annual Emissions (CO_2E)
Proposed Project	
Electricity	98 metric tons
Natural Gas	62 metric tons
Total	**159 metric tons**

See Appendix for CalEEMod software program output (demolition and new construction).

Table 8
Estimated Annual
Solid Waste and Water Use Greenhouse Gas Emissions

Emission Source	Annual Emissions (CO_2E)
Water	10 metric tons
Solid Waste	63 metric tons
Total Water and Solid Waste	**73 metric tons**

See Appendix for CalEEMod software program output (demolition and new construction).
[1]Assumes no diversion as AB 341 does not apply to businesses. .

Table 9
Estimated Annual Mobile Emissions of Greenhouse Gases

Emission Source	Annual Emissions (CO_2E)
Proposed Project	
Mobile Emissions (CO_2 & CH_4)	2,728 metric tons
Total	**2,728 metric tons**

See Appendix for CalEEMod software program output.

For the proposed project, the combined unmitigated annual emissions would total approximately 2,982 metric tons per year in CO_2E. The majority (91%) of the project's GHG emissions are associated with vehicle and heavy truck trips. The proposed project is evaluated based on whether measures to reduce GHG emissions would achieve at least a 21.7 percent reduction from baseline.

Table 10
Combined Annual Greenhouse Gas Emissions
(BAU)

Emission Source	Annual Emissions (CO_2E)
Construction	42 metric tons
Operational	
Energy	139 metric tons
Solid Waste	63 metric tons
Water	10 metric tons
Mobile	2,728 metric tons
Total	**2,982 metric tons**

See Appendix for CalEEMod software program output (demolition and new construction).

GHG Cumulative Significance

To determine significance, the analysis first quantified project-related GHG emissions under a BAU scenario and then compares these emissions with emissions that would occur when considering design features and compliance with applicable regulatory measures. The following regulations are incorporated into the CalEEMod emission factors used herein:

- Pavley I and Pavley II (LEV III) motor vehicle emission standards;
- ARB Medium and Heavy-Duty Vehicle Regulation; and
- 2005, 2008, 2013, and 2016 Title 24 Energy Efficiency Standards.

The following regulations have not been incorporated into the CalEEMod emission factors and require alternative methods to account for emission reductions provided by the regulations:

- Renewable Portfolio Standards (RPS);
- Low Carbon Fuel Standard (LCFS);
- Green Building Code Standards (indoor water use);
- California Model Water Efficient Landscape Ordinance (Outdoor Water);

As stated, Pavley II/LEV III standards have been incorporated in the latest version of CalEEMod. ARB estimated a 3 percent reduction by 2020 and a 19 percent reduction from the vehicle categories subject to the regulation by 2030 (ARB 2010b and ARB 2013a).
The ARB GHG Regulation for Medium and Heavy-Duty Engines and Vehicles applies to trucks that will operate in California and on the project site. The benefits of the regulation were incorporated into CalEEMod 2016.3.2. The ARB estimates that this regulation will reduce GHG emissions from the affected vehicles by 7.2 percent.
The Low Carbon Fuel Standard (LCFS) is estimated to have achieved a 10 percent reduction in emissions by 2020 and an 18 percent reduction by 2030 (ARB 2010a). CalEEMod does not include credit for the LCFS.

Title 24 reductions for 2013 and 2016 updates were added to CalEEMod 2016.3.2. The California Energy Commission (CEC) estimates that 2019 Title 24 standards would result in an increase in energy efficiency of 30 percent for commercial buildings relative to the 2016 standards (Berkeley Law Fact Sheet).

RPS is not accounted for in CalEEMod 2016.3.2. PG&E provided emission factors for the electricity it provides to customers and projections for its energy portfolio for 2020. No data to reflect compliance in 2030 was included in the PG&E projections. The utilities will be required by SB 350 to increase the use of renewable energy sources to 50 percent; however, details on individual utility compliance has not been determined. Thus, a reduction of 33% from BAU was assumed for energy emissions.

Energy savings from water conservation resulting from the Green Building Code Standards for indoor water use and California Model Water Efficient Landscape Ordinance for outdoor water use are not included in CalEEMod. The Water Conservation Act of 2009 mandates a 20 percent reduction in urban water use that is implemented with these regulations (CDWR 2013). Benefits of the water conservation regulations are applied in the CalEEMod mitigation component and assumes a total reduction in water demand associated with the project of 20 percent.

Reductions in emissions from solid waste are based on the City achieving the CalRecycle 75 Percent Initiative by 2020 compared with a 50 percent baseline for 2005. However, this does not apply to non-residential projects. Thus, no reduction in solid waste emissions is assumed in this analysis.

Regulations applicable to project sources and the percent reduction anticipated from each source are shown in Table 11. The percentage reductions are only applied to the specific sources subject to the regulations. For example, the Pavley LEV Standards apply only to light duty cars and trucks. Thus, the emission reduction was only applied to cars/light trucks. The project is intended to serve people traveling in motor vehicles; therefore, no additional reductions for design features and benefits from its location and infrastructure were assumed as mitigation in CalEEMod 2016.3.2. The results of this analysis are shown in Table 12.

Table 11
Reductions from Greenhouse Gas Regulations

Regulation	Project Applicability	Reduction Source	Percent Reduction in 2020 and 2030
Pavley Low Emission Vehicle Standards	Light-duty cars and trucks accessing the site are subject to the regulation.	CalEEMod defaults (Pavley I)	25.1[1]
		Adjusted GHG emission factor (Pavley II/LEV III) in CalEEMod.	3% 2020 19.5% 2030[2]
Truck and Bus Regulation	Heavy-duty trucks accessing the site for deliveries and services are subject to the regulation.	Adjusted GHG emission factors for the regulation in CalEEMod	7.2%[3]
Low Carbon Fuel Standard (LCFS)	Vehicles accessing the site will use fuel subject to the LCFS	CalEEMod defaults	10% 2020 18% 2030[1]

Title 24 Energy Efficiency Standards	Project buildings will be constructed to meet the latest version of Title 24 (currently 2019). Reduction applies only to energy consumption subject to the regulation.	CalEEMod defaults	30%[4]
Green Building Code Standards	The project will include water conservation features required by the standard	CalEEMod mitigation component	20%[5]
Water Efficient Land Use Ordinance	The project landscaping will comply with the regulation	CalEEMod mitigation component	20%[5]
Renewable Portfolio Standard (RPS)	Electricity purchased for use at the project site is subject to the 33 percent RPS mandate	CalEEMod adjusted energy intensity factors with PG&E emission factors that show the company will exceed the 33 percent mandate.	33%[6]
Solid waste	The solid waste service provider will need to provide programs to increase diversion and recycling to meet the 75 percent mandate.	CalEEMod mitigation component	No adjustment for commercial buildings

Notes:
Regulations are described in Section 2.3 Regulatory Environment. The source of the percentage reductions from each
measure are from the following sources:
1 Pavley 1 + Low Carbon Fuel Standard Postprocessor Version 1.0 User's Guide (ARB 2010b)
2 ARB Staff Report for LEV III Amendments (ARB 2013b)
3 ARB Staff Report for GHG Regulations for Medium and Heavy-Duty Engines and Vehicles (ARB 2013c)
4 Berkeley Law Fact Sheet: Building Energy Efficiency; Title 24 Standards Will Cut Residential Energy Use in commercial buildings by 30 Percent,
5 SB X7-7/CAPCOA Water Conservation Strategy applied as mitigation in CalEEMod 2106.3.2

Table 12
Combined Annual Greenhouse Gas Mitigated Emissions

Emission Source	Annual Emissions (CO_2E)	2023 With Design Features	Percent Reduction
Construction	42 metric tons	42	0.0%
Operational Energy Solid Waste Water	 139 metric tons 63 metric tons 10 metric tons	 63 0 8	 45% 0% 20%
Mobile	651 metric tons - primary trips 418 metric tons – diverted link 1,659 – heavy truck 2,728 metric tons	247 159 1,659	62% 62% 0.0%
Total	**2,982 metric tons**	**2,178 metric tons**	**-27%**

See Appendix for CalEEMod software program output.

As referenced, specific goals and actions that pertain to the proposed project include those addressing energy and water use reduction, promotion of green building measures, waste reduction, and reduction in vehicle miles traveled. The proposed project would also be required

to implement all mandatory green building measures for new commercial development under the CALGreen Code. As shown, GHG emission reductions associated with energy and fuel programs mandated at the state level would reduce BAU emissions by 27%. This would exceed the 21.7% target referenced herein; thus, resulting in a less than significant GHG impact under threshold a.

Consistency with AB 32 Scoping Plans and SB 32

AB 32 Scoping Plan. The California State Legislature adopted AB 32 in 2006. AB 32 focuses on reducing GHGs (carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride) to 1990 levels by the year 2020. Pursuant to the requirements in AB 32, the ARB adopted the Climate Change Scoping Plan (Scoping Plan) in 2008, which outlines actions recommended to obtain that goal. As stated earlier, the ARB has updated its emission inventory forecasts and now estimates a reduction of 21.7 percent is required from BAU in 2020 to achieve AB 32 targets. The 2017 Scoping Plan Update strategies primarily rely on increasing the stringency of existing regulations to achieve 2030 emission reduction goals.

The following summarizes strategies intended to reduce statewide GHG emissions and project consistency with those that are applicable based on the project scope.

Table 13
Project Consistency with AB 32 Scoping Plan

Scoping Plan Sector	Scoping Plan Measure	Implementation Regulation	Project Consistency
Transportation	California Cap-and-Trade Program Linked to Western Climate Initiative	Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanism October 20, 2015 (CCR 95800)	**Consistent.** The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers. The Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Accordingly, GHG emissions associated with CEQA projects' electricity usage are indirectly covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels.
	California Light-Duty Vehicle Greenhouse Gas Standards	Pavley I 2005 Regulations to Control GHG Emissions from Motor Vehicles	**Consistent**. This measure applies to all new vehicles starting with model year 2012. The project would not conflict with its implementation as it would apply to all new passenger vehicles purchased in California. Passenger vehicles, model year 2012 and later, associated with construction and operation of the project would be required to comply with the Pavley emissions standards.
		2012 LEV III Amendments to the California Greenhouse Gas and Criteria Pollutant Exhaust and Evaporative Emission Standards	
	Low Carbon Fuel Standard	2009 readopted in 2015. Regulations to Achieve Greenhouse Gas Emission	**Consistent.** This measure applies to transportation fuels used in vehicles operating in California. The project would not conflict with implementation of this

		Reductions Subarticle 7. Low Carbon Fuel Standard CCR 95480	measure. Motor vehicles associated with construction and operation of the project would utilize low carbon transportation fuels as required under this measure.
	Regional Transportation-Related Greenhouse Gas Targets.	SB 375. Cal. Public Resources Code §§ 21155, 21155.1, 21155.2, 21159.28	**Consistent**. The project will provide commercial development in the region that is consistent with the land uses assessed in the 2018 Regional Transportation Plan/Sustainable Communities Strategy (SCS). The project is not within an SCS priority area; and thus, is not subject to requirements applicable to those areas.
	Goods Movement	Goods Movement Action Plan January 2007.	**Not applicable**. The project does not propose any changes to maritime, rail, or intermodal facilities or forms of transportation.
	Medium/Heavy-Duty Vehicles	2010 Amendments to the Truck and Bus Regulation, the Drayage Truck Regulation and the Tractor-Trailer Greenhouse Gas Regulation	**Consistent**. This measure applies to medium- and heavy-duty vehicles that operate in the State. The project would not conflict with implementation of this measure. Medium and heavy-duty vehicles associated with construction and operation of the project would be required to comply with the requirements of this regulation.
	High Speed Rail	Funded under SB 862	**Not applicable**. The project is not related to high-speed rail.
Electricity and Natural Gas	Energy Efficiency	Title 20 Appliance Efficiency Regulation	**Consistent.** The project will comply with the latest energy efficiency standards and incorporate applicable energy efficiency features designed to reduce project energy consumption.
		Title 24 Part 6 Energy Efficiency Standards for Residential and Non-Residential Building	
		Title 24 Part 11 California Green Building Code Standards	
	Renewable Portfolio Standard/Renewable Electricity Standard.	2010 Regulation to Implement the Renewable Electricity Standard (33% 2020)	**Consistent**. PG&E obtained 33 percent of its power supply from renewable sources such as solar and geothermal in 2017, and about 70 percent of the electricity it delivers is carbon-free, including nuclear and large hydroelectric facilities. The owner of the project would purchase power that is comprised of renewable energy meeting the RPS standard.
		SB 350 Clean Energy and Pollution Reduction Act of 2015 (50% 2030)	
	Million Solar Roofs Program	Tax incentive program	**Consistent.** This measure is intended to increase solar throughout California by means of a variety of electricity providers and existing solar programs. Project design does not preclude the future installation of solar panels.
Water	Water	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The project will comply with the California Green Building Standards Code, which requires a 20 percent reduction in indoor water use. The project will also comply with the MWELO as required by the City's development code and water ordinance.
		SBX 7-7—The Water Conservation Act of 2009	
		Model Water Efficient Landscape Ordinance	

Green Building	Green Building Strategy	Title 24 Part 11 California Green Building Code Standards	**Consistent.** The State will increase the use of green building practices. The project would implement required green building strategies per 2019 Title 24 standards and related CALGreen requirements.
Recycling and Waste Management	Recycling and Waste	Title 24 Part 11 California Green Building Code Standards AB 341 Statewide 75 Percent Diversion Goal	**Consistent.** The project would not conflict with implementation of these measures. However, compliance was not a factor in determining project consistency with overall GHG emission reduction goals.
Source of ARB Scoping Plan Reduction Measures: California Air Resources Board 2008.			

SB 32. This bill establishes for a statewide GHG emissions reduction target whereby CARB, in adopting rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions, shall ensure that statewide GHG emissions are reduced to at least 40% below 1990 levels by December 31, 2030.

The reduction measures implemented by the project and/or required by regulatory controls addressing fuel and electrical energy conservation would reduce overall GHG emissions by more than 21.7 percent. Thus, the project is not considered a cumulatively considerable source of GHG emissions. CARB has indicated that statewide, California is on track to achieving both the 2030 and 2050 goals. CARB stated in the First Update to the Climate Change Scoping Plan that "California is on track to meet the near-term 2020 GHG emissions limit and is well positioned to maintain and continue reductions beyond 2020 as required by AB 32" (CARB 2014, p. ES2).This is confirmed in the 2017 Scoping Plan, which states that the Scoping Plan builds upon the successful framework established by the Initial Scoping Plan and First Update, while identifying new, technologically feasible and cost-effective strategies to ensure that California meets its GHG reduction targets. Project consistency with the 2017 Scoping Plan measures are summarized in Table 14.

Table 14
Consistency with SB 32 2017 Scoping Plan Update

Scoping Plan Measure	Project Consistency
SB 350 50% Renewable Mandate. Utilities subject to the legislation will be required to increase their renewable energy mix from 33% in 2020 to 50% in 2030.	**Consistent**: The project will purchase electricity from a utility subject to the SB 350 Renewable Mandate.
SB 350 Double Building Energy Efficiency by 2030. This is equivalent to a 20 percent reduction from 2014 building energy usage compared to current projected 2030 levels	**Not Applicable**. This measure applies to existing buildings. New structures are required to comply with Title 24 Energy Efficiency Standards that are expected to increase in stringency until nonresidential buildings achieve zero net energy.
Low Carbon Fuel Standard. This measure requires fuel providers to meet an 18 percent reduction in carbon content by 2030.	**Consistent**. Vehicles accessing the project site will use fuel containing lower carbon content as the fuel standard is implemented.
Mobile Source Strategy (Cleaner Technology and Fuels Scenario) Vehicle manufacturers will be required to meet existing regulations mandated by the LEV III and Heavy-Duty Vehicle programs. The strategy includes a goal of having 4.2 million ZEVs on the road by 2030 and increasing numbers of ZEV trucks and buses.	**Consistent**. Project customers and employees may purchase increasing numbers of more fuel efficient and zero emission cars and trucks each year. The 2016 CALGreen Code requires electrical service in commercial projects to be EV charger ready.

Sustainable Freight Action Plan The plan's target is to improve freight system efficiency 25 percent by increasing the value of goods and services produced from the freight sector, relative to the amount of carbon that it produces by 2030. This would be achieved by deploying over 100,000 freight vehicles and equipment capable of zero emission operation and maximize near-zero emission freight vehicles and equipment powered by renewable energy by 2030.	**Not Applicable**. The measure applies to owners and operators of trucks and freight operations. However, trucks accessing the project site are expected to be made by increasing number of ZEV delivery trucks.
Short-Lived Climate Pollutant (SLCP) Reduction Strategy. The strategy requires the reduction of SLCPs by 40 percent from 2013 levels by 2030 and the reduction of black carbon by 50 percent from 2013 levels by 2030.	**Consistent**. The project will be accessed by vehicles meeting increasingly stringent particulate matter standards that reduce black carbon compared to older trucks.
SB 375 Sustainable Communities Strategies. Requires Regional Transportation Plans to include a sustainable communities strategy for reduction of per capita vehicle miles traveled.	**Consistent**. The project will provide commercial development in the region that is consistent with the Regional Transportation Plan/Sustainable Communities Strategy (SCS) assumptions. The project is not within an SCS priority area and so is not subject to requirements applicable to those areas.
Post-2020 Cap-and-Trade Program. The Post 2020 Cap-and-Trade Program continues the existing program for another 10 years. The Cap-and-Trade Program applies to large industrial sources such as power plants, refineries, and cement manufacturers.	**Consistent.** The post-2020 Cap-and-Trade Program covers the GHG emissions associated with electricity consumed in California, whether generated in-state or imported. Thus, GHG emissions associated with new development is covered by the Cap-and-Trade Program. The Cap-and-Trade Program also covers fuel suppliers (natural gas and propane fuel providers and transportation fuel providers) to address emissions from such fuels and from combustion of other fossil fuels not directly covered at large sources in the program's first compliance period.
Natural and Working Lands Action Plan. The ARB is working in coordination with several other agencies at the federal, state, and local levels, stakeholders, and with the public, to develop measures as outlined in the Scoping Plan Update and the governor's Executive Order B-30-15 to reduce GHG emissions and to cultivate net carbon sequestration potential for California's natural and working land.	**Not Applicable**. The project is commercial development.
Source: ARB 2017 Scoping Plan Update (ARB 2017c).	

As stated, the project would not generate enough GHG emissions to cumulatively contribute to global climate change; and thus, would not adversely impact the attainment of statewide reductions in GHG emissions referenced above. The project would be consistent with EO S-3-05, AB 32 as well as the GHG reduction goals established by SB 32. Impacts would be less than significant under threshold b.

REFERENCES

Association of Environmental Professionals. *California Environmental Quality Act (CEQA) Statute and Guidelines.* 2021

California Air Pollution Control Officers Association. *CEQA and Climate Change: Addressing Climate Change through California Environmental Quality Act (CEQA)*. January 2008.

California Air Resources Board. *Ambient Air Quality Standards.* Updated February, 2016. http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf

California Air Resources Board, Maps of State and Federal Area Designations, https://ww2.arb.ca.gov/resources/documents/maps-state-and-federal-area-designations?corr

California Air Resources Board. 2017, 2018, & 2019 Annual Air Quality Data Summaries. http://www.arb.ca.gov/adam/topfour/topfour1.php. Accessed March 2021.

California Air Resources Board, *California Greenhouse Gas Emissions for 2000 to 2018*, 2020 Edition. https://ww3.arb.ca.gov/cc/inventory/pubs/reports/2000_2018/ghg_inventory_trends_00-18.pdf

California Air Resources Board. 2008. (includes edits made in 2009) Climate Change Scoping Plan, a framework for change. Website: http://www.arb.ca.gov/cc/scopingplan /document/adopted_scoping_plan.pdf. Accessed March 2021.

California Air Resources Board. 2010a. 2020 Greenhouse Gas Emissions Projection and BAU Scenario Emissions Estimate. Website: http://www.arb.ca.gov/cc/inventory/archive /captrade_2010_projection.pdf. Accessed March 2021.

California Air Resources Board. 2010b. Pavley 1 + Low Carbon Fuel Standard Postprocessor Version 1.0 User's Guide. Website: https://www.arb.ca.gov/cc/sb375/tools/pavleylcfsuserguide. pdf. Accessed March 2021.

California Air Resources Board. April 2012. *Greenhouse Gas Inventory Data – 2020 Emissions Forecast*. Available: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

California Air Resources Board. 2013a. Clean Car Standards—Pavley, Assembly Bill 1493. Website: http://www.arb.ca.gov/cc/ccms/ccms.htm. Accessed March 2021

California Air Resources Board. 2013b. Facts About the Clean Cars Program. Website: http://www.arb.ca.gov/msprog/zevprog/factsheets/advanced_clean_cars_eng.pdf.

Accessed March 2021

California Air Resources Board. 2013c. Initial Statement of Reasons for Proposed Rulemaking, Proposed GHG Regulations for Medium and Heavy-Duty Engines and Vehicles. Website: https://www.arb.ca.gov/regact/2013/hdghg2013/hdghg2013isor.pdf. Accessed October 17, 2019.

California Air Resources Board. May 2014. *2020 Business As Usual Emission Projection, 2014 Edition*. Available: http://www.arb.ca.gov/cc/inventory/data/tables/2020_bau_forecast_by_scoping_category_2014-05-22.pdf

California Air Resources Board. 2014. First Update to the Climate Change Scoping Plan. Website: http://www.arb.ca.gov/cc/scopingplan/document/updatedscopingplan2013.htm. Accessed March 2021.

California Air Resources Board. June 2015. *Greenhouse Gas Emissions Inventory– 2015 Edition* Available: http://www.arb.ca.gov/cc/inventory/data/data.htm

California Air Resources Board. June 2017. *Greenhouse Gas Inventory Data Inventory Program*. Available: https://www.arb.ca.gov/cc/inventory/inventory.htm

California Air Resources Board. 2017a. The 2017 Climate Change Scoping Plan Update, the Proposed Strategy for Achieving California's 2030 Greenhouse Gas Target. January 17, 2017.
Website: https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf. Accessed March 2021.

California Air Resources Board (ARB). 2018a. Climate Pollutants Fall Below 1990 Levels for the First Time. Website: https://ww2.arb.ca.gov/news/climate-pollutants-fall-below-1990-levelsfirst-time. Accessed March 2021.

California Climate Action Registry General Reporting Protocol, *Reporting Entity-Wide Greenhouse Gas Emissions*, Version 3.1, January 2009.

California Environmental Protection Agency, March 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature*. http://www.climatechange.ca.gov/climate_action_team/reports/2006-04-03_FINAL_CAT_REPORT_EXECSUMMARY.PDF

Intergovernmental Panel on Climate Change [IPCC]. *Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories*. [Kroeze, C.; Mosier, A.; Nevison, C.; Oenema, O.; Seitzinger, S.; Cleemput, O. van; Conrad, R.; Mitra, A.P.; H.U., Neue; Sass, R.]. Paris: OECD, 1997.

Intergovernmental Panel on Climate Change [IPCC]. Climate Change 2014 Synthesis Report, 2014.

LAV//Pinnacle Engineering, Inc., Trip Generation Estimates, April 2021

Office of the California Attorney General. The California Environmental Quality Act, Addressing Global Warming Impacts at the Local Agency Level. Updated May 21, 2008. http://ag.ca.gov/globalwarming/pdf/GW_mitigation_measures.pdf

South Coast Air Quality Management District (SCAQMD). *California Emissions Estimator Model User Guide Version 2016.3.2*. Prepared by BREEZE Software, A Division of Trinity Consultants. September 2016.

SCAQMD. *CEQA Air Quality Handbook*. Tables A9-11-A and A9-12-A. November 1993.

SCAQMD. *Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold*, October, 2008

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. Guidance for Assessing and Mitigating Air Quality Impacts. Revised March 19, 2015. Website: http://www.valleyair.org /transportation/GAMAQI_3-19-15.pdf. Accessed October 17, 2019.

San Joaquin Valley Air Pollution Control District. 2018a. Ozone Plans. Website: http://valleyair.org /Air_Quality_Plans/Ozone_Plans.htm. Accessed March 2021.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2012. 2012 PM2.5 Plan. Website: http://www.valleyair.org/Air_Quality_Plans/PM25Plan2012/CompletedPlanbookmarked.pdf. Accessed March 2021

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2015. 2015 Plan for the 1997 PM2.5 Standard. Website: http://www.valleyair.org/Air_Quality_Plans/docs/PM25-2015/2015-PM2.5-Plan_Bookmarked.pdf. Accessed October 17, 2019.

San Joaquin Valley Air Pollution Control District (SJVAPCD). 2017. Adopted PM Plans. http://www.valleyair.org/Air_Quality_Plans/PM_Plans.htm. Accessed October 17, 2019.

San Joaquin Valley Air Pollution Control District. 2018. 2018 Plan for the 1997, 2006, and 2012 PM2.5 Standards. Website: http://www.valleyair.org/pmplans/. Accessed August 1, 2019.

United States Environmental Protection Agency (U.S. EPA). *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2010*. U. S. EPA #430-R-11-005. April 2012. http://www.epa.gov/climatechange/emissions/usinventoryreport.html

United States Environmental Protection Agency (U.S. EPA). *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2015*. U. S. EPA #430-P-17-001. April 2017. https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks-1990-2015

United States Environmental Protection Agency (U.S. EPA). *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2019,* U. S. EPA #430-R-21-001. February 2021

Appendix A

CalEEMod Air Quality and Greenhouse Gas Emissions Model Results – Summer/Annual, and N_2O from Mobile Emissions Sources

Primary Trips – Summer

Taft Road Pilot Truck Center - Primary Vehicle Operation

Kern-San Joaquin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	14.00	Acre	14.00	609,840.00	0
Parking Lot	155.00	Space	1.39	62,000.00	0
Fast Food Restaurant with Drive Thru	3.50	1000sqft	0.08	3,500.00	0
Automobile Care Center	13.58	1000sqft	0.31	13,580.00	0
Convenience Market With Gas Pumps	11.20	1000sqft	0.26	11,197.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Taft Road Pilot Truck Center - Primary Vehicle Operation - Kern-San Joaquin County, Summer

Project Characteristics -

Land Use - Project details based on information from applicant

Architectural Coating - Arch. Coating based on non-flat paint requirement of 50 g/L VOC

Vehicle Trips - Trip rate adjusted for primary vehicle emissions.

Area Coating - Arch. coating emissions adjust to refelct non-flat and flat 50 g/L VOC

Construction Off-road Equipment Mitigation -

Area Mitigation -

Water Mitigation -

Fleet Mix - Fleet mix adjusted to reflect car/light truck operation at convenience store

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	50
tblAreaCoating	Area_EF_Nonresidential_Interior	150	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblFleetMix	HHD	0.15	0.00
tblFleetMix	LDA	0.49	0.60
tblFleetMix	LDT1	0.03	0.04
tblFleetMix	LDT2	0.17	0.21
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.5720e-003	0.00
tblFleetMix	MCY	5.7600e-003	5.8390e-003
tblFleetMix	MDV	0.11	0.14
tblFleetMix	MH	7.5900e-004	8.1600e-004
tblFleetMix	MHD	0.02	0.00

tblFleetMix	OBUS	1.6120e-003	0.00
tblFleetMix	SBUS	9.1200e-004	0.00
tblFleetMix	UBUS	1.6100e-003	0.00
tblLandUse	LandUseSquareFeet	11,200.00	11,197.00
tblVehicleTrips	CC_TL	7.30	0.50
tblVehicleTrips	CNW_TL	7.30	0.50
tblVehicleTrips	CW_TL	9.50	0.50
tblVehicleTrips	DV_TP	21.00	0.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	1,448.33	455.53
tblVehicleTrips	ST_TR	722.03	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	1,182.08	455.53
tblVehicleTrips	SU_TR	542.72	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	845.60	455.53
tblVehicleTrips	WD_TR	496.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7001	38.8819	29.5496	0.0847	18.2141	1.6360	19.8277	9.9699	1.5051	11.4544	0.0000	8,473.2382	8,473.2382	1.9480	0.0000	8,495.9098
2023	20.9603	23.9670	24.7628	0.0829	3.1785	0.7239	3.9024	0.8608	0.6810	1.5418	0.0000	8,295.9406	8,295.9406	0.8210	0.0000	8,316.4652
Maximum	**20.9603**	**38.8819**	**29.5496**	**0.0847**	**18.2141**	**1.6360**	**19.8277**	**9.9699**	**1.5051**	**11.4544**	**0.0000**	**8,473.2382**	**8,473.2382**	**1.9480**	**0.0000**	**8,495.9098**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7001	38.8819	29.5496	0.0847	8.2777	1.6360	9.8912	4.5080	1.5051	5.9925	0.0000	8,473.2382	8,473.2382	1.9480	0.0000	8,495.9098
2023	20.9603	23.9670	24.7628	0.0829	3.1785	0.7239	3.9024	0.8608	0.6810	1.5418	0.0000	8,295.9406	8,295.9406	0.8210	0.0000	8,316.4652
Maximum	**20.9603**	**38.8819**	**29.5496**	**0.0847**	**8.2777**	**1.6360**	**9.8912**	**4.5080**	**1.5051**	**5.9925**	**0.0000**	**8,473.2382**	**8,473.2382**	**1.9480**	**0.0000**	**8,495.9098**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**46.45**	**0.00**	**41.87**	**50.43**	**0.00**	**42.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Energy	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295
Mobile	6.5562	1.4568	18.7680	0.0275	1.9375	0.0365	1.9740	0.5136	0.0336	0.5472		2,720.8119	2,720.8119	0.1198		2,723.8068
Total	**7.5475**	**1.7631**	**19.0453**	**0.0293**	**1.9375**	**0.0599**	**1.9974**	**0.5136**	**0.0570**	**0.5705**		**3,088.2016**	**3,088.2016**	**0.1269**	**6.7300e-003**	**3,093.3822**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Energy	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295
Mobile	6.5562	1.4568	18.7680	0.0275	1.9375	0.0365	1.9740	0.5136	0.0336	0.5472		2,720.8119	2,720.8119	0.1198		2,723.8068
Total	**7.5475**	**1.7631**	**19.0453**	**0.0293**	**1.9375**	**0.0599**	**1.9974**	**0.5136**	**0.0570**	**0.5705**		**3,088.2016**	**3,088.2016**	**0.1269**	**6.7300e-003**	**3,093.3822**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/25/2022	5	30	
4	Building Construction	Building Construction	3/26/2022	5/19/2023	5	300	
5	Paving	Paving	5/20/2023	6/16/2023	5	20	
6	Architectural Coating	Architectural Coating	6/17/2023	7/14/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 15.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 42,416; Non-Residential Outdoor: 14,139; Striped Parking Area: 40,310 (Architectural Coating – sqft)

OffRoad Equipment

Taft Road Pilot Truck Center - Primary Vehicle Operation - Kern-San Joaquin County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	292.00	115.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0288	0.3811	1.2600e-003	0.1232	8.1000e-004	0.1240	0.0327	7.4000e-004	0.0334		125.5051	125.5051	2.8100e-003		125.5754
Total	**0.0564**	**0.0288**	**0.3811**	**1.2600e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**125.5051**	**125.5051**	**2.8100e-003**		**125.5754**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0288	0.3811	1.2600e-003	0.1232	8.1000e-004	0.1240	0.0327	7.4000e-004	0.0334		125.5051	125.5051	2.8100e-003		125.5754
Total	**0.0564**	**0.0288**	**0.3811**	**1.2600e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**125.5051**	**125.5051**	**2.8100e-003**		**125.5754**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0677	0.0346	0.4573	1.5100e-003	0.1479	9.7000e-004	0.1488	0.0392	8.9000e-004	0.0401		150.6062	150.6062	3.3700e-003		150.6904
Total	**0.0677**	**0.0346**	**0.4573**	**1.5100e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**150.6062**	**150.6062**	**3.3700e-003**		**150.6904**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.1298**	**1.6126**	**9.7424**	**4.4688**	**1.4836**	**5.9524**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0677	0.0346	0.4573	1.5100e-003	0.1479	9.7000e-004	0.1488	0.0392	8.9000e-004	0.0401		150.6062	150.6062	3.3700e-003		150.6904
Total	**0.0677**	**0.0346**	**0.4573**	**1.5100e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**150.6062**	**150.6062**	**3.3700e-003**		**150.6904**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.0384	0.5081	1.6800e-003	0.1643	1.0700e-003	0.1654	0.0436	9.9000e-004	0.0446		167.3402	167.3402	3.7400e-003		167.4338
Total	**0.0752**	**0.0384**	**0.5081**	**1.6800e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**167.3402**	**167.3402**	**3.7400e-003**		**167.4338**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.9030**	**1.6349**	**5.5379**	**1.6184**	**1.5041**	**3.1225**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.0384	0.5081	1.6800e-003	0.1643	1.0700e-003	0.1654	0.0436	9.9000e-004	0.0446		167.3402	167.3402	3.7400e-003		167.4338
Total	**0.0752**	**0.0384**	**0.5081**	**1.6800e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**167.3402**	**167.3402**	**3.7400e-003**		**167.4338**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3460	11.8477	2.0359	0.0332	0.7798	0.0288	0.8086	0.2246	0.0276	0.2521		3,475.7381	3,475.7381	0.2402		3,481.7441
Worker	1.0985	0.5612	7.4184	0.0245	2.3987	0.0157	2.4144	0.6363	0.0144	0.6507		2,443.1665	2,443.1665	0.0547		2,444.5334
Total	**1.4445**	**12.4090**	**9.4543**	**0.0577**	**3.1785**	**0.0445**	**3.2230**	**0.8608**	**0.0420**	**0.9028**		**5,918.9046**	**5,918.9046**	**0.2949**		**5,926.2776**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3460	11.8477	2.0359	0.0332	0.7798	0.0288	0.8086	0.2246	0.0276	0.2521		3,475.7381	3,475.7381	0.2402		3,481.7441
Worker	1.0985	0.5612	7.4184	0.0245	2.3987	0.0157	2.4144	0.6363	0.0144	0.6507		2,443.1665	2,443.1665	0.0547		2,444.5334
Total	**1.4445**	**12.4090**	**9.4543**	**0.0577**	**3.1785**	**0.0445**	**3.2230**	**0.8608**	**0.0420**	**0.9028**		**5,918.9046**	**5,918.9046**	**0.2949**		**5,926.2776**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2446	9.0792	1.7162	0.0324	0.7798	8.8900e-003	0.7887	0.2246	8.4900e-003	0.2331		3,389.6513	3,389.6513	0.1644		3,393.7603
Worker	1.0199	0.5029	6.8025	0.0236	2.3987	0.0153	2.4140	0.6363	0.0141	0.6503		2,351.0794	2,351.0794	0.0488		2,352.2988
Total	**1.2645**	**9.5821**	**8.5188**	**0.0560**	**3.1785**	**0.0242**	**3.2027**	**0.8608**	**0.0226**	**0.8834**		**5,740.7307**	**5,740.7307**	**0.2131**		**5,746.0591**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2446	9.0792	1.7162	0.0324	0.7798	8.8900e-003	0.7887	0.2246	8.4900e-003	0.2331		3,389.6513	3,389.6513	0.1644		3,393.7603
Worker	1.0199	0.5029	6.8025	0.0236	2.3987	0.0153	2.4140	0.6363	0.0141	0.6503		2,351.0794	2,351.0794	0.0488		2,352.2988
Total	**1.2645**	**9.5821**	**8.5188**	**0.0560**	**3.1785**	**0.0242**	**3.2027**	**0.8608**	**0.0226**	**0.8834**		**5,740.7307**	**5,740.7307**	**0.2131**		**5,746.0591**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	2.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.0488**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0258	0.3494	1.2100e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		120.7746	120.7746	2.5100e-003		120.8373
Total	**0.0524**	**0.0258**	**0.3494**	**1.2100e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**120.7746**	**120.7746**	**2.5100e-003**		**120.8373**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	2.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.0488**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0258	0.3494	1.2100e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		120.7746	120.7746	2.5100e-003		120.8373
Total	**0.0524**	**0.0258**	**0.3494**	**1.2100e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**120.7746**	**120.7746**	**2.5100e-003**		**120.8373**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	20.5661					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**20.7577**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2026	0.0999	1.3512	4.6800e-003	0.4765	3.0400e-003	0.4795	0.1264	2.7900e-003	0.1292		466.9952	466.9952	9.6900e-003		467.2374
Total	**0.2026**	**0.0999**	**1.3512**	**4.6800e-003**	**0.4765**	**3.0400e-003**	**0.4795**	**0.1264**	**2.7900e-003**	**0.1292**		**466.9952**	**466.9952**	**9.6900e-003**		**467.2374**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	20.5661					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**20.7577**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2026	0.0999	1.3512	4.6800e-003	0.4765	3.0400e-003	0.4795	0.1264	2.7900e-003	0.1292		466.9952	466.9952	9.6900e-003		467.2374
Total	**0.2026**	**0.0999**	**1.3512**	**4.6800e-003**	**0.4765**	**3.0400e-003**	**0.4795**	**0.1264**	**2.7900e-003**	**0.1292**		**466.9952**	**466.9952**	**9.6900e-003**		**467.2374**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.5562	1.4568	18.7680	0.0275	1.9375	0.0365	1.9740	0.5136	0.0336	0.5472		2,720.8119	2,720.8119	0.1198		2,723.8068
Unmitigated	6.5562	1.4568	18.7680	0.0275	1.9375	0.0365	1.9740	0.5136	0.0336	0.5472		2,720.8119	2,720.8119	0.1198		2,723.8068

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market With Gas Pumps	5,101.94	5,101.94	5101.94	928,552	928,552
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	5,101.94	5,101.94	5,101.94	928,552	928,552

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	9.50	7.30	7.30	33.00	48.00	19.00	21	51	28
Convenience Market With Gas	0.50	0.50	0.50	0.80	80.20	19.00	100	0	0
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Convenience Market With Gas Pumps	0.600851	0.037764	0.210492	0.144240	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.005839	0.000000	0.000816
Fast Food Restaurant with Drive Thru	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Other Asphalt Surfaces	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Parking Lot	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295
NaturalGas Unmitigated	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	776.478	8.3700e-003	0.0761	0.0640	4.6000e-004		5.7900e-003	5.7900e-003		5.7900e-003	5.7900e-003		91.3504	91.3504	1.7500e-003	1.6700e-003	91.8932
Convenience Market With Gas Pumps	328.241	3.5400e-003	0.0322	0.0270	1.9000e-004		2.4500e-003	2.4500e-003		2.4500e-003	2.4500e-003		38.6166	38.6166	7.4000e-004	7.1000e-004	38.8461
Fast Food Restaurant with Drive Thru	2017.73	0.0218	0.1978	0.1662	1.1900e-003		0.0150	0.0150		0.0150	0.0150		237.3795	237.3795	4.5500e-003	4.3500e-003	238.7902
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0337**	**0.3061**	**0.2572**	**1.8400e-003**		**0.0233**	**0.0233**		**0.0233**	**0.0233**		**367.3465**	**367.3465**	**7.0400e-003**	**6.7300e-003**	**369.5295**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.776478	8.3700e-003	0.0761	0.0640	4.6000e-004		5.7900e-003	5.7900e-003		5.7900e-003	5.7900e-003		91.3504	91.3504	1.7500e-003	1.6700e-003	91.8932
Convenience Market With Gas Pumps	0.328241	3.5400e-003	0.0322	0.0270	1.9000e-004		2.4500e-003	2.4500e-003		2.4500e-003	2.4500e-003		38.6166	38.6166	7.4000e-004	7.1000e-004	38.8461
Fast Food Restaurant with Drive Thru	2.01773	0.0218	0.1978	0.1662	1.1900e-003		0.0150	0.0150		0.0150	0.0150		237.3795	237.3795	4.5500e-003	4.3500e-003	238.7902
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0337**	**0.3061**	**0.2572**	**1.8400e-003**		**0.0233**	**0.0233**		**0.0233**	**0.0233**		**367.3465**	**367.3465**	**7.0400e-003**	**6.7300e-003**	**369.5295**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Unmitigated	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.8700e-003	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Total	**0.9577**	**1.8000e-004**	**0.0201**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**		**0.0432**	**0.0432**	**1.1000e-004**		**0.0460**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.8700e-003	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Total	**0.9577**	**1.8000e-004**	**0.0201**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**		**0.0432**	**0.0432**	**1.1000e-004**		**0.0460**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Diverted Link – Summer

Taft Road Pilot Truck Center - Diverted Link

Kern-San Joaquin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	14.00	Acre	14.00	609,840.00	0
Parking Lot	155.00	Space	1.39	62,000.00	0
Fast Food Restaurant with Drive Thru	3.50	1000sqft	0.08	3,500.00	0
Automobile Care Center	13.58	1000sqft	0.31	13,580.00	0
Convenience Market With Gas Pumps	11.20	1000sqft	0.26	11,197.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Taft Road Pilot Truck Center - Diverted Link - Kern-San Joaquin County, Summer

Project Characteristics -

Land Use - Project details based on information from applicant

Architectural Coating - Arch. Coating based on non-flat paint requirement of 50 g/L VOC

Vehicle Trips - Trip rate adjusted for primary vehicle emissions.

Area Coating - Arch. coating emissions adjust to refelct non-flat and flat 50 g/L VOC

Construction Off-road Equipment Mitigation -

Area Mitigation -

Water Mitigation -

Fleet Mix - Fleet mix adjusted to reflect car/light truck operation at convenience store

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	50
tblAreaCoating	Area_EF_Nonresidential_Interior	150	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblFleetMix	HHD	0.15	0.00
tblFleetMix	LDA	0.49	0.60
tblFleetMix	LDT1	0.03	0.04
tblFleetMix	LDT2	0.17	0.21
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.5720e-003	0.00
tblFleetMix	MCY	5.7600e-003	5.8390e-003
tblFleetMix	MDV	0.11	0.14
tblFleetMix	MH	7.5900e-004	8.1600e-004
tblFleetMix	MHD	0.02	0.00

tblFleetMix	OBUS	1.6120e-003	0.00
tblFleetMix	SBUS	9.1200e-004	0.00
tblFleetMix	UBUS	1.6100e-003	0.00
tblLandUse	LandUseSquareFeet	11,200.00	11,197.00
tblVehicleTrips	CC_TL	7.30	2.00
tblVehicleTrips	CNW_TL	7.30	2.00
tblVehicleTrips	CW_TL	9.50	2.00
tblVehicleTrips	DV_TP	21.00	100.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	1,448.33	455.53
tblVehicleTrips	ST_TR	722.03	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	1,182.08	455.53
tblVehicleTrips	SU_TR	542.72	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	845.60	455.53
tblVehicleTrips	WD_TR	496.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7001	38.8819	29.5496	0.0847	18.2141	1.6360	19.8277	9.9699	1.5051	11.4544	0.0000	8,473.2382	8,473.2382	1.9480	0.0000	8,495.9098
2023	20.9603	23.9670	24.7628	0.0829	3.1785	0.7239	3.9024	0.8608	0.6810	1.5418	0.0000	8,295.9406	8,295.9406	0.8210	0.0000	8,316.4652
Maximum	**20.9603**	**38.8819**	**29.5496**	**0.0847**	**18.2141**	**1.6360**	**19.8277**	**9.9699**	**1.5051**	**11.4544**	**0.0000**	**8,473.2382**	**8,473.2382**	**1.9480**	**0.0000**	**8,495.9098**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7001	38.8819	29.5496	0.0847	8.2777	1.6360	9.8912	4.5080	1.5051	5.9925	0.0000	8,473.2382	8,473.2382	1.9480	0.0000	8,495.9098
2023	20.9603	23.9670	24.7628	0.0829	3.1785	0.7239	3.9024	0.8608	0.6810	1.5418	0.0000	8,295.9406	8,295.9406	0.8210	0.0000	8,316.4652
Maximum	**20.9603**	**38.8819**	**29.5496**	**0.0847**	**8.2777**	**1.6360**	**9.8912**	**4.5080**	**1.5051**	**5.9925**	**0.0000**	**8,473.2382**	**8,473.2382**	**1.9480**	**0.0000**	**8,495.9098**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**46.45**	**0.00**	**41.87**	**50.43**	**0.00**	**42.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Energy	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295
Mobile	6.5562	1.4568	18.7680	0.0275	1.9375	0.0365	1.9740	0.5136	0.0336	0.5472		2,720.8119	2,720.8119	0.1198		2,723.8068
Total	**7.5475**	**1.7631**	**19.0453**	**0.0293**	**1.9375**	**0.0599**	**1.9974**	**0.5136**	**0.0570**	**0.5705**		**3,088.2016**	**3,088.2016**	**0.1269**	**6.7300e-003**	**3,093.3822**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Energy	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295
Mobile	6.5562	1.4568	18.7680	0.0275	1.9375	0.0365	1.9740	0.5136	0.0336	0.5472		2,720.8119	2,720.8119	0.1198		2,723.8068
Total	**7.5475**	**1.7631**	**19.0453**	**0.0293**	**1.9375**	**0.0599**	**1.9974**	**0.5136**	**0.0570**	**0.5705**		**3,088.2016**	**3,088.2016**	**0.1269**	**6.7300e-003**	**3,093.3822**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/25/2022	5	30	
4	Building Construction	Building Construction	3/26/2022	5/19/2023	5	300	
5	Paving	Paving	5/20/2023	6/16/2023	5	20	
6	Architectural Coating	Architectural Coating	6/17/2023	7/14/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 15.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 42,416; Non-Residential Outdoor: 14,139; Striped Parking Area: 40,310 (Architectural Coating – sqft)

OffRoad Equipment

Taft Road Pilot Truck Center - Diverted Link - Kern-San Joaquin County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	292.00	115.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0288	0.3811	1.2600e-003	0.1232	8.1000e-004	0.1240	0.0327	7.4000e-004	0.0334		125.5051	125.5051	2.8100e-003		125.5754
Total	**0.0564**	**0.0288**	**0.3811**	**1.2600e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**125.5051**	**125.5051**	**2.8100e-003**		**125.5754**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0288	0.3811	1.2600e-003	0.1232	8.1000e-004	0.1240	0.0327	7.4000e-004	0.0334		125.5051	125.5051	2.8100e-003		125.5754
Total	**0.0564**	**0.0288**	**0.3811**	**1.2600e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**125.5051**	**125.5051**	**2.8100e-003**		**125.5754**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0677	0.0346	0.4573	1.5100e-003	0.1479	9.7000e-004	0.1488	0.0392	8.9000e-004	0.0401		150.6062	150.6062	3.3700e-003		150.6904
Total	**0.0677**	**0.0346**	**0.4573**	**1.5100e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**150.6062**	**150.6062**	**3.3700e-003**		**150.6904**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.1298**	**1.6126**	**9.7424**	**4.4688**	**1.4836**	**5.9524**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0677	0.0346	0.4573	1.5100e-003	0.1479	9.7000e-004	0.1488	0.0392	8.9000e-004	0.0401		150.6062	150.6062	3.3700e-003		150.6904
Total	**0.0677**	**0.0346**	**0.4573**	**1.5100e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**150.6062**	**150.6062**	**3.3700e-003**		**150.6904**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.0384	0.5081	1.6800e-003	0.1643	1.0700e-003	0.1654	0.0436	9.9000e-004	0.0446		167.3402	167.3402	3.7400e-003		167.4338
Total	**0.0752**	**0.0384**	**0.5081**	**1.6800e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**167.3402**	**167.3402**	**3.7400e-003**		**167.4338**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.9030**	**1.6349**	**5.5379**	**1.6184**	**1.5041**	**3.1225**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.0384	0.5081	1.6800e-003	0.1643	1.0700e-003	0.1654	0.0436	9.9000e-004	0.0446		167.3402	167.3402	3.7400e-003		167.4338
Total	**0.0752**	**0.0384**	**0.5081**	**1.6800e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**167.3402**	**167.3402**	**3.7400e-003**		**167.4338**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3460	11.8477	2.0359	0.0332	0.7798	0.0288	0.8086	0.2246	0.0276	0.2521		3,475.7381	3,475.7381	0.2402		3,481.7441
Worker	1.0985	0.5612	7.4184	0.0245	2.3987	0.0157	2.4144	0.6363	0.0144	0.6507		2,443.1665	2,443.1665	0.0547		2,444.5334
Total	**1.4445**	**12.4090**	**9.4543**	**0.0577**	**3.1785**	**0.0445**	**3.2230**	**0.8608**	**0.0420**	**0.9028**		**5,918.9046**	**5,918.9046**	**0.2949**		**5,926.2776**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3460	11.8477	2.0359	0.0332	0.7798	0.0288	0.8086	0.2246	0.0276	0.2521		3,475.7381	3,475.7381	0.2402		3,481.7441
Worker	1.0985	0.5612	7.4184	0.0245	2.3987	0.0157	2.4144	0.6363	0.0144	0.6507		2,443.1665	2,443.1665	0.0547		2,444.5334
Total	**1.4445**	**12.4090**	**9.4543**	**0.0577**	**3.1785**	**0.0445**	**3.2230**	**0.8608**	**0.0420**	**0.9028**		**5,918.9046**	**5,918.9046**	**0.2949**		**5,926.2776**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2446	9.0792	1.7162	0.0324	0.7798	8.8900e-003	0.7887	0.2246	8.4900e-003	0.2331		3,389.6513	3,389.6513	0.1644		3,393.7603
Worker	1.0199	0.5029	6.8025	0.0236	2.3987	0.0153	2.4140	0.6363	0.0141	0.6503		2,351.0794	2,351.0794	0.0488		2,352.2988
Total	**1.2645**	**9.5821**	**8.5188**	**0.0560**	**3.1785**	**0.0242**	**3.2027**	**0.8608**	**0.0226**	**0.8834**		**5,740.7307**	**5,740.7307**	**0.2131**		**5,746.0591**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2446	9.0792	1.7162	0.0324	0.7798	8.8900e-003	0.7887	0.2246	8.4900e-003	0.2331		3,389.6513	3,389.6513	0.1644		3,393.7603
Worker	1.0199	0.5029	6.8025	0.0236	2.3987	0.0153	2.4140	0.6363	0.0141	0.6503		2,351.0794	2,351.0794	0.0488		2,352.2988
Total	**1.2645**	**9.5821**	**8.5188**	**0.0560**	**3.1785**	**0.0242**	**3.2027**	**0.8608**	**0.0226**	**0.8834**		**5,740.7307**	**5,740.7307**	**0.2131**		**5,746.0591**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	2.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.0488**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0258	0.3494	1.2100e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		120.7746	120.7746	2.5100e-003		120.8373
Total	**0.0524**	**0.0258**	**0.3494**	**1.2100e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**120.7746**	**120.7746**	**2.5100e-003**		**120.8373**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	2.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.0488**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0258	0.3494	1.2100e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		120.7746	120.7746	2.5100e-003		120.8373
Total	**0.0524**	**0.0258**	**0.3494**	**1.2100e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**120.7746**	**120.7746**	**2.5100e-003**		**120.8373**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	20.5661					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**20.7577**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2026	0.0999	1.3512	4.6800e-003	0.4765	3.0400e-003	0.4795	0.1264	2.7900e-003	0.1292		466.9952	466.9952	9.6900e-003		467.2374
Total	**0.2026**	**0.0999**	**1.3512**	**4.6800e-003**	**0.4765**	**3.0400e-003**	**0.4795**	**0.1264**	**2.7900e-003**	**0.1292**		**466.9952**	**466.9952**	**9.6900e-003**		**467.2374**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	20.5661					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**20.7577**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2026	0.0999	1.3512	4.6800e-003	0.4765	3.0400e-003	0.4795	0.1264	2.7900e-003	0.1292		466.9952	466.9952	9.6900e-003		467.2374
Total	**0.2026**	**0.0999**	**1.3512**	**4.6800e-003**	**0.4765**	**3.0400e-003**	**0.4795**	**0.1264**	**2.7900e-003**	**0.1292**		**466.9952**	**466.9952**	**9.6900e-003**		**467.2374**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6.5562	1.4568	18.7680	0.0275	1.9375	0.0365	1.9740	0.5136	0.0336	0.5472		2,720.8119	2,720.8119	0.1198		2,723.8068
Unmitigated	6.5562	1.4568	18.7680	0.0275	1.9375	0.0365	1.9740	0.5136	0.0336	0.5472		2,720.8119	2,720.8119	0.1198		2,723.8068

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market With Gas Pumps	5,101.94	5,101.94	5101.94	928,552	928,552
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	5,101.94	5,101.94	5,101.94	928,552	928,552

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	9.50	7.30	7.30	33.00	48.00	19.00	21	51	28
Convenience Market With Gas	2.00	2.00	2.00	0.80	80.20	19.00	0	100	0
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Convenience Market With Gas Pumps	0.600851	0.037764	0.210492	0.144240	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.005839	0.000000	0.000816
Fast Food Restaurant with Drive Thru	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Other Asphalt Surfaces	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Parking Lot	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295
NaturalGas Unmitigated	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	776.478	8.3700e-003	0.0761	0.0640	4.6000e-004		5.7900e-003	5.7900e-003		5.7900e-003	5.7900e-003		91.3504	91.3504	1.7500e-003	1.6700e-003	91.8932
Convenience Market With Gas Pumps	328.241	3.5400e-003	0.0322	0.0270	1.9000e-004		2.4500e-003	2.4500e-003		2.4500e-003	2.4500e-003		38.6166	38.6166	7.4000e-004	7.1000e-004	38.8461
Fast Food Restaurant with Drive Thru	2017.73	0.0218	0.1978	0.1662	1.1900e-003		0.0150	0.0150		0.0150	0.0150		237.3795	237.3795	4.5500e-003	4.3500e-003	238.7902
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0337**	**0.3061**	**0.2572**	**1.8400e-003**		**0.0233**	**0.0233**		**0.0233**	**0.0233**		**367.3465**	**367.3465**	**7.0400e-003**	**6.7300e-003**	**369.5295**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.776478	8.3700e-003	0.0761	0.0640	4.6000e-004		5.7900e-003	5.7900e-003		5.7900e-003	5.7900e-003		91.3504	91.3504	1.7500e-003	1.6700e-003	91.8932
Convenience Market With Gas Pumps	0.328241	3.5400e-003	0.0322	0.0270	1.9000e-004		2.4500e-003	2.4500e-003		2.4500e-003	2.4500e-003		38.6166	38.6166	7.4000e-004	7.1000e-004	38.8461
Fast Food Restaurant with Drive Thru	2.01773	0.0218	0.1978	0.1662	1.1900e-003		0.0150	0.0150		0.0150	0.0150		237.3795	237.3795	4.5500e-003	4.3500e-003	238.7902
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0337**	**0.3061**	**0.2572**	**1.8400e-003**		**0.0233**	**0.0233**		**0.0233**	**0.0233**		**367.3465**	**367.3465**	**7.0400e-003**	**6.7300e-003**	**369.5295**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Unmitigated	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.8700e-003	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Total	**0.9577**	**1.8000e-004**	**0.0201**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**		**0.0432**	**0.0432**	**1.1000e-004**		**0.0460**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.8700e-003	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Total	**0.9577**	**1.8000e-004**	**0.0201**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**		**0.0432**	**0.0432**	**1.1000e-004**		**0.0460**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Truck Trips – Summer

Taft Road Pilot Truck Center - Heavy Truck

Kern-San Joaquin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	14.00	Acre	14.00	609,840.00	0
Parking Lot	155.00	Space	1.39	62,000.00	0
Fast Food Restaurant with Drive Thru	3.50	1000sqft	0.08	3,500.00	0
Automobile Care Center	13.58	1000sqft	0.31	13,580.00	0
Convenience Market With Gas Pumps	11.20	1000sqft	0.26	11,197.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Taft Road Pilot Truck Center - Heavy Truck - Kern-San Joaquin County, Summer

Project Characteristics -

Land Use - Project details based on information from applicant

Architectural Coating - Arch. Coating based on non-flat paint requirement of 50 g/L VOC

Vehicle Trips - Trip rate adjusted for primary vehicle emissions.

Area Coating - Arch. coating emissions adjust to refelct non-flat and flat 50 g/L VOC

Construction Off-road Equipment Mitigation -

Area Mitigation -

Water Mitigation -

Fleet Mix - Fleet mix adjusted to reflect heavy truck operation only

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	50
tblAreaCoating	Area_EF_Nonresidential_Interior	150	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblFleetMix	HHD	0.15	0.67
tblFleetMix	LDA	0.49	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.02	0.26
tblFleetMix	LHD2	5.5720e-003	0.05
tblFleetMix	MCY	5.7600e-003	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	7.5900e-004	0.00
tblFleetMix	MHD	0.02	0.02

tblFleetMix	OBUS	1.6120e-003	0.00
tblFleetMix	SBUS	9.1200e-004	0.00
tblFleetMix	UBUS	1.6100e-003	0.00
tblLandUse	LandUseSquareFeet	11,200.00	11,197.00
tblVehicleTrips	CC_TL	7.30	1.00
tblVehicleTrips	CNW_TL	7.30	1.00
tblVehicleTrips	CW_TL	9.50	1.00
tblVehicleTrips	DV_TP	21.00	0.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	1,448.33	74.00
tblVehicleTrips	ST_TR	722.03	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	1,182.08	74.00
tblVehicleTrips	SU_TR	542.72	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	845.60	74.00
tblVehicleTrips	WD_TR	496.12	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7001	38.8819	29.5496	0.0847	18.2141	1.6360	19.8277	9.9699	1.5051	11.4544	0.0000	8,473.2382	8,473.2382	1.9480	0.0000	8,495.9098
2023	20.9603	23.9670	24.7628	0.0829	3.1785	0.7239	3.9024	0.8608	0.6810	1.5418	0.0000	8,295.9406	8,295.9406	0.8210	0.0000	8,316.4652
Maximum	**20.9603**	**38.8819**	**29.5496**	**0.0847**	**18.2141**	**1.6360**	**19.8277**	**9.9699**	**1.5051**	**11.4544**	**0.0000**	**8,473.2382**	**8,473.2382**	**1.9480**	**0.0000**	**8,495.9098**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7001	38.8819	29.5496	0.0847	8.2777	1.6360	9.8912	4.5080	1.5051	5.9925	0.0000	8,473.2382	8,473.2382	1.9480	0.0000	8,495.9098
2023	20.9603	23.9670	24.7628	0.0829	3.1785	0.7239	3.9024	0.8608	0.6810	1.5418	0.0000	8,295.9406	8,295.9406	0.8210	0.0000	8,316.4652
Maximum	**20.9603**	**38.8819**	**29.5496**	**0.0847**	**8.2777**	**1.6360**	**9.8912**	**4.5080**	**1.5051**	**5.9925**	**0.0000**	**8,473.2382**	**8,473.2382**	**1.9480**	**0.0000**	**8,495.9098**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**46.45**	**0.00**	**41.87**	**50.43**	**0.00**	**42.03**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Energy	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295
Mobile	1.2009	50.8227	5.6317	0.1001	0.7226	0.0239	0.7465	0.2004	0.0228	0.2232		10,484.4251	10,484.4251	1.4387		10,520.3922
Total	**2.1922**	**51.1290**	**5.9090**	**0.1019**	**0.7226**	**0.0472**	**0.7698**	**0.2004**	**0.0462**	**0.2466**		**10,851.8147**	**10,851.8147**	**1.4458**	**6.7300e-003**	**10,889.9676**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Energy	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295
Mobile	1.2009	50.8227	5.6317	0.1001	0.7226	0.0239	0.7465	0.2004	0.0228	0.2232		10,484.4251	10,484.4251	1.4387		10,520.3922
Total	**2.1922**	**51.1290**	**5.9090**	**0.1019**	**0.7226**	**0.0472**	**0.7698**	**0.2004**	**0.0462**	**0.2466**		**10,851.8147**	**10,851.8147**	**1.4458**	**6.7300e-003**	**10,889.9676**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/25/2022	5	30	
4	Building Construction	Building Construction	3/26/2022	5/19/2023	5	300	
5	Paving	Paving	5/20/2023	6/16/2023	5	20	
6	Architectural Coating	Architectural Coating	6/17/2023	7/14/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 15.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 42,416; Non-Residential Outdoor: 14,139; Striped Parking Area: 40,310 (Architectural Coating – sqft)

OffRoad Equipment

Taft Road Pilot Truck Center - Heavy Truck - Kern-San Joaquin County, Summer

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	292.00	115.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553		3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**		**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0288	0.3811	1.2600e-003	0.1232	8.1000e-004	0.1240	0.0327	7.4000e-004	0.0334		125.5051	125.5051	2.8100e-003		125.5754
Total	**0.0564**	**0.0288**	**0.3811**	**1.2600e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**125.5051**	**125.5051**	**2.8100e-003**		**125.5754**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.6392	25.7194	20.5941	0.0388		1.2427	1.2427		1.1553	1.1553	0.0000	3,746.7812	3,746.7812	1.0524		3,773.0920
Total	**2.6392**	**25.7194**	**20.5941**	**0.0388**		**1.2427**	**1.2427**		**1.1553**	**1.1553**	**0.0000**	**3,746.7812**	**3,746.7812**	**1.0524**		**3,773.0920**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0564	0.0288	0.3811	1.2600e-003	0.1232	8.1000e-004	0.1240	0.0327	7.4000e-004	0.0334		125.5051	125.5051	2.8100e-003		125.5754
Total	**0.0564**	**0.0288**	**0.3811**	**1.2600e-003**	**0.1232**	**8.1000e-004**	**0.1240**	**0.0327**	**7.4000e-004**	**0.0334**		**125.5051**	**125.5051**	**2.8100e-003**		**125.5754**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0677	0.0346	0.4573	1.5100e-003	0.1479	9.7000e-004	0.1488	0.0392	8.9000e-004	0.0401		150.6062	150.6062	3.3700e-003		150.6904
Total	**0.0677**	**0.0346**	**0.4573**	**1.5100e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**150.6062**	**150.6062**	**3.3700e-003**		**150.6904**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**8.1298**	**1.6126**	**9.7424**	**4.4688**	**1.4836**	**5.9524**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0677	0.0346	0.4573	1.5100e-003	0.1479	9.7000e-004	0.1488	0.0392	8.9000e-004	0.0401		150.6062	150.6062	3.3700e-003		150.6904
Total	**0.0677**	**0.0346**	**0.4573**	**1.5100e-003**	**0.1479**	**9.7000e-004**	**0.1488**	**0.0392**	**8.9000e-004**	**0.0401**		**150.6062**	**150.6062**	**3.3700e-003**		**150.6904**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**8.6733**	**1.6349**	**10.3082**	**3.5965**	**1.5041**	**5.1006**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.0384	0.5081	1.6800e-003	0.1643	1.0700e-003	0.1654	0.0436	9.9000e-004	0.0446		167.3402	167.3402	3.7400e-003		167.4338
Total	**0.0752**	**0.0384**	**0.5081**	**1.6800e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**167.3402**	**167.3402**	**3.7400e-003**		**167.4338**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**3.9030**	**1.6349**	**5.5379**	**1.6184**	**1.5041**	**3.1225**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0752	0.0384	0.5081	1.6800e-003	0.1643	1.0700e-003	0.1654	0.0436	9.9000e-004	0.0446		167.3402	167.3402	3.7400e-003		167.4338
Total	**0.0752**	**0.0384**	**0.5081**	**1.6800e-003**	**0.1643**	**1.0700e-003**	**0.1654**	**0.0436**	**9.9000e-004**	**0.0446**		**167.3402**	**167.3402**	**3.7400e-003**		**167.4338**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3460	11.8477	2.0359	0.0332	0.7798	0.0288	0.8086	0.2246	0.0276	0.2521		3,475.7381	3,475.7381	0.2402		3,481.7441
Worker	1.0985	0.5612	7.4184	0.0245	2.3987	0.0157	2.4144	0.6363	0.0144	0.6507		2,443.1665	2,443.1665	0.0547		2,444.5334
Total	**1.4445**	**12.4090**	**9.4543**	**0.0577**	**3.1785**	**0.0445**	**3.2230**	**0.8608**	**0.0420**	**0.9028**		**5,918.9046**	**5,918.9046**	**0.2949**		**5,926.2776**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3460	11.8477	2.0359	0.0332	0.7798	0.0288	0.8086	0.2246	0.0276	0.2521		3,475.7381	3,475.7381	0.2402		3,481.7441
Worker	1.0985	0.5612	7.4184	0.0245	2.3987	0.0157	2.4144	0.6363	0.0144	0.6507		2,443.1665	2,443.1665	0.0547		2,444.5334
Total	**1.4445**	**12.4090**	**9.4543**	**0.0577**	**3.1785**	**0.0445**	**3.2230**	**0.8608**	**0.0420**	**0.9028**		**5,918.9046**	**5,918.9046**	**0.2949**		**5,926.2776**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2446	9.0792	1.7162	0.0324	0.7798	8.8900e-003	0.7887	0.2246	8.4900e-003	0.2331		3,389.6513	3,389.6513	0.1644		3,393.7603
Worker	1.0199	0.5029	6.8025	0.0236	2.3987	0.0153	2.4140	0.6363	0.0141	0.6503		2,351.0794	2,351.0794	0.0488		2,352.2988
Total	**1.2645**	**9.5821**	**8.5188**	**0.0560**	**3.1785**	**0.0242**	**3.2027**	**0.8608**	**0.0226**	**0.8834**		**5,740.7307**	**5,740.7307**	**0.2131**		**5,746.0591**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.2446	9.0792	1.7162	0.0324	0.7798	8.8900e-003	0.7887	0.2246	8.4900e-003	0.2331		3,389.6513	3,389.6513	0.1644		3,393.7603
Worker	1.0199	0.5029	6.8025	0.0236	2.3987	0.0153	2.4140	0.6363	0.0141	0.6503		2,351.0794	2,351.0794	0.0488		2,352.2988
Total	**1.2645**	**9.5821**	**8.5188**	**0.0560**	**3.1785**	**0.0242**	**3.2027**	**0.8608**	**0.0226**	**0.8834**		**5,740.7307**	**5,740.7307**	**0.2131**		**5,746.0591**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694		2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	2.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.0488**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**		**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0258	0.3494	1.2100e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		120.7746	120.7746	2.5100e-003		120.8373
Total	**0.0524**	**0.0258**	**0.3494**	**1.2100e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**120.7746**	**120.7746**	**2.5100e-003**		**120.8373**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0327	10.1917	14.5842	0.0228		0.5102	0.5102		0.4694	0.4694	0.0000	2,207.5841	2,207.5841	0.7140		2,225.4336
Paving	2.0161					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.0488**	**10.1917**	**14.5842**	**0.0228**		**0.5102**	**0.5102**		**0.4694**	**0.4694**	**0.0000**	**2,207.5841**	**2,207.5841**	**0.7140**		**2,225.4336**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0524	0.0258	0.3494	1.2100e-003	0.1232	7.9000e-004	0.1240	0.0327	7.2000e-004	0.0334		120.7746	120.7746	2.5100e-003		120.8373
Total	**0.0524**	**0.0258**	**0.3494**	**1.2100e-003**	**0.1232**	**7.9000e-004**	**0.1240**	**0.0327**	**7.2000e-004**	**0.0334**		**120.7746**	**120.7746**	**2.5100e-003**		**120.8373**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	20.5661					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**20.7577**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2026	0.0999	1.3512	4.6800e-003	0.4765	3.0400e-003	0.4795	0.1264	2.7900e-003	0.1292		466.9952	466.9952	9.6900e-003		467.2374
Total	**0.2026**	**0.0999**	**1.3512**	**4.6800e-003**	**0.4765**	**3.0400e-003**	**0.4795**	**0.1264**	**2.7900e-003**	**0.1292**		**466.9952**	**466.9952**	**9.6900e-003**		**467.2374**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	20.5661					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**20.7577**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2026	0.0999	1.3512	4.6800e-003	0.4765	3.0400e-003	0.4795	0.1264	2.7900e-003	0.1292		466.9952	466.9952	9.6900e-003		467.2374
Total	**0.2026**	**0.0999**	**1.3512**	**4.6800e-003**	**0.4765**	**3.0400e-003**	**0.4795**	**0.1264**	**2.7900e-003**	**0.1292**		**466.9952**	**466.9952**	**9.6900e-003**		**467.2374**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.2009	50.8227	5.6317	0.1001	0.7226	0.0239	0.7465	0.2004	0.0228	0.2232		10,484.4251	10,484.4251	1.4387		10,520.3922
Unmitigated	1.2009	50.8227	5.6317	0.1001	0.7226	0.0239	0.7465	0.2004	0.0228	0.2232		10,484.4251	10,484.4251	1.4387		10,520.3922

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market With Gas Pumps	828.80	828.80	828.80	301,683	301,683
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	828.80	828.80	828.80	301,683	301,683

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	9.50	7.30	7.30	33.00	48.00	19.00	21	51	28
Convenience Market With Gas	1.00	1.00	1.00	0.80	80.20	19.00	100	0	0
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Convenience Market With Gas Pumps	0.000000	0.000000	0.000000	0.000000	0.260000	0.050000	0.020000	0.670000	0.000000	0.000000	0.000000	0.000000	0.000000
Fast Food Restaurant with Drive Thru	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Other Asphalt Surfaces	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Parking Lot	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295
NaturalGas Unmitigated	0.0337	0.3061	0.2571	1.8400e-003		0.0233	0.0233		0.0233	0.0233		367.3465	367.3465	7.0400e-003	6.7300e-003	369.5295

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	776.478	8.3700e-003	0.0761	0.0640	4.6000e-004		5.7900e-003	5.7900e-003		5.7900e-003	5.7900e-003		91.3504	91.3504	1.7500e-003	1.6700e-003	91.8932
Convenience Market With Gas Pumps	328.241	3.5400e-003	0.0322	0.0270	1.9000e-004		2.4500e-003	2.4500e-003		2.4500e-003	2.4500e-003		38.6166	38.6166	7.4000e-004	7.1000e-004	38.8461
Fast Food Restaurant with Drive Thru	2017.73	0.0218	0.1978	0.1662	1.1900e-003		0.0150	0.0150		0.0150	0.0150		237.3795	237.3795	4.5500e-003	4.3500e-003	238.7902
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0337**	**0.3061**	**0.2572**	**1.8400e-003**		**0.0233**	**0.0233**		**0.0233**	**0.0233**		**367.3465**	**367.3465**	**7.0400e-003**	**6.7300e-003**	**369.5295**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Automobile Care Center	0.776478	8.3700e-003	0.0761	0.0640	4.6000e-004		5.7900e-003	5.7900e-003		5.7900e-003	5.7900e-003		91.3504	91.3504	1.7500e-003	1.6700e-003	91.8932
Convenience Market With Gas Pumps	0.328241	3.5400e-003	0.0322	0.0270	1.9000e-004		2.4500e-003	2.4500e-003		2.4500e-003	2.4500e-003		38.6166	38.6166	7.4000e-004	7.1000e-004	38.8461
Fast Food Restaurant with Drive Thru	2.01773	0.0218	0.1978	0.1662	1.1900e-003		0.0150	0.0150		0.0150	0.0150		237.3795	237.3795	4.5500e-003	4.3500e-003	238.7902
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0337**	**0.3061**	**0.2572**	**1.8400e-003**		**0.0233**	**0.0233**		**0.0233**	**0.0233**		**367.3465**	**367.3465**	**7.0400e-003**	**6.7300e-003**	**369.5295**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Unmitigated	0.9577	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.8700e-003	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Total	**0.9577**	**1.8000e-004**	**0.0201**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**		**0.0432**	**0.0432**	**1.1000e-004**		**0.0460**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1127					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8431					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.8700e-003	1.8000e-004	0.0201	0.0000		7.0000e-005	7.0000e-005		7.0000e-005	7.0000e-005		0.0432	0.0432	1.1000e-004		0.0460
Total	**0.9577**	**1.8000e-004**	**0.0201**	**0.0000**		**7.0000e-005**	**7.0000e-005**		**7.0000e-005**	**7.0000e-005**		**0.0432**	**0.0432**	**1.1000e-004**		**0.0460**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Primary Trips – Annual

Taft Road Pilot Truck Center - Primary Vehicle Operation

Kern-San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	14.00	Acre	14.00	609,840.00	0
Parking Lot	155.00	Space	1.39	62,000.00	0
Fast Food Restaurant with Drive Thru	3.50	1000sqft	0.08	3,500.00	0
Automobile Care Center	13.58	1000sqft	0.31	13,580.00	0
Convenience Market With Gas Pumps	11.20	1000sqft	0.26	11,197.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Taft Road Pilot Truck Center - Primary Vehicle Operation - Kern-San Joaquin County, Annual

Project Characteristics -

Land Use - Project details based on information from applicant

Architectural Coating - Arch. Coating based on non-flat paint requirement of 50 g/L VOC

Vehicle Trips - Trip rate adjusted for primary vehicle emissions.

Area Coating - Arch. coating emissions adjust to refelct non-flat and flat 50 g/L VOC

Construction Off-road Equipment Mitigation -

Area Mitigation -

Water Mitigation -

Fleet Mix - Fleet mix adjusted to reflect car/light truck operation at convenience store

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	50
tblAreaCoating	Area_EF_Nonresidential_Interior	150	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblFleetMix	HHD	0.15	0.00
tblFleetMix	LDA	0.49	0.60
tblFleetMix	LDT1	0.03	0.04
tblFleetMix	LDT2	0.17	0.21
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.5720e-003	0.00
tblFleetMix	MCY	5.7600e-003	5.8390e-003
tblFleetMix	MDV	0.11	0.14
tblFleetMix	MH	7.5900e-004	8.1600e-004
tblFleetMix	MHD	0.02	0.00

tblFleetMix	OBUS	1.6120e-003	0.00
tblFleetMix	SBUS	9.1200e-004	0.00
tblFleetMix	UBUS	1.6100e-003	0.00
tblLandUse	LandUseSquareFeet	11,200.00	11,197.00
tblVehicleTrips	CC_TL	7.30	0.50
tblVehicleTrips	CNW_TL	7.30	0.50
tblVehicleTrips	CW_TL	9.50	0.50
tblVehicleTrips	DV_TP	21.00	0.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	1,448.33	455.53
tblVehicleTrips	ST_TR	722.03	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	1,182.08	455.53
tblVehicleTrips	SU_TR	542.72	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	845.60	455.53
tblVehicleTrips	WD_TR	496.12	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4001	3.8268	3.2357	9.7400e-003	0.5368	0.1304	0.6673	0.1894	0.1219	0.3113	0.0000	879.3769	879.3769	0.1245	0.0000	882.4880
2023	0.3760	1.3202	1.3694	4.3200e-003	0.1619	0.0421	0.2040	0.0439	0.0395	0.0834	0.0000	391.4142	391.4142	0.0441	0.0000	392.5178
Maximum	**0.4001**	**3.8268**	**3.2357**	**9.7400e-003**	**0.5368**	**0.1304**	**0.6673**	**0.1894**	**0.1219**	**0.3113**	**0.0000**	**879.3769**	**879.3769**	**0.1245**	**0.0000**	**882.4880**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4001	3.8268	3.2357	9.7400e-003	0.4156	0.1304	0.5461	0.1324	0.1219	0.2544	0.0000	879.3765	879.3765	0.1245	0.0000	882.4876
2023	0.3760	1.3202	1.3694	4.3200e-003	0.1619	0.0421	0.2040	0.0439	0.0395	0.0834	0.0000	391.4140	391.4140	0.0441	0.0000	392.5176
Maximum	**0.4001**	**3.8268**	**3.2357**	**9.7400e-003**	**0.4156**	**0.1304**	**0.5461**	**0.1324**	**0.1219**	**0.2544**	**0.0000**	**879.3765**	**879.3765**	**0.1245**	**0.0000**	**882.4876**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**17.35**	**0.00**	**13.92**	**24.42**	**0.00**	**14.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Taft Road Pilot Truck Center - Primary Vehicle Operation - Kern-San Joaquin County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-3-2022	4-2-2022	1.1739	1.1739
2	4-3-2022	7-2-2022	1.0132	1.0132
3	7-3-2022	10-2-2022	1.0244	1.0244
4	10-3-2022	1-2-2023	1.0244	1.0244
5	1-3-2023	4-2-2023	0.8629	0.8629
6	4-3-2023	7-2-2023	0.7109	0.7109
7	7-3-2023	9-30-2023	0.0958	0.0958
		Highest	1.1739	1.1739

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Energy	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	158.0195	158.0195	5.5600e-003	2.0200e-003	158.7617
Mobile	0.8475	0.2829	3.7342	4.6600e-003	0.3459	6.6400e-003	0.3525	0.0918	6.1100e-003	0.0979	0.0000	417.7278	417.7278	0.0215	0.0000	418.2651
Waste						0.0000	0.0000		0.0000	0.0000	25.5484	0.0000	25.5484	1.5099	0.0000	63.2952
Water						0.0000	0.0000		0.0000	0.0000	1.0056	6.3734	7.3790	0.1036	2.5000e-003	10.7127
Total	**1.0282**	**0.3388**	**3.7829**	**5.0000e-003**	**0.3459**	**0.0109**	**0.3568**	**0.0918**	**0.0104**	**0.1022**	**26.5540**	**582.1242**	**608.6782**	**1.6405**	**4.5200e-003**	**651.0385**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Energy	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	158.0195	158.0195	5.5600e-003	2.0200e-003	158.7617
Mobile	0.8475	0.2829	3.7342	4.6600e-003	0.3459	6.6400e-003	0.3525	0.0918	6.1100e-003	0.0979	0.0000	417.7278	417.7278	0.0215	0.0000	418.2651
Waste						0.0000	0.0000		0.0000	0.0000	25.5484	0.0000	25.5484	1.5099	0.0000	63.2952
Water						0.0000	0.0000		0.0000	0.0000	0.8045	5.0987	5.9032	0.0829	2.0000e-003	8.5702
Total	**1.0282**	**0.3388**	**3.7829**	**5.0000e-003**	**0.3459**	**0.0109**	**0.3568**	**0.0918**	**0.0104**	**0.1022**	**26.3529**	**580.8495**	**607.2024**	**1.6198**	**4.0200e-003**	**648.8959**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.76**	**0.22**	**0.24**	**1.26**	**11.06**	**0.33**

3.0 Construction Detail

Construction Phase

Taft Road Pilot Truck Center - Primary Vehicle Operation - Kern-San Joaquin County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/25/2022	5	30	
4	Building Construction	Building Construction	3/26/2022	5/19/2023	5	300	
5	Paving	Paving	5/20/2023	6/16/2023	5	20	
6	Architectural Coating	Architectural Coating	6/17/2023	7/14/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 15.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 42,416; Non-Residential Outdoor: 14,139; Striped Parking Area: 40,310 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Taft Road Pilot Truck Center - Primary Vehicle Operation - Kern-San Joaquin County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	292.00	115.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.1000e-004	3.2200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0309	1.0309	2.0000e-005	0.0000	1.0315
Total	**4.9000e-004**	**3.1000e-004**	**3.2200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0309**	**1.0309**	**2.0000e-005**	**0.0000**	**1.0315**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.1000e-004	3.2200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0309	1.0309	2.0000e-005	0.0000	1.0315
Total	**4.9000e-004**	**3.1000e-004**	**3.2200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0309**	**1.0309**	**2.0000e-005**	**0.0000**	**1.0315**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0903**	**8.0600e-003**	**0.0984**	**0.0497**	**7.4200e-003**	**0.0571**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.9000e-004	1.9300e-003	1.0000e-005	7.3000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6186	0.6186	1.0000e-005	0.0000	0.6189
Total	**3.0000e-004**	**1.9000e-004**	**1.9300e-003**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6186**	**0.6186**	**1.0000e-005**	**0.0000**	**0.6189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0407**	**8.0600e-003**	**0.0487**	**0.0223**	**7.4200e-003**	**0.0298**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.9000e-004	1.9300e-003	1.0000e-005	7.3000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6186	0.6186	1.0000e-005	0.0000	0.6189
Total	**3.0000e-004**	**1.9000e-004**	**1.9300e-003**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6186**	**0.6186**	**1.0000e-005**	**0.0000**	**0.6189**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8019	81.8019	0.0265	0.0000	82.4633
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.1301**	**0.0245**	**0.1546**	**0.0540**	**0.0226**	**0.0765**	**0.0000**	**81.8019**	**81.8019**	**0.0265**	**0.0000**	**82.4633**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.2000e-004	6.4400e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	2.0618	2.0618	5.0000e-005	0.0000	2.0630
Total	**9.8000e-004**	**6.2000e-004**	**6.4400e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4300e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**2.0618**	**2.0618**	**5.0000e-005**	**0.0000**	**2.0630**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0586	0.0000	0.0586	0.0243	0.0000	0.0243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8018	81.8018	0.0265	0.0000	82.4632
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.0586**	**0.0245**	**0.0831**	**0.0243**	**0.0226**	**0.0468**	**0.0000**	**81.8018**	**81.8018**	**0.0265**	**0.0000**	**82.4632**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.2000e-004	6.4400e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	2.0618	2.0618	5.0000e-005	0.0000	2.0630
Total	**9.8000e-004**	**6.2000e-004**	**6.4400e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4300e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**2.0618**	**2.0618**	**5.0000e-005**	**0.0000**	**2.0630**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7252	231.7252	0.0555	0.0000	233.1131
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7252**	**231.7252**	**0.0555**	**0.0000**	**233.1131**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0353	1.1987	0.2209	3.2700e-003	0.0768	2.9300e-003	0.0797	0.0222	2.8000e-003	0.0250	0.0000	310.7424	310.7424	0.0230	0.0000	311.3181
Worker	0.0958	0.0602	0.6269	2.2200e-003	0.2353	1.5700e-003	0.2369	0.0625	1.4400e-003	0.0640	0.0000	200.6861	200.6861	4.4100e-003	0.0000	200.7964
Total	**0.1311**	**1.2589**	**0.8478**	**5.4900e-003**	**0.3121**	**4.5000e-003**	**0.3166**	**0.0847**	**4.2400e-003**	**0.0889**	**0.0000**	**511.4285**	**511.4285**	**0.0274**	**0.0000**	**512.1145**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7250	231.7250	0.0555	0.0000	233.1128
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7250**	**231.7250**	**0.0555**	**0.0000**	**233.1128**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0353	1.1987	0.2209	3.2700e-003	0.0768	2.9300e-003	0.0797	0.0222	2.8000e-003	0.0250	0.0000	310.7424	310.7424	0.0230	0.0000	311.3181
Worker	0.0958	0.0602	0.6269	2.2200e-003	0.2353	1.5700e-003	0.2369	0.0625	1.4400e-003	0.0640	0.0000	200.6861	200.6861	4.4100e-003	0.0000	200.7964
Total	**0.1311**	**1.2589**	**0.8478**	**5.4900e-003**	**0.3121**	**4.5000e-003**	**0.3166**	**0.0847**	**4.2400e-003**	**0.0889**	**0.0000**	**511.4285**	**511.4285**	**0.0274**	**0.0000**	**512.1145**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0786	0.7192	0.8122	1.3500e-003		0.0350	0.0350		0.0329	0.0329	0.0000	115.9024	115.9024	0.0276	0.0000	116.5917
Total	**0.0786**	**0.7192**	**0.8122**	**1.3500e-003**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**115.9024**	**115.9024**	**0.0276**	**0.0000**	**116.5917**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.4577	0.0922	1.6000e-003	0.0384	4.5000e-004	0.0388	0.0111	4.3000e-004	0.0115	0.0000	151.5346	151.5346	7.8800e-003	0.0000	151.7315
Worker	0.0446	0.0270	0.2867	1.0700e-003	0.1177	7.6000e-004	0.1184	0.0313	7.0000e-004	0.0320	0.0000	96.5687	96.5687	1.9700e-003	0.0000	96.6179
Total	**0.0570**	**0.4847**	**0.3789**	**2.6700e-003**	**0.1560**	**1.2100e-003**	**0.1573**	**0.0423**	**1.1300e-003**	**0.0435**	**0.0000**	**248.1033**	**248.1033**	**9.8500e-003**	**0.0000**	**248.3494**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0786	0.7192	0.8122	1.3500e-003		0.0350	0.0350		0.0329	0.0329	0.0000	115.9022	115.9022	0.0276	0.0000	116.5915
Total	**0.0786**	**0.7192**	**0.8122**	**1.3500e-003**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**115.9022**	**115.9022**	**0.0276**	**0.0000**	**116.5915**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.4577	0.0922	1.6000e-003	0.0384	4.5000e-004	0.0388	0.0111	4.3000e-004	0.0115	0.0000	151.5346	151.5346	7.8800e-003	0.0000	151.7315
Worker	0.0446	0.0270	0.2867	1.0700e-003	0.1177	7.6000e-004	0.1184	0.0313	7.0000e-004	0.0320	0.0000	96.5687	96.5687	1.9700e-003	0.0000	96.6179
Total	**0.0570**	**0.4847**	**0.3789**	**2.6700e-003**	**0.1560**	**1.2100e-003**	**0.1573**	**0.0423**	**1.1300e-003**	**0.0435**	**0.0000**	**248.1033**	**248.1033**	**9.8500e-003**	**0.0000**	**248.3494**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0269	20.0269	6.4800e-003	0.0000	20.1888
Paving	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0305**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0269**	**20.0269**	**6.4800e-003**	**0.0000**	**20.1888**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	2.8000e-004	2.9500e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9921	0.9921	2.0000e-005	0.0000	0.9927
Total	**4.6000e-004**	**2.8000e-004**	**2.9500e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9921**	**0.9921**	**2.0000e-005**	**0.0000**	**0.9927**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0268	20.0268	6.4800e-003	0.0000	20.1888
Paving	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0305**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0268**	**20.0268**	**6.4800e-003**	**0.0000**	**20.1888**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	2.8000e-004	2.9500e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9921	0.9921	2.0000e-005	0.0000	0.9927
Total	**4.6000e-004**	**2.8000e-004**	**2.9500e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9921**	**0.9921**	**2.0000e-005**	**0.0000**	**0.9927**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.2076**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.0700e-003	0.0114	4.0000e-005	4.6700e-003	3.0000e-005	4.7000e-003	1.2400e-003	3.0000e-005	1.2700e-003	0.0000	3.8363	3.8363	8.0000e-005	0.0000	3.8382
Total	**1.7700e-003**	**1.0700e-003**	**0.0114**	**4.0000e-005**	**4.6700e-003**	**3.0000e-005**	**4.7000e-003**	**1.2400e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.8363**	**3.8363**	**8.0000e-005**	**0.0000**	**3.8382**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.2076**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.0700e-003	0.0114	4.0000e-005	4.6700e-003	3.0000e-005	4.7000e-003	1.2400e-003	3.0000e-005	1.2700e-003	0.0000	3.8363	3.8363	8.0000e-005	0.0000	3.8382
Total	**1.7700e-003**	**1.0700e-003**	**0.0114**	**4.0000e-005**	**4.6700e-003**	**3.0000e-005**	**4.7000e-003**	**1.2400e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.8363**	**3.8363**	**8.0000e-005**	**0.0000**	**3.8382**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8475	0.2829	3.7342	4.6600e-003	0.3459	6.6400e-003	0.3525	0.0918	6.1100e-003	0.0979	0.0000	417.7278	417.7278	0.0215	0.0000	418.2651
Unmitigated	0.8475	0.2829	3.7342	4.6600e-003	0.3459	6.6400e-003	0.3525	0.0918	6.1100e-003	0.0979	0.0000	417.7278	417.7278	0.0215	0.0000	418.2651

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market With Gas Pumps	5,101.94	5,101.94	5101.94	928,552	928,552
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	5,101.94	5,101.94	5,101.94	928,552	928,552

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	9.50	7.30	7.30	33.00	48.00	19.00	21	51	28
Convenience Market With Gas	0.50	0.50	0.50	0.80	80.20	19.00	100	0	0
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Convenience Market With Gas Pumps	0.600851	0.037764	0.210492	0.144240	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.005839	0.000000	0.000816
Fast Food Restaurant with Drive Thru	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Other Asphalt Surfaces	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Parking Lot	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.2011	97.2011	4.4000e-003	9.1000e-004	97.5820
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.2011	97.2011	4.4000e-003	9.1000e-004	97.5820
NaturalGas Mitigated	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	60.8183	60.8183	1.1700e-003	1.1200e-003	61.1797
NaturalGas Unmitigated	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	60.8183	60.8183	1.1700e-003	1.1200e-003	61.1797

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	283415	1.5300e-003	0.0139	0.0117	8.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	15.1241	15.1241	2.9000e-004	2.8000e-004	15.2140
Convenience Market With Gas Pumps	119808	6.5000e-004	5.8700e-003	4.9300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.3934	6.3934	1.2000e-004	1.2000e-004	6.4314
Fast Food Restaurant with Drive Thru	736470	3.9700e-003	0.0361	0.0303	2.2000e-004		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	39.3008	39.3008	7.5000e-004	7.2000e-004	39.5344
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.1500e-003**	**0.0559**	**0.0469**	**3.4000e-004**		**4.2500e-003**	**4.2500e-003**		**4.2500e-003**	**4.2500e-003**	**0.0000**	**60.8183**	**60.8183**	**1.1600e-003**	**1.1200e-003**	**61.1798**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	283415	1.5300e-003	0.0139	0.0117	8.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	15.1241	15.1241	2.9000e-004	2.8000e-004	15.2140
Convenience Market With Gas Pumps	119808	6.5000e-004	5.8700e-003	4.9300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.3934	6.3934	1.2000e-004	1.2000e-004	6.4314
Fast Food Restaurant with Drive Thru	736470	3.9700e-003	0.0361	0.0303	2.2000e-004		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	39.3008	39.3008	7.5000e-004	7.2000e-004	39.5344
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.1500e-003**	**0.0559**	**0.0469**	**3.4000e-004**		**4.2500e-003**	**4.2500e-003**		**4.2500e-003**	**4.2500e-003**	**0.0000**	**60.8183**	**60.8183**	**1.1600e-003**	**1.1200e-003**	**61.1798**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	119776	34.8441	1.5800e-003	3.3000e-004	34.9806
Convenience Market With Gas Pumps	91255.5	26.5473	1.2000e-003	2.5000e-004	26.6513
Fast Food Restaurant with Drive Thru	101395	29.4970	1.3300e-003	2.8000e-004	29.6126
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	21700	6.3128	2.9000e-004	6.0000e-005	6.3375
Total		**97.2011**	**4.4000e-003**	**9.2000e-004**	**97.5820**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	119776	34.8441	1.5800e-003	3.3000e-004	34.9806
Convenience Market With Gas Pumps	91255.5	26.5473	1.2000e-003	2.5000e-004	26.6513
Fast Food Restaurant with Drive Thru	101395	29.4970	1.3300e-003	2.8000e-004	29.6126
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	21700	6.3128	2.9000e-004	6.0000e-005	6.3375
Total		**97.2011**	**4.4000e-003**	**9.2000e-004**	**97.5820**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Unmitigated	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0206					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1539					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Total	**0.1746**	**2.0000e-005**	**1.8100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.5300e-003**	**3.5300e-003**	**1.0000e-005**	**0.0000**	**3.7600e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0206					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1539					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Total	**0.1746**	**2.0000e-005**	**1.8100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.5300e-003**	**3.5300e-003**	**1.0000e-005**	**0.0000**	**3.7600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	5.9032	0.0829	2.0000e-003	8.5702
Unmitigated	7.3790	0.1036	2.5000e-003	10.7127

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	1.27762 / 0.783058	3.2138	0.0418	1.0100e-003	4.5585
Convenience Market With Gas Pumps	0.829612 / 0.508472	2.0868	0.0271	6.6000e-004	2.9600
Fast Food Restaurant with Drive Thru	1.06237 / 0.0678107	2.0784	0.0347	8.3000e-004	3.1942
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**7.3790**	**0.1036**	**2.5000e-003**	**10.7127**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	1.0221 / 0.626447	2.5710	0.0334	8.1000e-004	3.6468
Convenience Market With Gas Pumps	0.66369 / 0.406778	1.6695	0.0217	5.2000e-004	2.3680
Fast Food Restaurant with Drive Thru	0.849894 / 0.0542486	1.6627	0.0278	6.7000e-004	2.5554
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**5.9032**	**0.0829**	**2.0000e-003**	**8.5702**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	25.5484	1.5099	0.0000	63.2952
Unmitigated	25.5484	1.5099	0.0000	63.2952

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	51.88	10.5312	0.6224	0.0000	26.0905
Convenience Market With Gas Pumps	33.66	6.8327	0.4038	0.0000	16.9277
Fast Food Restaurant with Drive Thru	40.32	8.1846	0.4837	0.0000	20.2770
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**25.5485**	**1.5099**	**0.0000**	**63.2952**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	51.88	10.5312	0.6224	0.0000	26.0905
Convenience Market With Gas Pumps	33.66	6.8327	0.4038	0.0000	16.9277
Fast Food Restaurant with Drive Thru	40.32	8.1846	0.4837	0.0000	20.2770
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**25.5485**	**1.5099**	**0.0000**	**63.2952**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Diverted Link – Annual

Taft Road Pilot Truck Center - Diverted Link

Kern-San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	14.00	Acre	14.00	609,840.00	0
Parking Lot	155.00	Space	1.39	62,000.00	0
Fast Food Restaurant with Drive Thru	3.50	1000sqft	0.08	3,500.00	0
Automobile Care Center	13.58	1000sqft	0.31	13,580.00	0
Convenience Market With Gas Pumps	11.20	1000sqft	0.26	11,197.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Project details based on information from applicant

Architectural Coating - Arch. Coating based on non-flat paint requirement of 50 g/L VOC

Vehicle Trips - Trip rate adjusted for primary vehicle emissions.

Area Coating - Arch. coating emissions adjust to refelct non-flat and flat 50 g/L VOC

Construction Off-road Equipment Mitigation -

Area Mitigation -

Water Mitigation -

Fleet Mix - Fleet mix adjusted to reflect car/light truck operation at convenience store

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	50
tblAreaCoating	Area_EF_Nonresidential_Interior	150	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblFleetMix	HHD	0.15	0.00
tblFleetMix	LDA	0.49	0.60
tblFleetMix	LDT1	0.03	0.04
tblFleetMix	LDT2	0.17	0.21
tblFleetMix	LHD1	0.02	0.00
tblFleetMix	LHD2	5.5720e-003	0.00
tblFleetMix	MCY	5.7600e-003	5.8390e-003
tblFleetMix	MDV	0.11	0.14
tblFleetMix	MH	7.5900e-004	8.1600e-004
tblFleetMix	MHD	0.02	0.00

tblFleetMix	OBUS	1.6120e-003	0.00
tblFleetMix	SBUS	9.1200e-004	0.00
tblFleetMix	UBUS	1.6100e-003	0.00
tblLandUse	LandUseSquareFeet	11,200.00	11,197.00
tblVehicleTrips	CC_TL	7.30	2.00
tblVehicleTrips	CNW_TL	7.30	2.00
tblVehicleTrips	CW_TL	9.50	2.00
tblVehicleTrips	DV_TP	21.00	100.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PR_TP	14.00	0.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	1,448.33	455.53
tblVehicleTrips	ST_TR	722.03	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	1,182.08	455.53
tblVehicleTrips	SU_TR	542.72	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	845.60	455.53
tblVehicleTrips	WD_TR	496.12	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4001	3.8268	3.2357	9.7400e-003	0.5368	0.1304	0.6673	0.1894	0.1219	0.3113	0.0000	879.3769	879.3769	0.1245	0.0000	882.4880
2023	0.3760	1.3202	1.3694	4.3200e-003	0.1619	0.0421	0.2040	0.0439	0.0395	0.0834	0.0000	391.4142	391.4142	0.0441	0.0000	392.5178
Maximum	**0.4001**	**3.8268**	**3.2357**	**9.7400e-003**	**0.5368**	**0.1304**	**0.6673**	**0.1894**	**0.1219**	**0.3113**	**0.0000**	**879.3769**	**879.3769**	**0.1245**	**0.0000**	**882.4880**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4001	3.8268	3.2357	9.7400e-003	0.4156	0.1304	0.5461	0.1324	0.1219	0.2544	0.0000	879.3765	879.3765	0.1245	0.0000	882.4876
2023	0.3760	1.3202	1.3694	4.3200e-003	0.1619	0.0421	0.2040	0.0439	0.0395	0.0834	0.0000	391.4140	391.4140	0.0441	0.0000	392.5176
Maximum	**0.4001**	**3.8268**	**3.2357**	**9.7400e-003**	**0.4156**	**0.1304**	**0.5461**	**0.1324**	**0.1219**	**0.2544**	**0.0000**	**879.3765**	**879.3765**	**0.1245**	**0.0000**	**882.4876**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**17.35**	**0.00**	**13.92**	**24.42**	**0.00**	**14.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-3-2022	4-2-2022	1.1739	1.1739
2	4-3-2022	7-2-2022	1.0132	1.0132
3	7-3-2022	10-2-2022	1.0244	1.0244
4	10-3-2022	1-2-2023	1.0244	1.0244
5	1-3-2023	4-2-2023	0.8629	0.8629
6	4-3-2023	7-2-2023	0.7109	0.7109
7	7-3-2023	9-30-2023	0.0958	0.0958
		Highest	1.1739	1.1739

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Energy	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	158.0195	158.0195	5.5600e-003	2.0200e-003	158.7617
Mobile	0.8475	0.2829	3.7342	4.6600e-003	0.3459	6.6400e-003	0.3525	0.0918	6.1100e-003	0.0979	0.0000	417.7278	417.7278	0.0215	0.0000	418.2651
Waste						0.0000	0.0000		0.0000	0.0000	25.5484	0.0000	25.5484	1.5099	0.0000	63.2952
Water						0.0000	0.0000		0.0000	0.0000	1.0056	6.3734	7.3790	0.1036	2.5000e-003	10.7127
Total	**1.0282**	**0.3388**	**3.7829**	**5.0000e-003**	**0.3459**	**0.0109**	**0.3568**	**0.0918**	**0.0104**	**0.1022**	**26.5540**	**582.1242**	**608.6782**	**1.6405**	**4.5200e-003**	**651.0385**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Energy	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	158.0195	158.0195	5.5600e-003	2.0200e-003	158.7617
Mobile	0.8475	0.2829	3.7342	4.6600e-003	0.3459	6.6400e-003	0.3525	0.0918	6.1100e-003	0.0979	0.0000	417.7278	417.7278	0.0215	0.0000	418.2651
Waste						0.0000	0.0000		0.0000	0.0000	25.5484	0.0000	25.5484	1.5099	0.0000	63.2952
Water						0.0000	0.0000		0.0000	0.0000	0.8045	5.0987	5.9032	0.0829	2.0000e-003	8.5702
Total	**1.0282**	**0.3388**	**3.7829**	**5.0000e-003**	**0.3459**	**0.0109**	**0.3568**	**0.0918**	**0.0104**	**0.1022**	**26.3529**	**580.8495**	**607.2024**	**1.6198**	**4.0200e-003**	**648.8959**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.76**	**0.22**	**0.24**	**1.26**	**11.06**	**0.33**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/25/2022	5	30	
4	Building Construction	Building Construction	3/26/2022	5/19/2023	5	300	
5	Paving	Paving	5/20/2023	6/16/2023	5	20	
6	Architectural Coating	Architectural Coating	6/17/2023	7/14/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 15.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 42,416; Non-Residential Outdoor: 14,139; Striped Parking Area: 40,310 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Taft Road Pilot Truck Center - Diverted Link - Kern-San Joaquin County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	292.00	115.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.1000e-004	3.2200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0309	1.0309	2.0000e-005	0.0000	1.0315
Total	**4.9000e-004**	**3.1000e-004**	**3.2200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0309**	**1.0309**	**2.0000e-005**	**0.0000**	**1.0315**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.1000e-004	3.2200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0309	1.0309	2.0000e-005	0.0000	1.0315
Total	**4.9000e-004**	**3.1000e-004**	**3.2200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0309**	**1.0309**	**2.0000e-005**	**0.0000**	**1.0315**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0903**	**8.0600e-003**	**0.0984**	**0.0497**	**7.4200e-003**	**0.0571**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.9000e-004	1.9300e-003	1.0000e-005	7.3000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6186	0.6186	1.0000e-005	0.0000	0.6189
Total	**3.0000e-004**	**1.9000e-004**	**1.9300e-003**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6186**	**0.6186**	**1.0000e-005**	**0.0000**	**0.6189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0407**	**8.0600e-003**	**0.0487**	**0.0223**	**7.4200e-003**	**0.0298**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.9000e-004	1.9300e-003	1.0000e-005	7.3000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6186	0.6186	1.0000e-005	0.0000	0.6189
Total	**3.0000e-004**	**1.9000e-004**	**1.9300e-003**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6186**	**0.6186**	**1.0000e-005**	**0.0000**	**0.6189**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8019	81.8019	0.0265	0.0000	82.4633
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.1301**	**0.0245**	**0.1546**	**0.0540**	**0.0226**	**0.0765**	**0.0000**	**81.8019**	**81.8019**	**0.0265**	**0.0000**	**82.4633**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.2000e-004	6.4400e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	2.0618	2.0618	5.0000e-005	0.0000	2.0630
Total	**9.8000e-004**	**6.2000e-004**	**6.4400e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4300e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**2.0618**	**2.0618**	**5.0000e-005**	**0.0000**	**2.0630**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0586	0.0000	0.0586	0.0243	0.0000	0.0243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8018	81.8018	0.0265	0.0000	82.4632
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.0586**	**0.0245**	**0.0831**	**0.0243**	**0.0226**	**0.0468**	**0.0000**	**81.8018**	**81.8018**	**0.0265**	**0.0000**	**82.4632**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.2000e-004	6.4400e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	2.0618	2.0618	5.0000e-005	0.0000	2.0630
Total	**9.8000e-004**	**6.2000e-004**	**6.4400e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4300e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**2.0618**	**2.0618**	**5.0000e-005**	**0.0000**	**2.0630**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7252	231.7252	0.0555	0.0000	233.1131
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7252**	**231.7252**	**0.0555**	**0.0000**	**233.1131**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0353	1.1987	0.2209	3.2700e-003	0.0768	2.9300e-003	0.0797	0.0222	2.8000e-003	0.0250	0.0000	310.7424	310.7424	0.0230	0.0000	311.3181
Worker	0.0958	0.0602	0.6269	2.2200e-003	0.2353	1.5700e-003	0.2369	0.0625	1.4400e-003	0.0640	0.0000	200.6861	200.6861	4.4100e-003	0.0000	200.7964
Total	**0.1311**	**1.2589**	**0.8478**	**5.4900e-003**	**0.3121**	**4.5000e-003**	**0.3166**	**0.0847**	**4.2400e-003**	**0.0889**	**0.0000**	**511.4285**	**511.4285**	**0.0274**	**0.0000**	**512.1145**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7250	231.7250	0.0555	0.0000	233.1128
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7250**	**231.7250**	**0.0555**	**0.0000**	**233.1128**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0353	1.1987	0.2209	3.2700e-003	0.0768	2.9300e-003	0.0797	0.0222	2.8000e-003	0.0250	0.0000	310.7424	310.7424	0.0230	0.0000	311.3181
Worker	0.0958	0.0602	0.6269	2.2200e-003	0.2353	1.5700e-003	0.2369	0.0625	1.4400e-003	0.0640	0.0000	200.6861	200.6861	4.4100e-003	0.0000	200.7964
Total	**0.1311**	**1.2589**	**0.8478**	**5.4900e-003**	**0.3121**	**4.5000e-003**	**0.3166**	**0.0847**	**4.2400e-003**	**0.0889**	**0.0000**	**511.4285**	**511.4285**	**0.0274**	**0.0000**	**512.1145**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0786	0.7192	0.8122	1.3500e-003		0.0350	0.0350		0.0329	0.0329	0.0000	115.9024	115.9024	0.0276	0.0000	116.5917
Total	**0.0786**	**0.7192**	**0.8122**	**1.3500e-003**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**115.9024**	**115.9024**	**0.0276**	**0.0000**	**116.5917**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.4577	0.0922	1.6000e-003	0.0384	4.5000e-004	0.0388	0.0111	4.3000e-004	0.0115	0.0000	151.5346	151.5346	7.8800e-003	0.0000	151.7315
Worker	0.0446	0.0270	0.2867	1.0700e-003	0.1177	7.6000e-004	0.1184	0.0313	7.0000e-004	0.0320	0.0000	96.5687	96.5687	1.9700e-003	0.0000	96.6179
Total	**0.0570**	**0.4847**	**0.3789**	**2.6700e-003**	**0.1560**	**1.2100e-003**	**0.1573**	**0.0423**	**1.1300e-003**	**0.0435**	**0.0000**	**248.1033**	**248.1033**	**9.8500e-003**	**0.0000**	**248.3494**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0786	0.7192	0.8122	1.3500e-003		0.0350	0.0350		0.0329	0.0329	0.0000	115.9022	115.9022	0.0276	0.0000	116.5915
Total	**0.0786**	**0.7192**	**0.8122**	**1.3500e-003**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**115.9022**	**115.9022**	**0.0276**	**0.0000**	**116.5915**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.4577	0.0922	1.6000e-003	0.0384	4.5000e-004	0.0388	0.0111	4.3000e-004	0.0115	0.0000	151.5346	151.5346	7.8800e-003	0.0000	151.7315
Worker	0.0446	0.0270	0.2867	1.0700e-003	0.1177	7.6000e-004	0.1184	0.0313	7.0000e-004	0.0320	0.0000	96.5687	96.5687	1.9700e-003	0.0000	96.6179
Total	**0.0570**	**0.4847**	**0.3789**	**2.6700e-003**	**0.1560**	**1.2100e-003**	**0.1573**	**0.0423**	**1.1300e-003**	**0.0435**	**0.0000**	**248.1033**	**248.1033**	**9.8500e-003**	**0.0000**	**248.3494**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0269	20.0269	6.4800e-003	0.0000	20.1888
Paving	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0305**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0269**	**20.0269**	**6.4800e-003**	**0.0000**	**20.1888**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	2.8000e-004	2.9500e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9921	0.9921	2.0000e-005	0.0000	0.9927
Total	**4.6000e-004**	**2.8000e-004**	**2.9500e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9921**	**0.9921**	**2.0000e-005**	**0.0000**	**0.9927**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0268	20.0268	6.4800e-003	0.0000	20.1888
Paving	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0305**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0268**	**20.0268**	**6.4800e-003**	**0.0000**	**20.1888**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	2.8000e-004	2.9500e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9921	0.9921	2.0000e-005	0.0000	0.9927
Total	**4.6000e-004**	**2.8000e-004**	**2.9500e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9921**	**0.9921**	**2.0000e-005**	**0.0000**	**0.9927**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.2076**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.0700e-003	0.0114	4.0000e-005	4.6700e-003	3.0000e-005	4.7000e-003	1.2400e-003	3.0000e-005	1.2700e-003	0.0000	3.8363	3.8363	8.0000e-005	0.0000	3.8382
Total	**1.7700e-003**	**1.0700e-003**	**0.0114**	**4.0000e-005**	**4.6700e-003**	**3.0000e-005**	**4.7000e-003**	**1.2400e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.8363**	**3.8363**	**8.0000e-005**	**0.0000**	**3.8382**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.2076**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.0700e-003	0.0114	4.0000e-005	4.6700e-003	3.0000e-005	4.7000e-003	1.2400e-003	3.0000e-005	1.2700e-003	0.0000	3.8363	3.8363	8.0000e-005	0.0000	3.8382
Total	**1.7700e-003**	**1.0700e-003**	**0.0114**	**4.0000e-005**	**4.6700e-003**	**3.0000e-005**	**4.7000e-003**	**1.2400e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.8363**	**3.8363**	**8.0000e-005**	**0.0000**	**3.8382**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.8475	0.2829	3.7342	4.6600e-003	0.3459	6.6400e-003	0.3525	0.0918	6.1100e-003	0.0979	0.0000	417.7278	417.7278	0.0215	0.0000	418.2651
Unmitigated	0.8475	0.2829	3.7342	4.6600e-003	0.3459	6.6400e-003	0.3525	0.0918	6.1100e-003	0.0979	0.0000	417.7278	417.7278	0.0215	0.0000	418.2651

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market With Gas Pumps	5,101.94	5,101.94	5101.94	928,552	928,552
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	5,101.94	5,101.94	5,101.94	928,552	928,552

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	9.50	7.30	7.30	33.00	48.00	19.00	21	51	28
Convenience Market With Gas	2.00	2.00	2.00	0.80	80.20	19.00	0	100	0
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Convenience Market With Gas Pumps	0.600851	0.037764	0.210492	0.144240	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.005839	0.000000	0.000816
Fast Food Restaurant with Drive Thru	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Other Asphalt Surfaces	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Parking Lot	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.2011	97.2011	4.4000e-003	9.1000e-004	97.5820
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.2011	97.2011	4.4000e-003	9.1000e-004	97.5820
NaturalGas Mitigated	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	60.8183	60.8183	1.1700e-003	1.1200e-003	61.1797
NaturalGas Unmitigated	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	60.8183	60.8183	1.1700e-003	1.1200e-003	61.1797

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	283415	1.5300e-003	0.0139	0.0117	8.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	15.1241	15.1241	2.9000e-004	2.8000e-004	15.2140
Convenience Market With Gas Pumps	119808	6.5000e-004	5.8700e-003	4.9300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.3934	6.3934	1.2000e-004	1.2000e-004	6.4314
Fast Food Restaurant with Drive Thru	736470	3.9700e-003	0.0361	0.0303	2.2000e-004		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	39.3008	39.3008	7.5000e-004	7.2000e-004	39.5344
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.1500e-003**	**0.0559**	**0.0469**	**3.4000e-004**		**4.2500e-003**	**4.2500e-003**		**4.2500e-003**	**4.2500e-003**	**0.0000**	**60.8183**	**60.8183**	**1.1600e-003**	**1.1200e-003**	**61.1798**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	283415	1.5300e-003	0.0139	0.0117	8.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	15.1241	15.1241	2.9000e-004	2.8000e-004	15.2140
Convenience Market With Gas Pumps	119808	6.5000e-004	5.8700e-003	4.9300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.3934	6.3934	1.2000e-004	1.2000e-004	6.4314
Fast Food Restaurant with Drive Thru	736470	3.9700e-003	0.0361	0.0303	2.2000e-004		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	39.3008	39.3008	7.5000e-004	7.2000e-004	39.5344
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.1500e-003**	**0.0559**	**0.0469**	**3.4000e-004**		**4.2500e-003**	**4.2500e-003**		**4.2500e-003**	**4.2500e-003**	**0.0000**	**60.8183**	**60.8183**	**1.1600e-003**	**1.1200e-003**	**61.1798**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	119776	34.8441	1.5800e-003	3.3000e-004	34.9806
Convenience Market With Gas Pumps	91255.5	26.5473	1.2000e-003	2.5000e-004	26.6513
Fast Food Restaurant with Drive Thru	101395	29.4970	1.3300e-003	2.8000e-004	29.6126
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	21700	6.3128	2.9000e-004	6.0000e-005	6.3375
Total		**97.2011**	**4.4000e-003**	**9.2000e-004**	**97.5820**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	119776	34.8441	1.5800e-003	3.3000e-004	34.9806
Convenience Market With Gas Pumps	91255.5	26.5473	1.2000e-003	2.5000e-004	26.6513
Fast Food Restaurant with Drive Thru	101395	29.4970	1.3300e-003	2.8000e-004	29.6126
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	21700	6.3128	2.9000e-004	6.0000e-005	6.3375
Total		**97.2011**	**4.4000e-003**	**9.2000e-004**	**97.5820**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Unmitigated	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0206					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1539					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Total	**0.1746**	**2.0000e-005**	**1.8100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.5300e-003**	**3.5300e-003**	**1.0000e-005**	**0.0000**	**3.7600e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0206					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1539					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Total	**0.1746**	**2.0000e-005**	**1.8100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.5300e-003**	**3.5300e-003**	**1.0000e-005**	**0.0000**	**3.7600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	5.9032	0.0829	2.0000e-003	8.5702
Unmitigated	7.3790	0.1036	2.5000e-003	10.7127

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	1.27762 / 0.783058	3.2138	0.0418	1.0100e-003	4.5585
Convenience Market With Gas Pumps	0.829612 / 0.508472	2.0868	0.0271	6.6000e-004	2.9600
Fast Food Restaurant with Drive Thru	1.06237 / 0.0678107	2.0784	0.0347	8.3000e-004	3.1942
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**7.3790**	**0.1036**	**2.5000e-003**	**10.7127**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	1.0221 / 0.626447	2.5710	0.0334	8.1000e-004	3.6468
Convenience Market With Gas Pumps	0.66369 / 0.406778	1.6695	0.0217	5.2000e-004	2.3680
Fast Food Restaurant with Drive Thru	0.849894 / 0.0542486	1.6627	0.0278	6.7000e-004	2.5554
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**5.9032**	**0.0829**	**2.0000e-003**	**8.5702**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	25.5484	1.5099	0.0000	63.2952
Unmitigated	25.5484	1.5099	0.0000	63.2952

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	51.88	10.5312	0.6224	0.0000	26.0905
Convenience Market With Gas Pumps	33.66	6.8327	0.4038	0.0000	16.9277
Fast Food Restaurant with Drive Thru	40.32	8.1846	0.4837	0.0000	20.2770
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**25.5485**	**1.5099**	**0.0000**	**63.2952**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	51.88	10.5312	0.6224	0.0000	26.0905
Convenience Market With Gas Pumps	33.66	6.8327	0.4038	0.0000	16.9277
Fast Food Restaurant with Drive Thru	40.32	8.1846	0.4837	0.0000	20.2770
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**25.5485**	**1.5099**	**0.0000**	**63.2952**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Truck Trips – Annual

Taft Road Pilot Truck Center - Heavy Truck

Kern-San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	14.00	Acre	14.00	609,840.00	0
Parking Lot	155.00	Space	1.39	62,000.00	0
Fast Food Restaurant with Drive Thru	3.50	1000sqft	0.08	3,500.00	0
Automobile Care Center	13.58	1000sqft	0.31	13,580.00	0
Convenience Market With Gas Pumps	11.20	1000sqft	0.26	11,197.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	32
Climate Zone	3			**Operational Year**	2023
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	641.35	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Taft Road Pilot Truck Center - Heavy Truck - Kern-San Joaquin County, Annual

Project Characteristics -

Land Use - Project details based on information from applicant

Architectural Coating - Arch. Coating based on non-flat paint requirement of 50 g/L VOC

Vehicle Trips - Trip rate adjusted for primary vehicle emissions.

Area Coating - Arch. coating emissions adjust to refelct non-flat and flat 50 g/L VOC

Construction Off-road Equipment Mitigation -

Area Mitigation -

Water Mitigation -

Fleet Mix - Fleet mix adjusted to reflect heavy truck operation only

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	150.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	150.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	150	50
tblAreaCoating	Area_EF_Nonresidential_Interior	150	50
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblFleetMix	HHD	0.15	0.67
tblFleetMix	LDA	0.49	0.00
tblFleetMix	LDT1	0.03	0.00
tblFleetMix	LDT2	0.17	0.00
tblFleetMix	LHD1	0.02	0.26
tblFleetMix	LHD2	5.5720e-003	0.05
tblFleetMix	MCY	5.7600e-003	0.00
tblFleetMix	MDV	0.11	0.00
tblFleetMix	MH	7.5900e-004	0.00
tblFleetMix	MHD	0.02	0.02

tblFleetMix	OBUS	1.6120e-003	0.00
tblFleetMix	SBUS	9.1200e-004	0.00
tblFleetMix	UBUS	1.6100e-003	0.00
tblLandUse	LandUseSquareFeet	11,200.00	11,197.00
tblVehicleTrips	CC_TL	7.30	1.00
tblVehicleTrips	CNW_TL	7.30	1.00
tblVehicleTrips	CW_TL	9.50	1.00
tblVehicleTrips	DV_TP	21.00	0.00
tblVehicleTrips	PB_TP	65.00	0.00
tblVehicleTrips	PR_TP	14.00	100.00
tblVehicleTrips	ST_TR	23.72	0.00
tblVehicleTrips	ST_TR	1,448.33	74.00
tblVehicleTrips	ST_TR	722.03	0.00
tblVehicleTrips	SU_TR	11.88	0.00
tblVehicleTrips	SU_TR	1,182.08	74.00
tblVehicleTrips	SU_TR	542.72	0.00
tblVehicleTrips	WD_TR	23.72	0.00
tblVehicleTrips	WD_TR	845.60	74.00
tblVehicleTrips	WD_TR	496.12	0.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4001	3.8268	3.2357	9.7400e-003	0.5368	0.1304	0.6673	0.1894	0.1219	0.3113	0.0000	879.3769	879.3769	0.1245	0.0000	882.4880
2023	0.3760	1.3202	1.3694	4.3200e-003	0.1619	0.0421	0.2040	0.0439	0.0395	0.0834	0.0000	391.4142	391.4142	0.0441	0.0000	392.5178
Maximum	**0.4001**	**3.8268**	**3.2357**	**9.7400e-003**	**0.5368**	**0.1304**	**0.6673**	**0.1894**	**0.1219**	**0.3113**	**0.0000**	**879.3769**	**879.3769**	**0.1245**	**0.0000**	**882.4880**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.4001	3.8268	3.2357	9.7400e-003	0.4156	0.1304	0.5461	0.1324	0.1219	0.2544	0.0000	879.3765	879.3765	0.1245	0.0000	882.4876
2023	0.3760	1.3202	1.3694	4.3200e-003	0.1619	0.0421	0.2040	0.0439	0.0395	0.0834	0.0000	391.4140	391.4140	0.0441	0.0000	392.5176
Maximum	**0.4001**	**3.8268**	**3.2357**	**9.7400e-003**	**0.4156**	**0.1304**	**0.5461**	**0.1324**	**0.1219**	**0.2544**	**0.0000**	**879.3765**	**879.3765**	**0.1245**	**0.0000**	**882.4876**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**17.35**	**0.00**	**13.92**	**24.42**	**0.00**	**14.44**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-3-2022	4-2-2022	1.1739	1.1739
2	4-3-2022	7-2-2022	1.0132	1.0132
3	7-3-2022	10-2-2022	1.0244	1.0244
4	10-3-2022	1-2-2023	1.0244	1.0244
5	1-3-2023	4-2-2023	0.8629	0.8629
6	4-3-2023	7-2-2023	0.7109	0.7109
7	7-3-2023	9-30-2023	0.0958	0.0958
		Highest	1.1739	1.1739

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Energy	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	158.0195	158.0195	5.5600e-003	2.0200e-003	158.7617
Mobile	0.2246	9.1519	1.1816	0.0174	0.1293	4.4500e-003	0.1338	0.0359	4.2600e-003	0.0402	0.0000	1,653.1056	1,653.1056	0.2515	0.0000	1,659.3921
Waste						0.0000	0.0000		0.0000	0.0000	25.5484	0.0000	25.5484	1.5099	0.0000	63.2952
Water						0.0000	0.0000		0.0000	0.0000	1.0056	6.3734	7.3790	0.1036	2.5000e-003	10.7127
Total	**0.4054**	**9.2078**	**1.2303**	**0.0177**	**0.1293**	**8.7100e-003**	**0.1380**	**0.0359**	**8.5200e-003**	**0.0445**	**26.5540**	**1,817.5020**	**1,844.0560**	**1.8705**	**4.5200e-003**	**1,892.1655**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Energy	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	158.0195	158.0195	5.5600e-003	2.0200e-003	158.7617
Mobile	0.2246	9.1519	1.1816	0.0174	0.1293	4.4500e-003	0.1338	0.0359	4.2600e-003	0.0402	0.0000	1,653.1056	1,653.1056	0.2515	0.0000	1,659.3921
Waste						0.0000	0.0000		0.0000	0.0000	25.5484	0.0000	25.5484	1.5099	0.0000	63.2952
Water						0.0000	0.0000		0.0000	0.0000	0.8045	5.0987	5.9032	0.0829	2.0000e-003	8.5702
Total	**0.4054**	**9.2078**	**1.2303**	**0.0177**	**0.1293**	**8.7100e-003**	**0.1380**	**0.0359**	**8.5200e-003**	**0.0445**	**26.3529**	**1,816.2273**	**1,842.5802**	**1.8498**	**4.0200e-003**	**1,890.0230**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.76**	**0.07**	**0.08**	**1.11**	**11.06**	**0.11**

3.0 Construction Detail

Construction Phase

Taft Road Pilot Truck Center - Heavy Truck - Kern-San Joaquin County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/3/2022	1/28/2022	5	20	
2	Site Preparation	Site Preparation	1/29/2022	2/11/2022	5	10	
3	Grading	Grading	2/12/2022	3/25/2022	5	30	
4	Building Construction	Building Construction	3/26/2022	5/19/2023	5	300	
5	Paving	Paving	5/20/2023	6/16/2023	5	20	
6	Architectural Coating	Architectural Coating	6/17/2023	7/14/2023	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 75

Acres of Paving: 15.39

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 42,416; Non-Residential Outdoor: 14,139; Striped Parking Area: 40,310 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Taft Road Pilot Truck Center - Heavy Truck - Kern-San Joaquin County, Annual

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	292.00	115.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	58.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

3.2 Demolition - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.1000e-004	3.2200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0309	1.0309	2.0000e-005	0.0000	1.0315
Total	**4.9000e-004**	**3.1000e-004**	**3.2200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0309**	**1.0309**	**2.0000e-005**	**0.0000**	**1.0315**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0264	0.2572	0.2059	3.9000e-004		0.0124	0.0124		0.0116	0.0116	0.0000	33.9902	33.9902	9.5500e-003	0.0000	34.2289
Total	**0.0264**	**0.2572**	**0.2059**	**3.9000e-004**		**0.0124**	**0.0124**		**0.0116**	**0.0116**	**0.0000**	**33.9902**	**33.9902**	**9.5500e-003**	**0.0000**	**34.2289**

3.2 Demolition - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.9000e-004	3.1000e-004	3.2200e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	1.0309	1.0309	2.0000e-005	0.0000	1.0315
Total	**4.9000e-004**	**3.1000e-004**	**3.2200e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**1.0309**	**1.0309**	**2.0000e-005**	**0.0000**	**1.0315**

3.3 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0903**	**8.0600e-003**	**0.0984**	**0.0497**	**7.4200e-003**	**0.0571**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.9000e-004	1.9300e-003	1.0000e-005	7.3000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6186	0.6186	1.0000e-005	0.0000	0.6189
Total	**3.0000e-004**	**1.9000e-004**	**1.9300e-003**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6186**	**0.6186**	**1.0000e-005**	**0.0000**	**0.6189**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0159	0.1654	0.0985	1.9000e-004		8.0600e-003	8.0600e-003		7.4200e-003	7.4200e-003	0.0000	16.7197	16.7197	5.4100e-003	0.0000	16.8549
Total	**0.0159**	**0.1654**	**0.0985**	**1.9000e-004**	**0.0407**	**8.0600e-003**	**0.0487**	**0.0223**	**7.4200e-003**	**0.0298**	**0.0000**	**16.7197**	**16.7197**	**5.4100e-003**	**0.0000**	**16.8549**

3.3 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-004	1.9000e-004	1.9300e-003	1.0000e-005	7.3000e-004	0.0000	7.3000e-004	1.9000e-004	0.0000	2.0000e-004	0.0000	0.6186	0.6186	1.0000e-005	0.0000	0.6189
Total	**3.0000e-004**	**1.9000e-004**	**1.9300e-003**	**1.0000e-005**	**7.3000e-004**	**0.0000**	**7.3000e-004**	**1.9000e-004**	**0.0000**	**2.0000e-004**	**0.0000**	**0.6186**	**0.6186**	**1.0000e-005**	**0.0000**	**0.6189**

3.4 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1301	0.0000	0.1301	0.0540	0.0000	0.0540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8019	81.8019	0.0265	0.0000	82.4633
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.1301**	**0.0245**	**0.1546**	**0.0540**	**0.0226**	**0.0765**	**0.0000**	**81.8019**	**81.8019**	**0.0265**	**0.0000**	**82.4633**

3.4 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.2000e-004	6.4400e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	2.0618	2.0618	5.0000e-005	0.0000	2.0630
Total	**9.8000e-004**	**6.2000e-004**	**6.4400e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4300e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**2.0618**	**2.0618**	**5.0000e-005**	**0.0000**	**2.0630**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0586	0.0000	0.0586	0.0243	0.0000	0.0243	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0544	0.5827	0.4356	9.3000e-004		0.0245	0.0245		0.0226	0.0226	0.0000	81.8018	81.8018	0.0265	0.0000	82.4632
Total	**0.0544**	**0.5827**	**0.4356**	**9.3000e-004**	**0.0586**	**0.0245**	**0.0831**	**0.0243**	**0.0226**	**0.0468**	**0.0000**	**81.8018**	**81.8018**	**0.0265**	**0.0000**	**82.4632**

3.4 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	9.8000e-004	6.2000e-004	6.4400e-003	2.0000e-005	2.4200e-003	2.0000e-005	2.4300e-003	6.4000e-004	1.0000e-005	6.6000e-004	0.0000	2.0618	2.0618	5.0000e-005	0.0000	2.0630
Total	**9.8000e-004**	**6.2000e-004**	**6.4400e-003**	**2.0000e-005**	**2.4200e-003**	**2.0000e-005**	**2.4300e-003**	**6.4000e-004**	**1.0000e-005**	**6.6000e-004**	**0.0000**	**2.0618**	**2.0618**	**5.0000e-005**	**0.0000**	**2.0630**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7252	231.7252	0.0555	0.0000	233.1131
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7252**	**231.7252**	**0.0555**	**0.0000**	**233.1131**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0353	1.1987	0.2209	3.2700e-003	0.0768	2.9300e-003	0.0797	0.0222	2.8000e-003	0.0250	0.0000	310.7424	310.7424	0.0230	0.0000	311.3181
Worker	0.0958	0.0602	0.6269	2.2200e-003	0.2353	1.5700e-003	0.2369	0.0625	1.4400e-003	0.0640	0.0000	200.6861	200.6861	4.4100e-003	0.0000	200.7964
Total	**0.1311**	**1.2589**	**0.8478**	**5.4900e-003**	**0.3121**	**4.5000e-003**	**0.3166**	**0.0847**	**4.2400e-003**	**0.0889**	**0.0000**	**511.4285**	**511.4285**	**0.0274**	**0.0000**	**512.1145**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7250	231.7250	0.0555	0.0000	233.1128
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7250**	**231.7250**	**0.0555**	**0.0000**	**233.1128**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0353	1.1987	0.2209	3.2700e-003	0.0768	2.9300e-003	0.0797	0.0222	2.8000e-003	0.0250	0.0000	310.7424	310.7424	0.0230	0.0000	311.3181
Worker	0.0958	0.0602	0.6269	2.2200e-003	0.2353	1.5700e-003	0.2369	0.0625	1.4400e-003	0.0640	0.0000	200.6861	200.6861	4.4100e-003	0.0000	200.7964
Total	**0.1311**	**1.2589**	**0.8478**	**5.4900e-003**	**0.3121**	**4.5000e-003**	**0.3166**	**0.0847**	**4.2400e-003**	**0.0889**	**0.0000**	**511.4285**	**511.4285**	**0.0274**	**0.0000**	**512.1145**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0786	0.7192	0.8122	1.3500e-003		0.0350	0.0350		0.0329	0.0329	0.0000	115.9024	115.9024	0.0276	0.0000	116.5917
Total	**0.0786**	**0.7192**	**0.8122**	**1.3500e-003**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**115.9024**	**115.9024**	**0.0276**	**0.0000**	**116.5917**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.4577	0.0922	1.6000e-003	0.0384	4.5000e-004	0.0388	0.0111	4.3000e-004	0.0115	0.0000	151.5346	151.5346	7.8800e-003	0.0000	151.7315
Worker	0.0446	0.0270	0.2867	1.0700e-003	0.1177	7.6000e-004	0.1184	0.0313	7.0000e-004	0.0320	0.0000	96.5687	96.5687	1.9700e-003	0.0000	96.6179
Total	**0.0570**	**0.4847**	**0.3789**	**2.6700e-003**	**0.1560**	**1.2100e-003**	**0.1573**	**0.0423**	**1.1300e-003**	**0.0435**	**0.0000**	**248.1033**	**248.1033**	**9.8500e-003**	**0.0000**	**248.3494**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0786	0.7192	0.8122	1.3500e-003		0.0350	0.0350		0.0329	0.0329	0.0000	115.9022	115.9022	0.0276	0.0000	116.5915
Total	**0.0786**	**0.7192**	**0.8122**	**1.3500e-003**		**0.0350**	**0.0350**		**0.0329**	**0.0329**	**0.0000**	**115.9022**	**115.9022**	**0.0276**	**0.0000**	**116.5915**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0125	0.4577	0.0922	1.6000e-003	0.0384	4.5000e-004	0.0388	0.0111	4.3000e-004	0.0115	0.0000	151.5346	151.5346	7.8800e-003	0.0000	151.7315
Worker	0.0446	0.0270	0.2867	1.0700e-003	0.1177	7.6000e-004	0.1184	0.0313	7.0000e-004	0.0320	0.0000	96.5687	96.5687	1.9700e-003	0.0000	96.6179
Total	**0.0570**	**0.4847**	**0.3789**	**2.6700e-003**	**0.1560**	**1.2100e-003**	**0.1573**	**0.0423**	**1.1300e-003**	**0.0435**	**0.0000**	**248.1033**	**248.1033**	**9.8500e-003**	**0.0000**	**248.3494**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0269	20.0269	6.4800e-003	0.0000	20.1888
Paving	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0305**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0269**	**20.0269**	**6.4800e-003**	**0.0000**	**20.1888**

3.6 Paving - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	2.8000e-004	2.9500e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9921	0.9921	2.0000e-005	0.0000	0.9927
Total	**4.6000e-004**	**2.8000e-004**	**2.9500e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9921**	**0.9921**	**2.0000e-005**	**0.0000**	**0.9927**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0103	0.1019	0.1458	2.3000e-004		5.1000e-003	5.1000e-003		4.6900e-003	4.6900e-003	0.0000	20.0268	20.0268	6.4800e-003	0.0000	20.1888
Paving	0.0202					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0305**	**0.1019**	**0.1458**	**2.3000e-004**		**5.1000e-003**	**5.1000e-003**		**4.6900e-003**	**4.6900e-003**	**0.0000**	**20.0268**	**20.0268**	**6.4800e-003**	**0.0000**	**20.1888**

3.6 Paving - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.6000e-004	2.8000e-004	2.9500e-003	1.0000e-005	1.2100e-003	1.0000e-005	1.2200e-003	3.2000e-004	1.0000e-005	3.3000e-004	0.0000	0.9921	0.9921	2.0000e-005	0.0000	0.9927
Total	**4.6000e-004**	**2.8000e-004**	**2.9500e-003**	**1.0000e-005**	**1.2100e-003**	**1.0000e-005**	**1.2200e-003**	**3.2000e-004**	**1.0000e-005**	**3.3000e-004**	**0.0000**	**0.9921**	**0.9921**	**2.0000e-005**	**0.0000**	**0.9927**

3.7 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.2076**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.0700e-003	0.0114	4.0000e-005	4.6700e-003	3.0000e-005	4.7000e-003	1.2400e-003	3.0000e-005	1.2700e-003	0.0000	3.8363	3.8363	8.0000e-005	0.0000	3.8382
Total	**1.7700e-003**	**1.0700e-003**	**0.0114**	**4.0000e-005**	**4.6700e-003**	**3.0000e-005**	**4.7000e-003**	**1.2400e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.8363**	**3.8363**	**8.0000e-005**	**0.0000**	**3.8382**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2057					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9200e-003	0.0130	0.0181	3.0000e-005		7.1000e-004	7.1000e-004		7.1000e-004	7.1000e-004	0.0000	2.5533	2.5533	1.5000e-004	0.0000	2.5571
Total	**0.2076**	**0.0130**	**0.0181**	**3.0000e-005**		**7.1000e-004**	**7.1000e-004**		**7.1000e-004**	**7.1000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.5000e-004**	**0.0000**	**2.5571**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.7700e-003	1.0700e-003	0.0114	4.0000e-005	4.6700e-003	3.0000e-005	4.7000e-003	1.2400e-003	3.0000e-005	1.2700e-003	0.0000	3.8363	3.8363	8.0000e-005	0.0000	3.8382
Total	**1.7700e-003**	**1.0700e-003**	**0.0114**	**4.0000e-005**	**4.6700e-003**	**3.0000e-005**	**4.7000e-003**	**1.2400e-003**	**3.0000e-005**	**1.2700e-003**	**0.0000**	**3.8363**	**3.8363**	**8.0000e-005**	**0.0000**	**3.8382**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2246	9.1519	1.1816	0.0174	0.1293	4.4500e-003	0.1338	0.0359	4.2600e-003	0.0402	0.0000	1,653.1056	1,653.1056	0.2515	0.0000	1,659.3921
Unmitigated	0.2246	9.1519	1.1816	0.0174	0.1293	4.4500e-003	0.1338	0.0359	4.2600e-003	0.0402	0.0000	1,653.1056	1,653.1056	0.2515	0.0000	1,659.3921

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Automobile Care Center	0.00	0.00	0.00		
Convenience Market With Gas Pumps	828.80	828.80	828.80	301,683	301,683
Fast Food Restaurant with Drive Thru	0.00	0.00	0.00		
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Total	828.80	828.80	828.80	301,683	301,683

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Automobile Care Center	9.50	7.30	7.30	33.00	48.00	19.00	21	51	28
Convenience Market With Gas	1.00	1.00	1.00	0.80	80.20	19.00	100	0	0
Fast Food Restaurant with Drive	9.50	7.30	7.30	2.20	78.80	19.00	29	21	50
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Automobile Care Center	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Convenience Market With Gas Pumps	0.000000	0.000000	0.000000	0.000000	0.260000	0.050000	0.020000	0.670000	0.000000	0.000000	0.000000	0.000000	0.000000
Fast Food Restaurant with Drive Thru	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Other Asphalt Surfaces	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759
Parking Lot	0.487920	0.030073	0.170877	0.112061	0.016651	0.005572	0.019337	0.146855	0.001612	0.001610	0.005760	0.000912	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.2011	97.2011	4.4000e-003	9.1000e-004	97.5820
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	97.2011	97.2011	4.4000e-003	9.1000e-004	97.5820
NaturalGas Mitigated	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	60.8183	60.8183	1.1700e-003	1.1200e-003	61.1797
NaturalGas Unmitigated	6.1500e-003	0.0559	0.0469	3.4000e-004		4.2500e-003	4.2500e-003		4.2500e-003	4.2500e-003	0.0000	60.8183	60.8183	1.1700e-003	1.1200e-003	61.1797

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	283415	1.5300e-003	0.0139	0.0117	8.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	15.1241	15.1241	2.9000e-004	2.8000e-004	15.2140
Convenience Market With Gas Pumps	119808	6.5000e-004	5.8700e-003	4.9300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.3934	6.3934	1.2000e-004	1.2000e-004	6.4314
Fast Food Restaurant with Drive Thru	736470	3.9700e-003	0.0361	0.0303	2.2000e-004		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	39.3008	39.3008	7.5000e-004	7.2000e-004	39.5344
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.1500e-003**	**0.0559**	**0.0469**	**3.4000e-004**		**4.2500e-003**	**4.2500e-003**		**4.2500e-003**	**4.2500e-003**	**0.0000**	**60.8183**	**60.8183**	**1.1600e-003**	**1.1200e-003**	**61.1798**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Automobile Care Center	283415	1.5300e-003	0.0139	0.0117	8.0000e-005		1.0600e-003	1.0600e-003		1.0600e-003	1.0600e-003	0.0000	15.1241	15.1241	2.9000e-004	2.8000e-004	15.2140
Convenience Market With Gas Pumps	119808	6.5000e-004	5.8700e-003	4.9300e-003	4.0000e-005		4.5000e-004	4.5000e-004		4.5000e-004	4.5000e-004	0.0000	6.3934	6.3934	1.2000e-004	1.2000e-004	6.4314
Fast Food Restaurant with Drive Thru	736470	3.9700e-003	0.0361	0.0303	2.2000e-004		2.7400e-003	2.7400e-003		2.7400e-003	2.7400e-003	0.0000	39.3008	39.3008	7.5000e-004	7.2000e-004	39.5344
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**6.1500e-003**	**0.0559**	**0.0469**	**3.4000e-004**		**4.2500e-003**	**4.2500e-003**		**4.2500e-003**	**4.2500e-003**	**0.0000**	**60.8183**	**60.8183**	**1.1600e-003**	**1.1200e-003**	**61.1798**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	119776	34.8441	1.5800e-003	3.3000e-004	34.9806
Convenience Market With Gas Pumps	91255.5	26.5473	1.2000e-003	2.5000e-004	26.6513
Fast Food Restaurant with Drive Thru	101395	29.4970	1.3300e-003	2.8000e-004	29.6126
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	21700	6.3128	2.9000e-004	6.0000e-005	6.3375
Total		**97.2011**	**4.4000e-003**	**9.2000e-004**	**97.5820**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Automobile Care Center	119776	34.8441	1.5800e-003	3.3000e-004	34.9806
Convenience Market With Gas Pumps	91255.5	26.5473	1.2000e-003	2.5000e-004	26.6513
Fast Food Restaurant with Drive Thru	101395	29.4970	1.3300e-003	2.8000e-004	29.6126
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	21700	6.3128	2.9000e-004	6.0000e-005	6.3375
Total		**97.2011**	**4.4000e-003**	**9.2000e-004**	**97.5820**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Paint - Non-Residential Interior

Use Low VOC Paint - Non-Residential Exterior

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Unmitigated	0.1746	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0206					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1539					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Total	**0.1746**	**2.0000e-005**	**1.8100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.5300e-003**	**3.5300e-003**	**1.0000e-005**	**0.0000**	**3.7600e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0206					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1539					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.7000e-004	2.0000e-005	1.8100e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	3.5300e-003	3.5300e-003	1.0000e-005	0.0000	3.7600e-003
Total	**0.1746**	**2.0000e-005**	**1.8100e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**3.5300e-003**	**3.5300e-003**	**1.0000e-005**	**0.0000**	**3.7600e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	5.9032	0.0829	2.0000e-003	8.5702
Unmitigated	7.3790	0.1036	2.5000e-003	10.7127

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	1.27762 / 0.783058	3.2138	0.0418	1.0100e-003	4.5585
Convenience Market With Gas Pumps	0.829612 / 0.508472	2.0868	0.0271	6.6000e-004	2.9600
Fast Food Restaurant with Drive Thru	1.06237 / 0.0678107	2.0784	0.0347	8.3000e-004	3.1942
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**7.3790**	**0.1036**	**2.5000e-003**	**10.7127**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Automobile Care Center	1.0221 / 0.626447	2.5710	0.0334	8.1000e-004	3.6468
Convenience Market With Gas Pumps	0.66369 / 0.406778	1.6695	0.0217	5.2000e-004	2.3680
Fast Food Restaurant with Drive Thru	0.849894 / 0.0542486	1.6627	0.0278	6.7000e-004	2.5554
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**5.9032**	**0.0829**	**2.0000e-003**	**8.5702**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	25.5484	1.5099	0.0000	63.2952
Unmitigated	25.5484	1.5099	0.0000	63.2952

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	51.88	10.5312	0.6224	0.0000	26.0905
Convenience Market With Gas Pumps	33.66	6.8327	0.4038	0.0000	16.9277
Fast Food Restaurant with Drive Thru	40.32	8.1846	0.4837	0.0000	20.2770
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**25.5485**	**1.5099**	**0.0000**	**63.2952**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Automobile Care Center	51.88	10.5312	0.6224	0.0000	26.0905
Convenience Market With Gas Pumps	33.66	6.8327	0.4038	0.0000	16.9277
Fast Food Restaurant with Drive Thru	40.32	8.1846	0.4837	0.0000	20.2770
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**25.5485**	**1.5099**	**0.0000**	**63.2952**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix E:

Biological

Study

BIOLOGICAL RESOURCES STUDY

FOR A PILOT TRUCK CENTER
CONDITIONAL USE PERMIT NO. 20-0379

KERN COUNTY, CALIFORNIA

Project No. 2102-0491

Prepared for:

LAV // Pinnacle Engineering
12418 Rosedale Highway, Suite A
Bakersfield, CA 93312

Prepared by:

Padre Associates, Inc.
3500 Coffee Road, Suite B
Bakersfield, California 93308

REVISED JULY 2021

padre associates, inc.
ENGINEERS, GEOLOGISTS & ENVIRONMENTAL SCIENTISTS

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1.0 INTRODUCTION

1.1 PURPOSE AND NEED

Padre Associates Inc. (Padre) has been retained by LAV Consulting & Engineering, Inc. (LAV) on behalf of Bakersfield 119 LLC. (Project Proponent) to update the Biological Resources Study Report for the Conditional Use Permit (CUP) (No. 20-0379) for the proposed construction of a Pilot Truck Center on Assessor Parcel Numbers (APN) 184-160-13, 184-160-14, and 184-160-43 just west of the intersection of Highway 119 and Highway 99 (Project). Padre had previously conducted a survey and submitted a report dated June 2017 for the 12.34-acre parcel with Assessor Parcel Number 184-160-13. The Project is now expected to cover approximately 13.5-acres across three parcels. A Biological Study has been updated to discuss the current biological resources observed or have a potential to be observed within the Project site. Padre understands this report has been requested by the City of Bakersfield in the Incomplete Letter for the CUP dated January 29, 2021.

1.2 FEDERALLY LISTED SPECIES

Based on both a literature review of database queries and field investigations, which will be discussed in sections below, it has been determined that the following federally listed species have a potential to occur within the Project area:

- San Joaquin kit fox (*Vulpes macrotis mutica*) – FE

1.3 STATE LISTED SPECIES

Species that are state listed and have the potential to occur within the Project area are listed below:

- San Joaquin kit fox (*Vulpes macrotis mutica*) – ST
- Swainson's hawk (*Buteo swainsoni)* – ST

2.0 DESCRIPTION OF THE PROPOSED ACTION

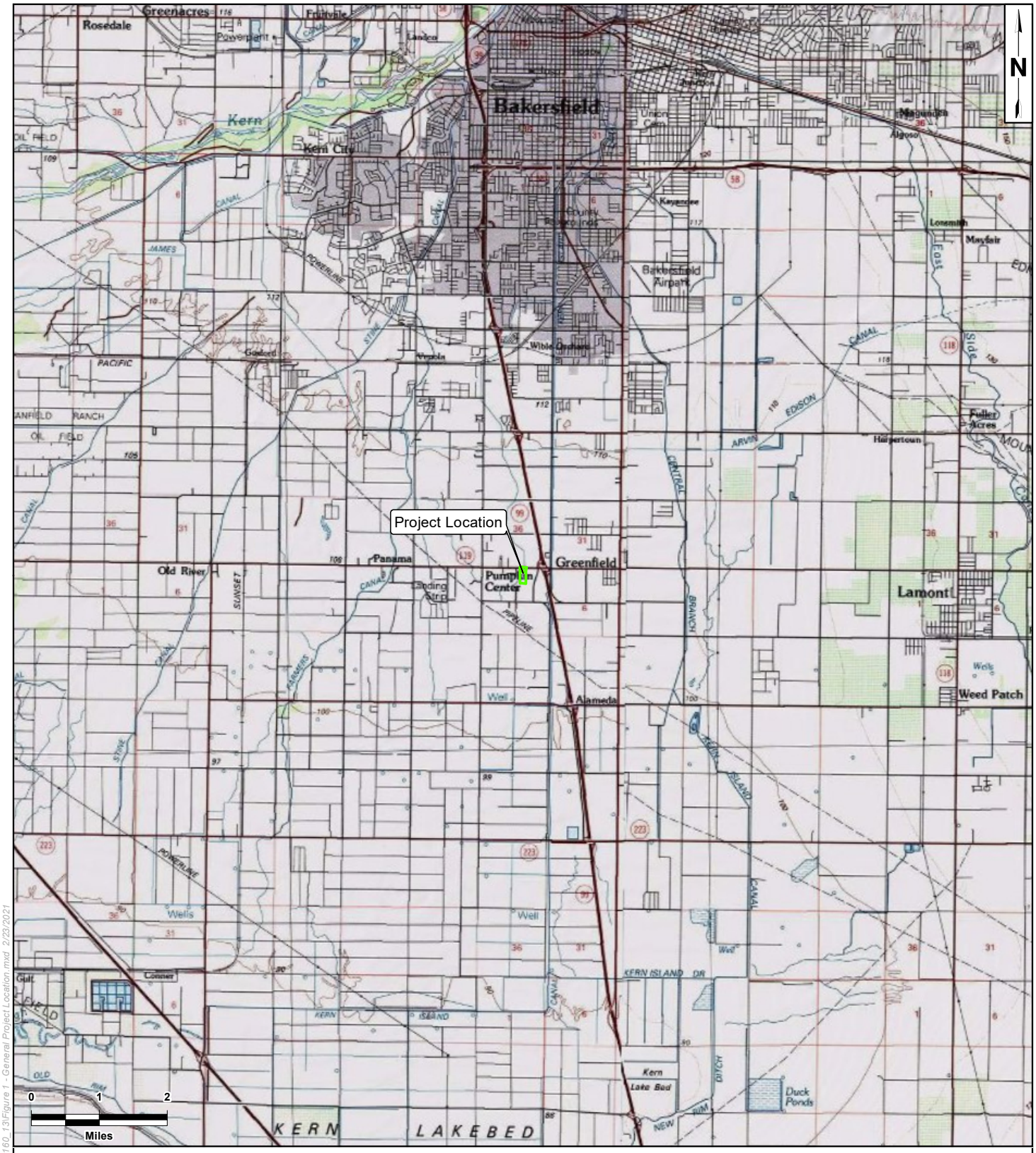
2.1 PROJECT LOCATION

The Project is located at 2201 and 2311 Taft Highway, Bakersfield, California, just south of Highway 119 and approximately 0.25 miles west of Highway 99 and east of the unincorporated community of Pumpkin Center, Kern County, California, within the southern San Joaquin Valley (**Figures 1** and **2**). The Project site is south of the City of Bakersfield. The Project occurs in Section 1, Township 31 South, Range 27 East within the U.S. Geological Survey's Gosford Quadrangle.

2.2 PROJECT DESCRIPTION

2.2.1 Proposed Project

Development of the parcels located at 2201 and 2311 Taft Highway into a Pilot Truck Center is currently being proposed under CUP No. 20-0379. **Figure 3** is the site plan developed for the Project. If approved, the three parcels are anticipated to be developed into businesses which will include a truck wash, truck repair, convenience store with restaurants, and fueling station. Additionally, the proposed construction of the Pilot Truck Center will include accessible parking for trucks, a CAT truck scale, 9-lane diesel canopy and dispensers, seven electric vehicle charging stations, automobile gas canopy and dispensers, a 30-foot-wide car driveway, two truck driveways, 60-inch sidewalk, a dog park with pet-friendly artificial turf and a loading zone. Essentially, the Project Proponent anticipates developing the parcels with businesses that truckers and other motorists travelling through the area may require. The parcels are zoned as "M-1/M-2" which allows for industrial and commercial development.



LEGEND:

Project Location

MAP EXTENT:

Source: USGS 7.5 Topo, County of Kern
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
Notes: This map was created for informational and display purposes only.

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PROJECT NAME:	BIOTA STUDY FOR ZONE CHANGE OF APN 184-160-13 KERN COUNTY, CA	GENERAL PROJECT LOCATION	FIGURE 1
PROJECT NUMBER: 2102-0491	DATE: February 2021		

Z:\GIS Projects\GIS Maps\Map Project\APN_184_160_13\Figure 1 - General Project Location.mxd 2/23/2021

LEGEND:

- Loggerhead Shrike (Observed in 2017)
- Swainson's Hawk (Observed in 2017)
- Irrigation Ditch
- Project Location
- Additional APN surveyed in 2021

Source: Esri Online Imagery Basemap, County of Kern
Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
Notes: This map was created for informational and display purposes only.

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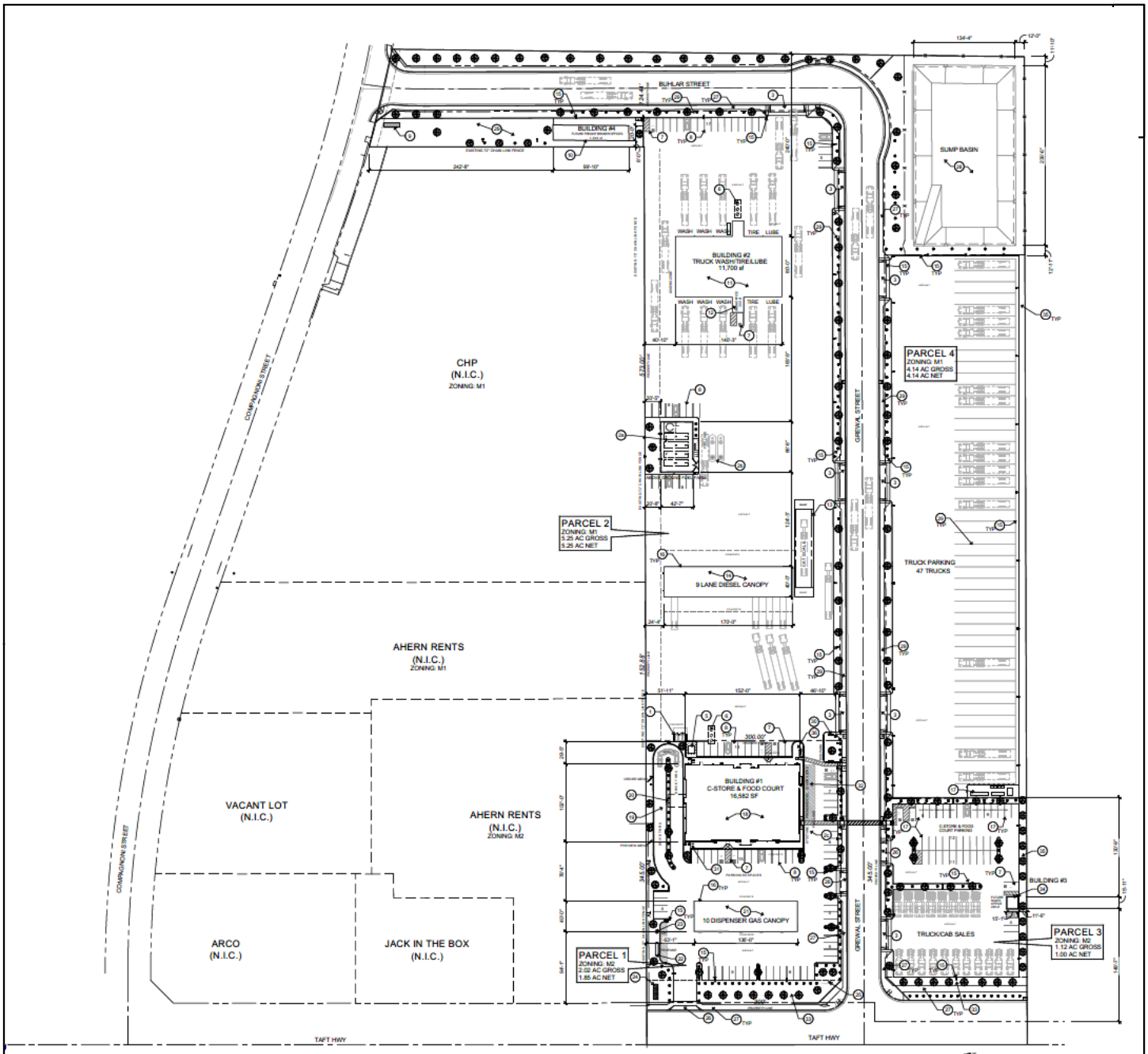
PROJECT NAME:	BIOTA STUDY FOR PILOT TRAVEL PLAZA KERN COUNTY, CA	BIOLOGICAL SURVEY FOR APN 184-160-13 AND 184-160-14	FIGURE 2
PROJECT NUMBER: 2102-0491	DATE: June 2021		

Z:\GIS Projects\GIS Maps\Map Project\APN_184_160_13\Figure 2 - Site Location.mxd 6/11/2021



OVERALL SITE PLAN

Source: Ideation Design Group 04-14-2021 Pilot Travel Site Plan provided by LAV // Pinnacle Engineering

Z:\GIS Projects\GIS Maps\Map Project\APN_184_160_13\Figure 2 - Site Location.mxd 6/11/2021

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BIOTA STUDY FOR PILOT TRAVEL PLAZA
KERN COUNTY, CA

PROJECT NUMBER: 2102-0491

DATE: June 2021

Pilot Travel Plaza Site Plan

FIGURE 3

3.0 EXISTING ENVIRONMENTAL CONDITIONS

3.1 PHYSICAL SETTING

The Project site is located within the south portion of the San Joaquin Valley adjacent to the southernmost portions of the developed portions of the City of Bakersfield. The Project site occurs just north of agricultural fields and was presumably at one time used for agricultural row crops or similar. The Project site has been mostly disturbed by previous development and a portion of it had industrial/residential waste.

3.2 GEOLOGY AND CLIMATE

The topography within the Project site is relatively flat terrain with a slope of 0 to 5 percent and elevation of approximately 345 feet. Two soil classifications occur within the Project site which include: Bakersfield fine sandy loam and Granoso sandy loam (USDA 2021). The soil consists of fine sandy loam occurring on slopes no greater than two percent and both being alluvium derived from granitoid rock or mixed rock sources.

The average rainfall in Bakersfield is 6.47 inches per year (USCD, 2021). Summer temperatures in the Bakersfield area average between 90 and 96 degrees Fahrenheit and winter temperatures ranging between 57 to 79 degrees Fahrenheit.

3.3 RIVERS AND STREAMS

No naturally occurring rivers, streams or lakes were observed within the Project site. A concrete-lined channel does occur within the Project. The channel appears to originate within agricultural fields south of the Project off of Curnow Road and likely terminates within a sump or catch basin adjacent to residential homes east of Hughes Lane. No riparian habitat was observed within this channel.

3.4 CURRENT LAND USE

A homestead and associated structures that were once present within the north part of the Project site have been torn down along with some large trees. A building still stands near the former location of the homestead. Otherwise, the Project site is undeveloped and consists mostly of disturbed grassland habitat.

3.5 HABITAT FOR LISTED SPECIES

The vegetation observed at the Project site include two general communities: annual (non-native) grassland, and disturbed or “ruderal” communities. Horticultural and landscape trees were present near and within the site; however, these trees are non-native and were likely planted as part of the homestead that previously occurred within the parcel. No native habitats were observed within the Project site. Detailed descriptions of these communities are provided below.

3.5.1 Annual (non-native) Grassland

An annual grassland community is characterized by a sparse to dense cover of low (<1 meter) annual grasses and native and non-native herbaceous species (Holland, 1986; Sawyer

and Keeler-Wolf, 1995). Shrubs and sub-shrubs are sometimes scattered in grasslands but do not dominate the vegetation. This vegetation type occurs within a relatively small portion of the Project site where disking or tilling has not recently occurred. Grassland habitat was present along the edge of the concrete-lined channel; however, non-native grasses such as red brome (*Bromus rubens*) and ripgut (*Bromus diandrus*) dominated these areas.

3.5.3 Disturbed (Ruderal) Community

Disturbed areas are characterized as areas that have been physically disturbed or invaded by non-native species, such that few or no native plant species remain. Although a disturbed modifier can be applied to any native habitat, the actual designation of disturbed area refers to areas that are no longer recognizable as a native or naturalized vegetation association. Often these areas are associated with human-related activities such as clearing or grazing.

4.0 THREATENED, ENDANGERED, PROPOSED THREATENED, OR PROPOSED ENDANGERED SPECIES

4.1 DESKTOP ANALYSIS

Prior to the start of biological surveys conducted at the Project site, a desktop analysis was conducted to identify any state/federally threatened, endangered, and/or sensitive (TES) plant and animal species that may be present within or surrounding the Project site. The desktop analysis included a query of the California Department of Fish and Wildlife's (CDFW) California Natural Diversity Data Base (CNDDB), California Native Plant Society (CNPS) Rare Plant Inventory List, U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Conservation (iPaC) planning tool, and a USFWS Critical Habitat Report was conducted for the Gosford and eight surrounding USGS 7.5 minute quadrangles (Rosedale, Oildale, Oil Center, Stevens, Lamont, Millux, Conner and Weed Patch). The sensitive plant and wildlife that have a potential to occur within or near the Project site have been listed in **Tables 1 and 2**.

Table 1. Threatened, endangered, and/or sensitive plant species with potential to occur within or near the Project Site.

Species	Status	Habitat	Blooming Period	Rationale
Allium howellii var. howellii Howell's onion	CRPR 4.3	Serpentine and granite soils of several of the local mountain ranges, hills and valleys; 200-900m.	Mar-Apr	**Unlikely to occur** as no suitable habitat occurs within the Project site.
Astragalus hornii var. *hornii* Horn's milkvetch	CRPR 1B.1	Salty flats, lake shores; 60-300 m.	May-Oct	**Unlikely to occur** as suitable habitat is not present within the site.
Atriplex codulata var. codulata *Heartscale*	CRPR 1B.2	Chenopod scrub, meadow and seep, valley and foothill grassland, saline or alkaline soils; 0-560 m	Apr-Oct	**Unlikely to occur** as no suitable habitat occurs within the Project site.
Atriplex Coronata var. vallicola *Lost Hills Crownscale*	CRPR 1B.2	Chenopod scrub, valley and foothill grassland, vernal pools, dried ponds, alkaline soils; less than 430 m.	Apr-Sept	**Unlikely to occur** as no suitable habitat occurs within the Project site.
Atriplex tularensis Bakersfield smallscale	SE, CRPR 1A	Dry ephemeral lakebed, alkaline soils of local occasionally flooded salt pan; 90-200 m.	Jun-Oct	**Unlikely to occur** as suitable habitat is not present within the site.
Azolla microphylla Mexican mosquito fern	CRPR 4.2	Freshwater aquatic such as ponds, marshes, and swamps (slow moving water); less than 1200 m.	Aug	**Unlikely to occur** as suitable habitat is not present within the site.
Calochortus striatus Alkali mariposa lily	CRPR 1B.2	Chaparral, chenopod scrub, Mojavean desert scrub, and meadows and seeps within alkaline or mesic soils; 70-1595 m.	Apr-Jun	**Unlikely to occur** as no suitable habitat occurs within the Project site.

Table 1. Threatened, endangered, and/or sensitive plant species with potential to occur within or near the Project Site.

Species	Status	Habitat	Blooming Period	Rationale
Caulanthus californicus California jewelflower	FE, SE, CRPR 1B.1	Chenopod scrub, valley-foothill grassland, pinyon-juniper woodland. Generally, in non-alkaline grassland; 70–1000 m.	Feb-May	**Unlikely to occur** as Project site is outside of known population range.
Chloropyron molle ssp. hispidum Hispid bird's-beak	CRPR 1B.1	Alkaline, meadows and seeps, playas, valley and foothill grassland; <130 m.	Jun-Sep	**Unlikely to occur** as suitable habitat is not present within the site.
Clarkia exilis Slender clarkia	CRPR 4.3	Cismontane woodland; <1000 m.	Apr-May	**Unlikely to occur** as suitable habitat is not present within the site.
Delphinium recurvatum Recurved larkspur	BLM, CRPR 1B.2	Chenopod scrub, valley-foothill grassland, cismontane woodland, poorly drained, fine, alkaline soils in grassland, *Atriplex* scrub; 30–600 m.	Mar-Jun	**Unlikely to occur** as suitable habitat is not present within the site.
Diplacus pictus Calico monkeyflower	CRPR 1B.2	Granitic, disturbed areas; broad-leafed upland forest and cismontane woodland; 100-1430 m.	Mar-May	**Unlikely to occur** as cismontane woodland is not present within the Project site.
Eremalche parryi ssp. kernensis Kern mallow	FE, CRPR 1B.2	Chenopod scrub, valley and foothill grassland; dry, open sandy to clay soils; often at edge of scalds; alkali flats; 70-1290 m.	Jan-May	**Unlikely to occur** as no suitable habitat occurs within the Project site.
Eriastrum hooveri Hoover's eriastrum	CRPR 4.2	Chenopod scrub, valley-foothill grasslands, pinyon juniper woodlands on sparsely vegetated alkaline alluvial fans and sandy soils; < 900 m.	(Feb)Mar-Jul	**Unlikely to occur** as suitable habitat is present in nearby areas.
Eschscholzia lemmonii ssp. *kernensis* Tejon poppy	CRPR 1B.1	Chenopod scrub, valley and foothill grassland, open grassland; 200–1000 m.	(Feb)Mar-May	**Unlikely to occur** due to habitat disturbance.
Goodmania luteola Golden goodmania	CRPR 4.2	Alkaline or clay soils; Mojavean desert scrub, meadows and seeps, playas, valley foothill grasslands; 20-2200 m.	Apr-Aug	**Unlikely to occur** as no suitable habitat occurs within the Project.
Hodeum intercedens Vernal Barley	CRPR 3.2	Coastal dunes, coastal scrub, valley and foothill grasslands (saline flats and depressions), vernal pools;	Mar-Jun	**Unlikely to occur** as suitable habitat is not present within the site.
Imperata brevifolia California satintail	CRPR 2B.1	Chaparral, coastal scrub, creosote bush scrub, wetland-riparian, meadows and seeps, <500 m.	Sep-May	**Unlikely to occur** as suitable habitat is not present within the site.

Table 1. Threatened, endangered, and/or sensitive plant species with potential to occur within or near the Project Site.

Species	Status	Habitat	Blooming Period	Rationale
Lasthenia ferrisiae Ferris' goldfields	CRPR 4.2	Vernal pools (alkaline or clay), wet saline flats; <700 m.	Feb-May	**Unlikely to occur** as vernal pools are not present within the Project site.
Lasthenia glabrate ssp. coulteri Coulter's goldfields	CRPR 1B.1	Marshes and swamps (coastal salt); playas and vernal pools; saline places; <1000 m.	Feb-Jun	**Unlikely to occur** as no suitable habitat occurs within the Project site.
Monardella linoides ssp. oblonga Tehachapi monardella	CRPR 1B.3	Lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest; 900-2470 m.	(May)Jun-Aug	**Unlikely to occur** as coniferous forest, pinyon and juniper woodland are not present within the Project site.
Monolopia congdonii San Joaquin woollythreads	FE, CRPR 1B.2	Grassland, sandy soils; chenopod scrub and valley-foothill grassland with sandy soils; 90-700 m.	(Jan)Feb-May	**Unlikely to occur** due to habitat disturbance.
Opuntia basilaris var. treleasei Bakersfield Cactus	FE, SE, CRPR 1B.1	Sandy or gravelly, chenopod scrub, cismontane woodland, valley and foothill grassland; 120-1450 m.	Apr-May	**Unlikely to occur** as no suitable habitat occurs within the Project site.
Puccinellia simplex California alkali grass	CRPR 1B.2	Chenopod scrub, meadow and seep, valley and foothill grassland, vernal pool, saline flats, and mineral springs; 2 – 930 m.	Mar-May	**Unlikely to occur** as no suitable habitat occurs within the Project site.
Stylocline citroleum Oil neststraw	BLM, CRPR 1B.1	Open, stable, often crusted sand, clay, dry drainage edges, between *Atriplex* shrubs, chenopod scrub; coastal scrub; valley and foothill grassland; clay; 60-300 m.	Mar-Apr	**Unlikely to occur** as suitable habitat is not present within the site.
Stylocline masonii Mason's neststraw	CRPR 1B.1	Open loose sand of washes and flats, chenopod scrub, pinyon and juniper woodland; 100-1200 m.	Mar-May	**Unlikely to occur** as suitable habitat is not present within the site.
Tortula californica California screwmoss	CRPR 1B.2	Sandy soil, chenopod scrub, valley and foothill grassland; 10-1460 m.		**Unlikely to occur** as suitable habitat is not present within the site.
Trichostema ovatum San Joaquin bluecurls	CRPR 4.2	Grassland, disturbed sites, chenopod scrub, valley and foothill grassland; <300 m.	Jul-Oct	**Potential to occur** as suitable habitat occurs on the Project site.

Table 1. Threatened, endangered, and/or sensitive plant species with potential to occur within or near the Project Site.

Species	Status	Habitat	Blooming Period	Rationale
CNNDB = California Natural Diversity Database Info (CDFW) CNPS = California Native Plant Society FE = Federally listed Endangered (USFWS) SE = State listed Endangered (CDFW) BLM = Bureau of Land Management Sensitive Species CRPR (California Rare Plant Rank) Codes: 1A = Plants presumed Extirpated in California and Either Rare or Extinct Elsewhere 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere 3 = Plants about which More Information is Needed – A Review List 4 = Limited Distribution (watch list) 0.1 = Seriously Threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat) 0.2 = Moderately Threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat) 0.3 = Not very threatened in California (<20% occurrences threatened / low degree and immediacy of threat or no current threats known)				

Table 2. Threatened, endangered, and/or sensitive wildlife species with potential to occur within or near the Project Site

Species	Status	Habitat	Rationale
Invertebrates			
Branchinecta lynchi *Vernal pool fairy shrimp*	FT	Vernal pools or vernal pool-like habitats.	**Unlikely to occur** since no vernal pools are present within the Project site. Critical habitat is designated for this species; however, the critical habitat is outside the Project site.
Amphibians/Reptiles			
Arizona elegans occidentalis California glossy snake	SSC	Inhabits arid scrub, rocky washes, grasslands, and chaparral often with loose or sandy soils.	**Unlikely to occur** as no suitable habitat for the species occurs. All habitat within the Project site has been previously disturbed by agricultural activities.
Emys marmorata Western pond turtle	SSC	Ponds, lakes, rivers, streams, creeks, marshes, and irrigation ditches, with abundant vegetation, and either rocky or muddy bottoms, in woodland, forest, and grassland. Logs, rocks, cattail mats and exposed banks are required for basking.	**Potential to occur** as an irrigation ditch is present within the Project site.
Gambelia sila *Blunt-nosed leopard lizard*	FE, SE, FP	Sparsely vegetated alkali and desert scrub habitats in areas of low topographic relief (< 30° slopes) with small mammal burrows for cover.	**Unlikely to occur** as no suitable habitat for the species occurs. All habitat within the Project site has been previously disturbed by agricultural activities.
Masticophis flagellum ruddocki San Joaquin coachwhip	SSC	Open dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in the San Joaquin Valley. Requires mammal burrows for refuge and oviposition sites.	**Unlikely to occur** as no suitable habitat for the species occurs. All habitat within the Project site has been previously disturbed by agricultural activities.

Table 2. Threatened, endangered, and/or sensitive wildlife species with potential to occur within or near the Project Site

Species	Status	Habitat	Rationale
Phrynosoma blainvillii Coast horned lizard	SSC, BLMS	Desert wash, pinon and juniper woodland, riparian scrub, and valley and foothill grassland, in sandy areas.	**Unlikely to occur** as no suitable habitat for the species occurs. All habitat within the Project site has been previously disturbed by agricultural activities.
Rana draytonii *California red-legged frog*	FT, SSC	Breeding habitat including pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, and lagoons, artificial stock pounds; and dispersal habitat upland and riparian.	**Unlikely to occur** as the Project site is outside the range for the species. Critical habitat is designated for this species; however, the Project site is outside the critical habitat.
Thamnophis gigas giant garter snake	FT, ST	Valley floor wetlands of the Sacramento and San Joaquin Valleys, inhabits marshes, sloughs, ponds, small lakes, low gradient streams and other water ways, and agricultural wetlands.	**Unlikely to occur** as the Project site is outside the known range for the species.
Birds			
Agelaius tricolor Tricolored blackbird	FT, BLMS, NABCI: RWL, BCC, MBTA	Colonial nester; nests in wetland and riparian vegetation near water. Forages in agricultural fields and grassland habitat.	**Unlikely to occur** as no nesting or roosting habitat is present on the Project site; however, foraging habitat may be present as this species tends to forage in agricultural fields.
Aquila chrysaetos Golden eagle	FP, BLMS, WL, BCC, BE&GEPA, MBTA	Rolling foothills, mountain areas, sage-juniper flats, and desert. Nests in large trees in open areas or canyons.	**Unlikely to occur** as no suitable habitat for the species occurs. The species may occur as an occasional fly-over in the area.
Athene cunicularia hypugea Western burrowing owl	SSC, BCC, BLMS MBTA	Open dry annual or perennial grasslands, deserts and scrublands characterized by low-growing vegetation in areas where fossorial mammals are already present.	**Potential to occur** as potential habitat is present within the Project site and are known to occur in fallow fields and areas near human development.
Buteo swainsoni Swainson's hawk	ST, BCC, BLMS, MBTA	Riparian forest, riparian woodland, valley and foothill grasslands; breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees; forages in grasslands, or alfalfa or grain fields supporting rodent populations.	**Known to occur** as a fly-over was observed during the 2017 survey. Large trees present within and near the Project site could potentially be used for nesting; although, no nests were observed during the survey.
Charadrius alexandrinus nivosus Western snowy plover	FT, SSC, NABCI: RWL, BCC, MBTA	Primarily on coastal beaches, on coastal beaches, sand spits, dunes, salt pond levees, river bars, saline lakes, reservoirs, and ponds.	**Unlikely to occur** as no suitable habitat is present within the Project site.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	FT, SE, BLMS NABCI: RWL, BCC, MBTA	Woodland riparian, overgrown orchards and dense thickets along the larger river systems; nests in riparian jungles of willow, often with cottonwoods, with lower story of blackberry, nettles, or wild grape.	**Unlikely to occur** as no densely covered riparian habitat occurs within the Project site.

Table 2. Threatened, endangered, and/or sensitive wildlife species with potential to occur within or near the Project Site

Species	Status	Habitat	Rationale
Dendrocygna bicolor Fulvous whistling-duck	SSC, MBTA	Freshwater wetlands, flooded agriculture fields (rice), grasslands and pastures.	**Unlikely to occur** as the Project site is outside the known range of the species.
Elanus leucurus White-tailed kite	FP, BLMS, MBTA	Open savanna, open woodlands, marshes, desert grassland, cultivated fields, and grazed fields.	**Potential to occur** as suitable foraging habitat is present within the Project site.
Falco mexicanus Prairie falcon	WL, BCC, MBTA	Inhabits dry, open terrain, whether level or hilly. Breeding sites located on cliffs, forages far afield, even to marshlands and ocean shores; inhabits dry, open terrain, either level or hilly.	**Potential to occur** as the species may fly-over and forage within the Project site; however, no nesting habitat was observed.
Haliaeetus leucocephalus *Bald eagle*	FD, SE, FP, BCC, MBTA, BE&GEPA	Nest in forested areas adjacent to large bodies of water. In winter, can be seen in dry, open uplands if there is access to open water for fishing.	**Unlikely to occur** as no suitable habitat is present within the Project site. May occasionally occur as a fly-over.
Lanius ludovicianus Loggerhead shrike	SSC, BCC, MBTA	Broken woodlands, savannah, pinyon-juniper, Joshua tree, riparian woodlands, desert oases, scrub and washes	**Known to occur** as Padre biologists observed an individual sitting on a fence line during the 2017 survey.
Xanthocephalus xanthocephalus Yellow-headed blackbird	SSC, MBTA	Fresh marshes, open fields, freshwater sloughs, marshes, lakes, plowed fields, cattle pens, and feedlots.	**Potential to occur** as suitable foraging habitat is present within the Project site.
Mammals			
Ammospermophilus nelsoni San Joaquin (Nelson's) antelope squirrel	ST, BLMS	Dry, sparsely vegetated loam soils with widely scattered shrubs, forbs, and grasses and broken terrain with gullies and washes.	**Unlikely to occur** as no suitable habitat is present within the Project site.
Antrozous pallidus Pallid bat	SSC, BLMS, WBWG:H	Low elevation (< 1,830 m) rocky arid deserts and canyonlands, shrub-steppe grasslands, karst formations, and higher elevation coniferous forests (> 2,100 m); abundant in xeric ecosystems, including the Great Basin, Mojave, and Sonoran Deserts.	**Potential to occur** as foraging habitat is present due to the presence of the concrete-lined channel with water.

Table 2. Threatened, endangered, and/or sensitive wildlife species with potential to occur within or near the Project Site

Species	Status	Habitat	Rationale
Corynorhinus townsendii Townsend's big-eared bat	SSC, BLMS, WBWG:H	Throughout California in a wide variety of habitats and Valley and foothill grassland, most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting, extremely sensitive to human disturbance.	**Potential to occur** as foraging habitat is present due to the presence of the concrete-lined channel with water.
Dipodomys ingens Giant kangaroo rat	FE, SE	Annual grasslands with marginal habitat in alkali scrub with level terrain and sandy loams soils for burrowing.	**Unlikely to occur** as no suitable habitat for this species was present.
Dipodomys nitratoides brevinasus Short-nosed kangaroo rat	BLM, SSC	Western side of San Joaquin Valley in grassland and desert shrub associations in highly alkaline soils on gently flat to gently sloping terrain.	**Does not occur** as the Project site is east of the California Aqueduct and this species is only known to occur west of the aqueduct.
Dipodomys nitratoides nitratoides Tipton kangaroo rat	FE, SE	Saltbush scrub and sink scrub in the Tulare Lake Basin with soft friable soils which escape seasonal flooding.	**Unlikely to occur** as the Project site has been heavily disturbed by agricultural activities.
Eumops perotis californicus Western mastiff bat	SSC, BLMS, WBWG:H	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, grasslands, etc.; roosts in crevices in cliff faces, high buildings, trees, and tunnels.	**Potential to occur** as foraging habitat is present due to the presence of the concrete-lined channel with water.
Onychomys torridus tularensis Tulare grasshopper mouse	SSC, BLMS	Hot, arid valleys and scrub deserts in the southern San Joaquin Valley. Chenopod scrub. Western margin of the Tulare Basin.	**Unlikely to occur** as no suitable habitat for this species was present.
Sorex ornatus relictus Buena Vista Lake ornate shrew	FE, SSC	Marsh and swamp, riparian scrub habitats.	**Unlikely to occur** as no suitable habitat for this species was present.
Taxidea taxus American badger	SSC	Dry, open stages of most shrub, forest, and herbaceous habitats with friable soils.	**Unlikely to occur** as the Project site has been heavily disturbed by agricultural activities.
Vulpes macrotis mutica San Joaquin kit fox	FE, ST	Annual grasslands, habitat with grassy open stages and scattered shrubby vegetation in loose-textured sandy soils for burrowing and suitable prey base.	**Likely to occur** as an urban population is known to occur throughout Bakersfield and may forage throughout the area at nearby businesses/restaurants that have a constant food availability (food waste/garbage).

Table 2. Threatened, endangered, and/or sensitive wildlife species with potential to occur within or near the Project Site

Species	Status	Habitat	Rationale
Listing Codes: BCC = Birds of Conservation Concern (USFWS) BE&GEPA = Bald Eagle and Golden Eagle Protection Act CNDDB = California Natural Diversity Database Info (CDFW) FD = Federally delisted (USFWS) FE = Federally listed Endangered (USFWS) FP = Fully protected under Fish and Game Code (CDFW) FT = Federally listed Threatened (USFWS) MBTA = Migratory Bird Treaty Act (USFWS) NABCI- = North American Bird Conservation Initiative RWL = Red Watch List YWL = Yellow Watch List SCT = State Candidate for Threatened (CDFW) SE = State listed Endangered (CDFW) SSC= Species of Special Concern (CDFW) ST = State listed Threatened (CDFW) WL = State Watch List (CDFW) WBWG = Western Bat Working Group H = Highest priority XERCES: CI = Critically Imperiled			

4.2 CRITICAL HABITAT AND QUERY RESULTS

A review of the USFWS Critical Habitat Report search determined that no critical habitat exists within or surrounding the Project site. The nearest USFWS Critical Habitats occurs 10.3 miles south of the Project site which has been designated for Buena Vista Lake ornate shrew (*Sorex ornatus relictus*); however, the Project is located well outside of this critical habitat location.

Results of the CNDDB and CNPS nine quad query indicated that 29 plants that are either state-listed, federally-listed and/or have CNPS rare plant ranks have been reported within the same general region as the Project site (see **Table 1**). However, most of these plants have been ruled out as potentially occurring due to the Project being located outside the known range of the plant species, outside of the reported elevational range for the species, due to the absence of habitat within the Project site, or due to the relatively high rate of disturbance at the Project site for agricultural activities. Therefore, these plants will not be discussed further in this report.

Results of the CNDDB and USFWS iPaC searches indicated that 31 species of wildlife with various special-status designations have been reported within the general region of the Project site (see **Table 2**). Of these 31 species, 20 species have been ruled out as unlikely to occur due to absence of suitable habitat or the Project site being outside of the known range for the species. However, 11 species that have been reported in the general region either have the potential, likely, or are known to occur within or near the Project site and will be discussed further in the following sections.

Species Accounts for species with potential to occur at or near the Project site have been included in **Appendix A**.

5.0 BIOLOGICAL SURVEY RESULTS

5.1 BIOLOGICAL SURVEYS

The Project area and vicinity potentially supports various species known to occur in the region. Reconnaissance-level biological surveys of the Project site were conducted by Padre Associates, Inc. (Padre) on February 15, 2021 to update the previous results from the 2017 survey and determine the likelihood of presence of any TES species that may be present and impacted during Project-related activities (**Figure 2**). Both common and listed wildlife/plants that were observed during these surveys, as well as signs of their presence (e.g., nests, burrows, scat, tracks, prey remains, etc.) were recorded. In addition, the location of (if any) listed species was recorded using a Global Positioning System (GPS). Biological field surveys consisted of walking meandering transects within the Project site, including a 250-foot buffer, when feasible. A summary of species commonly observed during the surveys is provided in **Table 3**.

Table 3. Species observed during Reconnaissance-level Biological Survey on February 15, 2021.

Common Name	Scientific Name
Plants	
Blue gum	*Eucalyptus globulus*
Cedar	*Cedrus* sp.
Oak	*Quercus* sp.
Pomegranate	*Punica granatum*
Red brome	*Bromus rubens marditensis*
Ripgut brome	*Bromus diandrus*
Russian thistle	*Salsola tragus*
Wild slender oats	*Avena barbata*
Birds	
Anna's hummingbird	*Calypte anna*
California scrub-jay	*Aphelocoma californica*
Common raven	*Corvus corax*
Mourning dove	*Zenaida macroura*
Northern mockingbird	*Mimus polyglottos*
Turkey vulture	*Cathartes aura*
White-crowned sparrow	*Zonotrichia leucophrys*
Mammals	
California ground squirrel	*Spermophilus beecheyi*
Domestic dog	*Canis familiaris*
Skunk	*Mephitis mephitis*

5.2 SENSITIVE PLANT SPECIES

No listed or otherwise sensitive plants species were observed during the biological survey. These surveys were conducted outside of the optimal phenological period for a majority of blooming plant species that may occur in the area. However, any plant species that were observed could be identified using the vegetation features of this year's plant assemblage along

with the dried remains of last year's standing crop, if any. Due to the disturbed state of the Project site from human-related activities, several of the sensitive plant species reported for the general region were ruled out to occur.

5.2.1 San Joaquin Bluecurls

San Joaquin bluecurls is a California Rare Plant Rank of 4.2, meaning that it is a plant of limited distribution and infrequent throughout broader areas in California. This species is an annual herb in the Lamiaceae family (mint family). This species can be observed blooming during July through October in chenopod scrub and valley and foothill grassland at elevations from 65 to 230 meters (215 to 759 feet) (CNPS 2016). The stem of this plant is woolly, the calyx lobes are two to three times the tube, and the corolla tube is curved upward and sharply recurved near the throat (Baldwin *et al.* 2012). This species is thought to be threatened by recreational activities (CNPS 2016).

The biological survey was conducted outside of the known blooming period for this species. However, San Joaquin bluecurls are known to occur in areas that have been previously disturbed. The Project site does contain suitable habitat for this species of plant.

5.3 SENSTIVE WILDLIFE SPECIES

The only sensitive wildlife species observed during the biological surveys for the Project site included the Swainson's hawk and loggerhead shrike in 2017. No sensitive species were observed during the 2021 survey. No other listed or sensitive species were observed. A further discussion of other sensitive species with potential to occur within the Project site or surrounding area is included below.

5.3.1 Western Pond Turtle (*Emys marmorata*)

The western pond turtle is a California Species of Special Concern (CSC). It is an aquatic turtle inhabiting streams, marshes, ponds, and irrigation ditches within woodland, grassland, and open forest communities. This species requires upland sites, usually along stream or pond margins for nesting and over-wintering. Stream habitat must contain large, deep pool areas with moderate-to-good plant and debris cover, and rock and cobble substrates for escape retreats. Western pond turtles have been found in artificial bodies of waters such as canals and sewage treatment ponds due to the reduction and availability of natural bodies of water (Germano 2010). Females dig upland nests between April and August and hatchlings emerge in early fall or overwinter (Stebbins 2003; Behler and King 1992). Western pond turtle can be found up to 100 meters away from a body of water to lay their eggs.

Previous occurrences of pond turtles have been reported in the Kern River with the nearest reported observation approximately 10 miles northwest of the Project site. This species has not been observed or reported within the immediate vicinity of the Project Site locations (CNDDB 2017). Pond turtles are known to utilize canals and other artificial waterways for traveling and although the irrigation ditch is present within the Project site, it is not clearly known where the source of water for this ditch comes from or if it is isolated from other forms of water. Although the likelihood of western pond turtles being present within the site is low, there is a potential for their presence.

5.3.2 Western Burrowing Owl (*Athene cunicularia hypugea*)

The western burrowing owl is a California Species of Special Concern and is protected by the Migratory Bird Treaty Act (MBTA). Burrowing owls are small, ground dwelling birds measuring 21.6 to 27.9 centimeters (8.5 to 11 inches) and weigh on average approximately 170 grams (ESRP, 2015). They have long legs with sparse feathers. Burrowing owls have a facial ruff, no ear tufts, and a round head. Their wings are typically long and rounded and have a wingspan approximately three feet in length. They are a buffy brown with white barred primaries (ESRP 2015).

Burrowing owls feed primarily on arthropods, small mammals, birds, and sometimes on reptiles and amphibians (ESRP 2015). These owls typically forage in open short grasslands and/or mowed or overgrazed pastures. Burrowing owls are usually crepuscular but may also forage during the day.

Burrowing owls are usually found in dry, open, shortgrass, treeless plains, desert habitats, and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats (Zeiner *et al.* 1990). The western burrowing owl occurs in areas with rodent and other small mammal burrows as they do not excavate their own burrows, but instead inhabit the previously dug burrows of mammals. Low perches, such as shrubs and fence posts are typically utilized during foraging. Loss of habitat and conversion to agriculture and other development, poisoning of ground squirrels, and vehicle collisions may be the greatest threat to burrowing owls.

The nearest known occurrence of burrowing owls is approximately two miles southeast of the Project site in an area with similar physical features to the Project site such as an irrigation ditch and agricultural field. The Project site does provide suitable habitat for burrowing owls could potentially be used by burrowing owls for foraging.

5.3.3 Swainson's Hawk (*Buteo swainsoni*)

The Swainson's hawk is state-listed as a Threatened species and is protected by the MBTA. This species is found throughout valley and foothill grasslands, savannah, and open pine-oak woodlands. The natural foraging habitat for the Swainson's hawk is open areas of grassland with sparse shrubs. They will also forage in agriculture fields of various crops. They are a large broad winged hawk similar in shape and size to the most common hawk in North America, the red-tailed hawk, but have longer and more pointed wingtips. Like many buteos, their plumage types are polymorphic: light morphs, intermediate morphs, and dark morphs. The majority of hawks are light morphs or intermediate morphs. During flight, these hawks are distinguished from similar hawks by their underwing colors. Their flight feathers are dark and contrasting with their pale leading edge. Dark morphs have undertail coverts that are buffy white and barred dark brown, in comparison of other dark morph hawks that have dark undertail coverts.

These hawks have elaborate migrations displays where 100's to 1,000's of Swainson's hawks gather for long migrations. The Swainson's hawk migrate 12,500 miles round-trip during their migration (BLM 2014). They begin congregating for their long migrations in late August and September, after the young have fledged. The hawks arrive to their wintering grounds by November. Their primary wintering grounds, during the Northern hemisphere winter, is in Argentina, South America. Breeding occurs from early March to mid-May in open areas with scattered trees (Baicich 1997). They typically brood two young and both parents tend to the

young. Their diet consists of a variety of prey of mammals, birds, lizards, snakes, amphibians, and insects. The hawks within the Central Valley forage on California ground squirrel, voles, pocket gopher (*Thomomys* sp.), mourning dove (*Zenaida macroura*), and ring-necked pheasant (*Phasianus colchicus*) (BLM 2014). Habitat loss and pesticide use has resulted in the decline of the Swainson's hawks (USFWS 2014).

A Swainson's hawk was previously observed flying over the Project site during the 2017 biological survey and this hawk species is known to migrate and nest throughout the San Joaquin Valley. Several trees in the general area could potentially be used by these hawks for nesting; although, no nests were observed, and no breeding or nesting behaviors were observed during either 2017 or 2021 surveys. Additionally, the Project site may also provide foraging habitat for the species. The location of the Swainson's hawk observation is presented in **Figure 2**.

5.3.4 Mountain Plover (*Charadrius montanus*)

The mountain plover is a California Species of Special Concern and is protected by the MBTA. This species of plover has unbanded, white underparts with a buffy tinge on its breast (National Geographic 2002). Mountain plovers have a similar body shape and appearance to the common killdeer (*Charadrius vociferus*); however, they lack the black banding patterns on the breast that are distinctive of killdeer.

Plovers typically search on the ground for large insects, such as grasshoppers and the like (Zeiner et al., 1990). They typically search in grassy or plowed fields with little to no vegetation. Mountain plovers typically avoid high or dense vegetated areas (Zeiner et al. 1990). They frequent grassy or plowed fields but may also occur in open sagebrush areas. Plovers may roost in depressions in the ground.

The nearest observation of mountain plover is reported approximately 19 miles northwest of the Project site near Tupman, CA within the Tule Elk Reserve (CNDDB 2017). Although no mountain plovers were observed during the biological survey, the Project site does provide suitable foraging habitat for this species.

5.3.5 White-tailed kite (*Elanus leucurus*)

The white-tailed kit is a California Department of Fish and Wildlife fully-protected species, as well as a species protected under the Migratory Bird Treaty Act. The kite is a falcon-shaped raptor with long, pointed wings. The wingspan is 42 inches long and the raptor stands from 15 to 17 inches. The adults are pale gray with a white head, underparts, and tail. They have black spots on their wings, hence their former common name, "black-shouldered kite". The young have a rusty breast, a brown back, and a narrow dark band near the tip of their tail.

During the nonbreeding season the kites can be observed roosting in groups of up to 100 individuals (Cornell 2016). The white-tailed kite is found in open groves, river valleys, marshes, desert grassland, and cultivated fields. In California, white-tailed kites have been reported in February through April nesting (CDFW 2016). Nesting habitats are oak woodlands or marsh edges with trees. They will use trees of moderate height such as eucalyptus, cottonwoods, toyons, and even coyote bush. The nests are placed at the tops of these trees or shrubs. They sometimes have two broods per season with each brood having three to six eggs. The female incubates the eggs for 28 days and the young fledge in 35 to 40 days. White-tailed kites feed mainly on small mammals, birds, lizards, and insects.

The nearest observation of white-tailed kite has been reported near the Kern River approximately 14 miles northwest of the Project site. Although no white-tailed kites were observed during the biological survey, the Project site does provide suitable foraging habitat for this species. No nesting habitat for this species was observed within the Project site.

5.3.6 Prairie falcon (*Falco mexicanus*)

The prairie falcon is ranked as a Birds of Conservation Concern by the USFWS and is on the CDFW Watch List; in addition, the prairie falcons are protected under the Migratory Bird Treaty Act. The prairie falcon is susceptible to habitat loss and degradation of nesting and foraging sites. Most of their habitat, nesting sites, and foraging sites have been converted to agricultural development. Furthermore, since their nest sites occur on rocky outcrops, their nesting grounds have been affected by mining activities and recreational activities, such as rock climbing that result in nest abandonment.

They are approximately the same size of a peregrine falcon. Their plumage is pale brown above and cream-colored below, and they are overall paler than peregrine falcons. In flight, they are identified by their dark axillaries, contrasting with their pale underwing coverts. This species is found throughout the Central Valley, inner Coast Ranges, and lower elevations of the Sierra Nevada (CDFW 2005). These hawks inhabit grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. During the winter the falcon will inhabit cultivated fields, lakeshores, and desert scrub habitats. Their breeding season begins in mid-February and ends in mid-September. They nest on cliff edges or rocky outcrop near open terrain used for foraging. Prairie falcons forage on mostly small mammals, some small birds, and reptiles.

Foraging habitat for this species is present within the Project site; however, no nesting habitat occurs within the area. The nearest known observation for this species is not known as the CNDDB does not provide the location of prairie falcon observations.

5.3.7 Loggerhead shrike (*Lanius ludovicianus*)

The loggerhead shrike is a California Species of Special Concern and is protected by the Migratory Bird Treaty Act. Loggerhead shrikes have a slim tail, gray and black body with white and black facial markings (Peterson 1990). They have a bluish-gray head and back with a dark hooked bill.

These shrikes typically feed on insects but may also hunt small birds, mammals, amphibians, and reptiles, fish, carrion, and various other invertebrates (Zeiner et al., 1990). Loggerhead shrikes are known to skewer their prey on thorns, sharp twigs, wire barbs, or other sharp objects to kill its prey.

Loggerhead shrikes are common in the lowlands and foothills with open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches (Zeiner et al. 1990). They may also occur in open-canopied valley foothill hardwood, valley foothill hardwood-conifer woodlands, valley-foothill riparian areas, pinyon-juniper woodland, juniper woodland, desert riparian areas, and Joshua tree woodland.

A loggerhead shrike was previously observed perched on a fence on the eastern side of the Project site in 2017 (**Figure 2**). No loggerhead shrikes were observed during the 2021 survey. The Project contains both nesting and foraging habitat for this species.

5.3.8 Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)

The yellow-headed blackbird is a California species of Special Concern and is protected by the Migratory Bird Treaty Act. Yellow-headed black birds have a golden head with a black body and a white patch on their black wings.

These blackbirds typically feed on seeds and cultivated grains as well as insects during the breeding season (Zeiner et al. 1990). They typically use dense emergent vegetation for nesting and roosting. Nests are typically in colony located in wetland vegetation such as cattails, tules and other plants on the edge of lakes or ponds. Nests are always found over water as the species may require drinking water when the diet is primarily seeds and grains.

Much of the California breeding population migrates south during the winter and is an uncommon resident during the winter season. Yellow-headed blackbirds are can be yearlong residents within Kern County.

The nearest reported observation of yellow-headed blackbird occurs near Buena Vista Lake approximately 13 miles west of the Project site. Although no yellow-headed blackbirds were observed during the biological surveys; potential foraging habitat is present within the Project site.

5.3.9 Bats

Pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and the western mastiff bat (*Eumops perotis californicus*) have been reported in the general region. All three of these bats are California Species of Special Concern. No potential structures that may be used as maternity roosts were observed within the Project site. The remaining structure observed on the Project site was very dilapidated with a caved-in roof likely causing the structure to be too drafty for bats to use as a regular roost. No bats or their sign (guano etc.) were observed within the Project site; however, the water present in the irrigation ditch may likely attract insects, which in turn will attract bats to forage within the Project site.

5.3.10 San Joaquin kit fox (*Vulpes macrotis mutica*)

The San Joaquin kit fox is federally-listed as Endangered and state-listed as Threatened. The primary decline of the San Joaquin kit fox is from habitat loss due to agricultural, industrial, and urban development (ESRP 2015). The kit fox is the smallest canid species in North America and the San Joaquin kit fox is the larger of the two subspecies in skeletal measurements, body size, and weight (USFWS, 1998). General physical characteristics of kit foxes include a small, slim body, relatively large ears set close together, narrow nose, and a long, bushy tail tapering slightly toward the tip. Color and texture of the fur coat of kit foxes varies geographically and seasonally. The most commonly described colorations are buff, tan, grizzled, or yellowish-gray dorsal coats.

Historically, the kit fox is adapted for arid habitats such as the alkali scrub and arid grasslands throughout the San Joaquin Valley floor from Southern Kern County north to Tracy in San Joaquin County an up into gradual slopes of the surrounding foothills and adjoining valleys of the interior Coast Ranges (USFWS 2010). Today the San Joaquin kit fox inhabits the remaining suitable habitat of grasslands and scrublands, and even in urban settings.

Kit foxes are primarily nocturnal and utilize subsurface dens for shelter and reproduction. The foxes either construct their own dens, or modify burrows of other animals, such

as ground squirrels, badgers, and coyotes (ESRP 2015). Kit foxes have also been known to den in human-made structures, such as culverts, abandoned pipes, and banks in roadbeds (ESRP, 2015). Kit foxes mate between December and March and litters of two to six pups or born between February and late March. The young begin dispersing in August or September.

Diet of kit foxes varies geographically, seasonally, and annually, based on variation in abundance of potential prey (USFWS 2010; ESRP 2015). In the southern portion of their range, kangaroo rats, pocket mice, white-footed mice (*Peromyscus* spp.), and other nocturnal rodents comprise about one-third or more of their diets (USFWS 1998). Kit foxes also prey on California ground squirrels, black-tailed jackrabbits, San Joaquin antelope squirrels, desert cottontails, ground-nesting birds, and insects (ESRP 2015).

The primary factors in the decline of the San Joaquin kit fox are the habitat loss due to agricultural, industrial, and urban development (ESRP 2015; USFWS 2010). Predation has been the primary factor in mortality of the San Joaquin kit fox by coyote, bob cat, and red fox.

The nearest known observation of kit fox has been reported approximately 1.3 miles west of the Project site (MBHCP 2017). The occurrence is a den reported for the Metropolitan Bakersfield Habitat Conservation Plan's (MBHCP) kit fox of known and potentials dens. No San Joaquin kit fox or their sign was observed within the Project site during the survey. However, due to the presence of San Joaquin kit within the developed areas of Bakersfield, it is likely that kit fox may traverse through the site and may even provide foraging habitat for kit foxes. No known or potential dens were observed within the Project site.

6.0 MINIMIZATION AND AVOIDANCE MEASURES

The following are minimization and take-avoidance measures that have been developed for this Project should ground disturbance or other activities that may impact sensitive species occur. These measures are based on the Metropolitan Habitat Conservation Plan (MBHCP) compliance measures which can be accessed at: https://kernplanning.com/metropolitan-bakersfield-hcp-incidental-take-permit/. Implementation of the measures below and MBHCP measures are expected to mitigate, avoid and/or minimize impacts to listed species and their habitats.

- Project employees and contractors will receive formal training prior to working on the Project including attending a sensitive species education program developed by trained biologists, focusing on the protected and sensitive species that may occur at the Project areas. At a minimum, the program will cover species distribution, identification characteristics, sensitivity to human activities, legal protection, penalties for violation of state and federal laws, reporting requirements, and project mitigation measures.
- Habitat disturbance will be minimized and conducted in a manner that reduces, as much as possible, the potential for take of individuals of a listed species. Existing roads and routes of travel will be used to the greatest extent practicable.
- Construction activities will be conducted during daylight hours to minimize encounters with listed animals that are typically most active during nighttime hours.
- Vehicles will use existing and/or designated roads and avoid any cross-country travel.
- Vehicles must observe a 20 MPH speed limit in and around Project site.
- To prevent attracting wildlife to the Project site, trash and food items will be kept in closed containers and removed daily.
- Firearms and pets will be prohibited within the boundaries of the Project site.
- Dust control (use of water trucks) will be implemented during Project activities that create a substantial amount of dust.
- Spills of hazardous materials shall be immediately cleaned up to prevent exposure to wildlife.
- A pre-activity survey for listed species must be conducted by a qualified biologist within 30 days prior to any ground disturbing activities. Any listed species, their sign, or sensitive habitat features observed must be noted and clearly marked (i.e., burrows, dens, nests etc.).
- To prevent entrapment of animals, any trenches or pits created during Project activities more than two feet deep must be either covered at night or earthen or wooden escape ramps must be provided. Before work continues in these areas, trenches and pits must be inspected to ensure that no animals are present.
- To minimize the inadvertent capture or entrapment of listed animals, the following additional measures will be implemented:

San Joaquin kit fox. If kit fox dens are observed and can be avoided, then exclusion zones will be established for each kit fox den. Potential kit fox dens will be avoided by 50 feet, known kit fox dens will avoided by 100 feet and active pupping dens will be avoided by 250 feet. If a kit fox den cannot be avoided during the project activities, additional consultation with the US Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) will be required prior to the start of activities if the activities are not covered under the MBHCP.

Nesting birds. Prior to construction, a qualified biologist will conduct avian nest surveys within the vicinity of the Project area. Pre-activity surveys will be conducted during the appropriate time of the breeding season (March 1 through August 1). If any protected species are found nesting in these areas, consultation with CDFW and USFWS will be initiated to determine any effects on active nests and how to avoid them as well as establishing an appropriate buffer zone around active nests during the breeding season.

Project activities shall avoid disturbance to active raptor nests within or near the Project. For ground-disturbing activities with mechanized equipment, no pre-construction surveys for nesting raptors shall be required if work is to occur during the non-breeding season (September 1 through January 31). If, however, ground disturbing activities are scheduled to occur during the breeding season (February 1 through August 31), pre-construction surveys of potentially active nest sites within 200 feet of the Project site shall be conducted in areas that may potentially have nesting raptors, including ground nesting raptor species such as the northern harrier. If surveys indicate that nests are inactive or potential habitat is unoccupied during the life of the project, no further mitigation shall be required.

Burrowing owl. Pre-construction surveys for burrowing owls will be conducted according to the March 2012 CDFW *Staff Report on Burrowing Owl Mitigation* guidelines. If owls and/or burrows can be avoided using buffer zones, then the appropriate buffer areas will be implemented. In the event that avoidance measures cannot be adhered to for burrowing owls located within the Project site, exclusion and burrow closures will be implemented. These activities will occur after consultation and CDFW approval has been obtained and in accordance with the 2012 CDFW *Staff Report on Burrowing Owl Mitigation* (CDFW, 2012b).

Jurisdictional Waters. It is not known at this time if the concrete-lined channel may be the jurisdiction of various state and federal agencies regarding waters and waterways. Padre recommends that consultation with state and federal agencies be conducted in order to determine any jurisdictional conditions the agencies may have for any activities or disturbances that may occur within the channel. The following are agency permits/notifications that may need to be submitted/obtained for activities occurring within the channel:

- California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement,
- Army Corps of Engineers (ACOE) Clean Water Act Section 404 permit, and/or
- California Regional Water Quality Control Board (RWQCB) Section 401 Water Quality Certification.

7.0 REFERENCES

Baldwin, B.G. et al. 2012. The Jepson Manual: Higher Plants of California, Second Edition. University of California Press; Berkeley, CA.

Baicich, P.J. and C.J.O. Harrison. 1997. Nests, Eggs, and Nestlings of North American Birds. 2ed. Princeton University Press, Princeton, New Jersey.

Bureau of Land Management. Swainson's Hawk by A. Sidney. Accessed online at: http://www.blm.gov/ca/pdfs/cdd_pdfs/swainhawk1.PDF

CalFlora. 2021. Calflora: Information on Wild California Plants for Conservation, Education, and Appreciation. Accessed online at: http://www.calflora.org

California Department of Fish and Wildlife (CDFW). 2021. Life history accounts for species in the California Wildlife Habitat Relationships (CWHR) System. Accessed online at: http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx

-------. 2021. RareFind 5. Query and Reporting of CNDDB data.

California Native Plant Society (CNPS). 2021. Inventory of Rare, Threatened, and Endangered Plants of California. Accessed online at: http://www.rareplants.cnps.org/

Consortium of California Herbaria. 2021. *Amsinkia furcata* Specimen collection. Accessed online at: http://ucjeps.berkeley.edu/consortium/

Cypher, E.A. 2002. Supplemental Survey Methods for Kern Mallow. In: General Rare Plant Survey Guidelines. Endangered Species Recovery Program.

Endangered Species Recovery Program (ESRP). 2021. Species Profiles. Accessed online at: http://esrp.csustan.edu/speciesprofiles/

Fitton, S. 2008. California Bird Species of special Concern: Le Conte's Thrasher. California Department of Fish and Wildlife and Western Field Ornithologists; Sacramento, CA.

Germano, D.J. 2010. Ecology of Western Pond Turtles (Actinemys marmorata) at Sewage-treatment Facilities in the San Joaquin Valley, California. The Southwestern Naturalist. 55(1): 89-97.

Jennings and Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. California Department of Fish and Game: Inland Fisheries Division; Rancho Cordova, CA.

Kays, R.W., and D.E. Wilson. 2002. Mammals of North America. Princeton University Press. Princeton, NJ.

Metropolitan Bakersfield Habitat Conservations Plan (MBHCP). 2017. Kit Fox Known & Potential Dens Map.

National Geographic. 2002. Field Guides to the Birds of North America. National Geographic Society; Washington, DC.

Sawyer, J.O., and T. Keeler-Wolf. 1995. Manual of California Vegetation. California Native Plant Society, Sacramento, CA.

U.S. Department of Agriculture (USDA) Natural Resources Conservation Service. 2021. Custom Resource Report for Kern County, California. Accessed online at: http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

U.S. Climate Data (USCD). 2021. Accessed online: https://www.usclimatedata.com/climate/bakersfield/california/united-states/usca0062

U.S. Fish and Wildlife Service (USFWS). 2010. San Joaquin Kit Fox 5-Year Review: Summary and Evaluations. USFWS Sacramento, CA.

U.S. Fish and Wildlife Service. 1998. Recovery Plan for Upland Species of the San Joaquin Valley, California. Region 1 US Fish and Wildlife Service; Portland, OR.

U. S. Fish and Wildlife Service. 2014. Swainson's hawk species profile. Accessed online at: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B070

Zeiner, D.C., W.F. Laudenslayer Jr., K.E. Mayer, and M. White, eds. 1998-1990. California's Wildlife Volume I-III. California Department of Fish and Game. Sacramento, CA.

APPENDIX A

SPECIES ACCOUNTS

SPECIES ACCOUNTS

Listed Plant Species

California jewelflower (*Caulanthus californicus*)

California jewelflower is both state and federally-listed as Endangered. This plant species is also a California Rare Plant Rank 1B.1 plant. This species is known to occur in chenopod scrub, pinyon-juniper woodlands, and valley-foothill grasslands with sandy soils (CNPS, 2016). Previous sightings of California jewelflower indicated that the herbaceous cover is usually dense (USFWS, 1998). This species of jewelflower has been known to occur with various other species such as annual fescue (*Vulpia microstachys*), clovers (*Trifolium* spp.), red maids (*Calandrinia ciliata*), and goldfields (*Lasthenia californica*) (USFWS, 1998). California jewelflower has been reported from elevations ranging from approximately 75 to 900 meters (246 to 2953 feet), from level terrain to slopes with angles up to 25 percent. Primary soil types at known populations are subalkaline, sandy loams (USFWS, 1998).

California jewelflower is an annual plant belonging to the mustard family (Baldwin *et al.*, 2012). As is typical of annuals, both the plant size and population size of jewelflower in California can vary dramatically, depending on site and weather conditions. Physical characteristics of California jewelflower include stems that are hairless and often branching with upper leaves that are egg-shaped and clasp the stem; unlike the leaves at the base of the plant, which are oblong. The maroon floral buds are clustered at the tip of the plant's stem and contrast with the translucent, white flowers that are located lower on the stem (USFWS, 1998).

Currently, known populations of California jewelflower are confined to three areas in hilly terrain west of the San Joaquin Valley: the Carrizo Plain, Santa Barbara Canyon (adjacent to the Cuyama Valley in Santa Barbara County), and the Kreyenhagen Hills (Fresno County) (USFWS, 1998). Additional populations of California jewelflower may persist in the foothills of Fresno, Kern, and Kings Counties, where potential suitable habitat remains in private rangeland (USFWS, 1998). However, access to historical sites in these areas has been restricted, so the presence of the species has not been verified in over 50 years.

The primary reason for the decline of California jewelflower is destruction of suitable habitat (CNPS, 2016). Conversion to agriculture accounted for the loss of most populations, but those closest to Bakersfield and Fresno were lost due to urbanization. Oilfield activity has eliminated, and has the potential to eliminate, unknown populations in the foothills at the western margin of the San Joaquin Valley. Potential threats to the remaining populations include competition from introduced plant species, pesticide effects on pollinators, and small population size (USFWS, 1998).

Kern mallow (*Eremalche parryi ssp. kernensis*)

Kern mallow is federally listed as Endangered and is a California Rare Plant Rank 1B.1 plant. Kern Mallow is an annual from the family Malvaceae, which typically occurs in chenopod scrub and valley-foothill grassland (CNPS, 2016). This plant is often known to occur with red brome (*Bromus madritensis* ssp*. rubens*), red-stemmed filaree (*Erodium cicutarium*), woolly goldfields (*Lasthenia minor*), and white Sierran layia (*Layia pentachaeta* ssp. *albida*) (ESRP, 2016).

The height and habit of Kern mallow vary depending on seasonal precipitation. This plant can vary from single-stemmed to multiple-stemmed, with the central stem erect and the lateral stems trailing along the ground (Baldwin *et al*. 2012). Stem lengths at flowering may range from less than 2.5 to nearly 50 centimeters (1 to nearly 20 inches). The flowers have five petals and the wheel-shaped fruits are divided into single-seeded segments. Kern mallow flowers range from white to pale lavender (Cypher, 2002).

The loss and degradation of suitable habitat are the primary reasons for the decline of Kern mallow (ESRP, 2016; CNPS, 2016). Kern mallow was historically thought to have a very restricted range and known to occur in the Lokern area (Cypher, 2002). Extant populations of Kern mallow have been recently found at locations in San Luis Obispo, Santa Barbara, and Ventura Counties and herbarium collections have been verified in San Luis Obispo, Santa Barbara, Ventura and Tulare Counties (USFWS, 2013).

San Joaquin woollythreads (*Monolopia congdonii*)

San Joaquin woollythreads is federally listed as Endangered and is a California Rare Plant Rank 1B.2 plant. This species is an annual herb from the family Asteraceae and occurs in chenopod scrub and valley and foothill grassland (CNPS, 2016). Plant species that often occur with San Joaquin woollythreads include red brome, red-stemmed filaree, goldfields (*Lasthenia* spp.), Arabian grass (*Schismus* spp.), and mouse-tail fescue (*Festuca myuros - Vulpia myuros*) (ESRP, 2016). San Joaquin woollythreads occurs on sandy, sandy loam, or silty soils with neutral to subalkaline pH that were deposited in geologic times by flowing water. Occurrences have been reported at elevations ranging from approximately 60 to 800 meters (197 to 2625 feet) (ESRP, 2016).

The common name "woollythreads" is derived from the many long (up to 45 centimeters) (1.5 feet) trailing stems covered with tangled hairs. However, the growth habit varies (Baldwin *et al*., 2012). San Joaquin woollythreads plants also can be tiny and erect with a single stem. The tiny, yellow flowers are clustered at the tips of the stems and branches. Each flower head is approximately 6 millimeters (.24 inches) long and contains two types of florets. The ray flowers are approximately 0.5 millimeters in length with four-lobed disk flowers approximately 1 to 1.5 millimeters (.039-.06 inches) in length. The two types of florets produce achenes (tiny, one-seeded fruits) that also differ in shape (Baldwin *et al*., 2012).

Historically, San Joaquin woollythreads occurred primarily in the San Joaquin Valley, with a few occurrences in the hills to the west and in the Cuyama Valley of San Luis Obispo and Santa Barbara counties (ESRP, 2016). Current populations of this species have been found in the hills and plateaus west of the San Joaquin Valley (ESRP, 2016).

Habitat loss was responsible for the decline of San Joaquin woollythreads (CNPS, 2016; ESRP, 2016). The majority of the occurrences in the San Joaquin and Cuyama valleys were extirpated by intensive agriculture (ESRP, 2016). In addition, several sites in and around Bakersfield were eliminated by urban and intensive oilfield development. Current threats to San Joaquin woollythreads include commercial and agricultural development, increased intensity of land use in oilfields or pastures, and competition from introduced plants.

Other Sensitive Plant Species

Cottony Buckwheat (*Eriogonum gossypinum*)

Cottony buckwheat is a California Rare Plant Rank 4.2 plant. This plant is an annual herb in the Polygonaceae family (buckwheat family) that typically blooms all year (Baldwin *et al.*, 2012). This species occurs in clay soils within chenopod scrub and valley and foothill grassland (CNPS, 2016). This plant species is known to occur at elevations ranging from 100 to 500 meters (328 to 1640 feet). Cottony buckwheat grows up to 2 decimeters (7.87 inches) in height with tomentose stems. The perianth is white to rose with narrowly oblong lobes and the peduncles are tomentose to hairy (Baldwin *et al.*, 2012). This species is thought to be threatened by vehicles (CNPS, 2016).

Crownscale (*Atriplex coronata var. coronata*)

Crownscale is a California Rare Plant Rank 4.2 plant. This species is an annual herb in the Chenopodiaceae family (goosefoot family). This plant species typically occurs in alkaline, clay soils in chenopod scrub, valley and foothill grassland, and vernal pools (CNPS, 2016). Crownscale is most often found at elevations between one and 1936 feet (590 meters) (CNPS, 2016). The blooming period for crownscale typically occurs between March and October (Baldwin, *et al*., 2016). This plant's stems are decumbent to ascending. Stems are typically gray and scaly and the fruiting bract's margins are toothed (Baldwin *et al*., 2012).

Heartscale (*Atriplex cordulata var. cordulata*)

Heartscale is a California Rare Plant Rank 1B.2 plant. This species is an annual herb in the Chenopodiaceae family (goosefoot family). This plant species typically occurs in saline or alkaline soils in chenopod scrub, meadow and seeps, and valley and foothill grassland (CNPS, 2016). Heartscale is most often found in sandy soils at elevations below 560 meters (1837 feet) (CNPS, 2016). The blooming period for heartscale typically occurs between April and October (Calflora, 2016). This plant grows erect with several rigid stems branching from the base. Stems are typically gray and scaly. Leaves measure between 6 to 20 millimeters in length (Baldwin *et al*., 2012). This plant is thought to be most threatened by competition from non-native plants and possibly trampling (CNPS, 2016).

Hoover's eriastrum (*Eriastrum hooveri*)

Hoover's eriastrum is ranked as a California Rare Plant Rank 4.2 plant. This plant was previously listed as federally Threatened but was delisted in 2003 (CNPS, 2016). This plant species occurs in chenopod scrub, pinyon and juniper woodland, and valley and foothill grassland in gravelly soils, alkaline flats and above streambeds (CNPS, 2016). This species of *Eriastrum* is found at elevations ranging between 90 to 915 meters (295 to 3002 feet). Hoover's eriastrum is an annual herb from the family Polemoniaceae and typically blooms between March and July. The stem can grow to between 1 to 2 inches (3 to 15 centimeters). Leaves are typically linear, ranging between glabrous to woolly and measure between 5 to 25 millimeters in length. Flowers are typically white to pale blue (Baldwin *et al.,* 2012). Threats to this plant include agriculture, grazing, urbanization, energy development, and vehicles (CNPS, 2016).

Lemmon's jewelflower (*Caulanthus lemmonii*)

Lemon's jewelflower is a California Rare Plant Rank 1B.2 plant. This species is an annual herb in the Brassicaceae family (mustard family). This species is known to occur in pinyon-juniper woodland and valley and foothill grassland (CNPS, 2016). Lemmon's jewelflower occurs between 262 to 3609 feet (80 and 1,100 meters) in elevation. The blooming period for this species is March through May. This species can be identified by their cauline leaves clasping the stem and the erect fruit. The primary reason for the decline of Lemmon's jewelflower is development, grazing, and vehicles (CNPS, 2016).

Lost Hills crownscale (*Atriplex coronata* var. *vallicola*)

Lost Hills crownscale is a California Rare Plant Rank 1B.2 plant. This plant is an annual herb in the Chenopodiaceae family (goosefoot family) that typically blooms from April to September (Baldwin *et al.,* 2012). This species occurs in alkaline soils within chenopod scrub, vernal pools, and valley and foothill grassland (CNPS, 2016). This plant species is known to occur at elevations ranging from 50 to 635 meters (164 to 2083 feet). Lost Hills crownscale grows up to 3 decimeters (11.8 inches) in height with one to few, gray-scaly stems that grow from the base. Flowers are typically leaf-like in structure and are fleshy and membranous (Baldwin *et al.,* 2012). This species is thought to be threatened by grazing, agricultural conversion, and energy development (CNPS, 2016).

Munz's tidy-tips (*Layia munzii*)

Munz's tidy-tips is ranked as a California Rare Plant Rank 1B.2 species. This plant typically occurs in chenopod scrub and valley and foothill grassland, often in alkaline, clay soils (CNPS, 2016). Munz's tidy-tips is an annual herb from the family Asteraceae, and is glandular in nature but not scented. The ray flowers are yellow with white tips that range from 3 to 14 millimeters (.12 to .55 inches) in length. The disk flowers are yellow with purple anthers that range from 3.5 to 5 millimeters (.14 to .2 inches) in length (Baldwin *et al*., 2012). This plant typically flowers between March and April and is found in elevations fewer than 700 meters (2297 feet). Primary threats to Munz's tidy-tips include vehicles, foot travel, and non-native plants (CNPS, 2016).

Oil neststraw (*Stylocline citroleum*)

Oil neststraw is ranked as a California Rare Plant Rank 1B.1 plant. This annual herb is from the family Asteraceae and is typically found in clay soils within chenopod scrub, coastal scrub, and valley and foothill grassland in oil producing areas (CNPS, 2016). Extant populations of oil neststraw are known to occur in Elk Hills and Coles Levee Ecosystem Preserve typically at elevations ranging between 50 to 400 meters (164 to 1312 feet) (ESRP, 2016). Oil neststraw typically blooms between March to April. This plant grows low to the ground, approximately less than 13 centimeters (5 inches) in height. Oil neststraw has stems that are trailing and woolly with small, obtuse leaves measuring less than 14 millimeters (.55 inches) in length. Primary threats to oil neststraw include urban development in open habitats in San Diego County, where it is thought to have been extirpated, in addition to the same threats in Kern County (CNPS, 2016).

Pale-yellow layia (*Layia heterotricha*)

Pale-yellow layia is ranked as a California Rare Plant Rank 1B.1 species. This plant typically occurs in clay or sandy soils, sometimes alkaline, in cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland (CNPS, 2016). Pale-yellow layia is a glandular plant from the family Asteraceae that often smells like apples or bananas. The ray flowers are white to cream-colored from 5 to 24 millimeters (.2 to .95 inches) in length. The disk flowers are yellow colored and range from 4 to 7 millimeters (.16 to .28 inches) in length (Baldwin *et al*., 2012). This annual herb flowers between March and June (CNPS, 2016). Primary threats to pale-yellow layia include agricultural development, road maintenance, wind energy development, and non-native plants (CNPS, 2016).

Recurved larkspur (*Delphinium recurvatum*)

Recurved larkspur is ranked as a California Rare Plant Rank 1B.2 species. This larkspur typically occurs in alkaline soils within chenopod scrub, cismontane woodland, and valley and foothill grasslands (CNPS, 2016). This plant is typically found at elevations below 790 meters (2592 feet). Recurved larkspur is a perennial herb from the family Ranunculaceae that typically blooms between March and June. This plant species has a stem that reaches up to centimeters (34 inches) in height with basal, cauline leaves. Flowers typically have a light blue color with white petals (Baldwin *et al*., 2012). Threats to this plant include agricultural development, grazing, trampling, and non-native plants (CNP, 2016).

Showy golden madia (*Madia radiata*)

Showy golden madia is ranked as a California Rare Plant Rank 1B.1 plant. This plant typically occurs in cismontane woodland and valley and foothill grassland (CNPS, 2016). This species of madia typically occurs at elevations ranging between 25 to 1215 meters (82 to 3986 feet). Showy golden madia is an annual herb from the family Asteraceae that typically blooms between March and May. This madia typically has glandular-hairy stems with lateral branches extending from a main stem (Baldwin *et al*., 2012). Leaves are lanceolate to linear and measure 2 to 10 centimeters (.79 to 3.94 inches) in length. This plant produces ray flowers that are typically a golden yellow color and range from 6 to 19 millimeters (.24 to .75 inches) in length. The disk flowers are also yellow and range from 3.5 to 5.5 millimeters (.14 to .22 inches) in length with yellow to black anthers. Threats to this plant species include grazing and non-native plants (CNPS, 2016).

Tejon poppy (*Eschscholzia lemmonii ssp. kernensis*)

Tejon poppy is a California Rare Plant Rank 1B.1 plant. This poppy typically occurs in chenopod scrub and valley and foothill grasslands (CNPS, 2016). Tejon poppies are typically found at elevations ranging between 160 to 1000 meters (525-3281 feet) (CNPS, 2016). This annual herb is from the family Papaveraceae and typically flowers between March and May. This poppy typically grows erect with basal, pinnate leaves (Baldwin *et al*., 2012). Flowers are typically yellow to orange in color. The distinguishing feature of the Tejon poppy is the lack of the rim-like appendage below the flower. Tejon poppy is thought to be threatened by grazing and competition from non-native plants (CNPS, 2016).

Temblor Buckwheat (*Eriogonum temblorense*)

Temblor buckwheat is a California Rare Plant Rank 1B.2 plant. This plant is an annual herb in the Polygonaceae family (buckwheat family) that typically blooms May through September (Baldwin *et al.*, 2012). This species occurs in clay or sandstone soils in valley and foothill grassland (CNPS, 2016). This plant species is known to occur at elevations ranging from 300 to 900 meters (984 to 2953 feet). Temblor buckwheat grows 1 to 8 decimeters (3.94 to 31.5 inches) in height with tomentose stems. The perianth is white with oblong lobes and the peduncles are tomentose (Baldwin *et al.*, 2012). This species is thought to be threatened by energy development (CNPS, 2016).

Listed Wildlife Species

Blunt-nosed leopard lizard (*Gambelia sila*)

The blunt-nosed leopard lizard is both state and federally listed as Endangered. It is also a state Fully-protected species. This species of *Gambelia* is a large lizard ranging in size from snout to vent length (SVL) of 7.6 to 12.7 centimeters (3 to 5 inches) (ESRP, 2015). The coloration of this lizard varies with rows of dark spots across their backs, alternating with white, cream-colored or yellow bands. Other characteristics include a long tail, powerful hind limbs and a short, blunt snout. Breeding females have orange or reddish spots on their sides and breeding males exhibit a salmon coloration on their sides (ESRP, 2015).

Blunt-nosed leopard lizards feed primarily on insects and other lizards (ESRP, 2015). Normally, breeding activity begins within a month of emergence from dormancy that lasts from the end of April through the beginning of June, in some years to near the end of June (Zeiner *et al*., 1990). The female lays two to six eggs in June or July. Females typically produce one clutch of eggs per year, but some may produce three or more under favorable environmental conditions (ESRP, 2015). After about 2 months of incubation, young hatch from July through early August, rarely to September.

This species of lizard was historically located in the San Joaquin Valley inhabiting non-native grassland and alkali sink scrub communities, characterized by poorly drained, alkaline, and saline soils (ESRP, 2015; Zeiner *et al*., 1990). However, urbanization and agricultural development have eliminated more than 70 percent of BNLL habitat in the San Joaquin Valley (ESRP, 2015). Off-highway vehicle (OHV) use, mineral extraction, petroleum and gas field development, construction of transportation corridors, and water transport systems have further impacted the habitat of this species. Habitat disturbance and destruction has resulted in the fragmentation and isolation of BNLL populations.

Giant kangaroo rat (*Dipodomys ingens*)

The giant kangaroo rat is both federally and state listed as Endangered. This type of rodent is adapted for bipedal locomotion (two-footed hopping); the hind limbs are large compared to the size of the forelimbs, the neck is short, and the head is large and flattened (ESRP, 2015). The tail is longer than the combined head and body length and has a dorsal crest of long hairs towards the end of the tail, terminating in a large tuft. Large, fur-lined cheek pouches open on each side of the mouth. The pouches extend as deep pockets of skin folded inward along the sides of the head. Giant kangaroo rats are distinguished from the coexisting species, San Joaquin

kangaroo rat and Heermann's kangaroo rat, by size and number of toes on the hind foot. The hind feet of adult giant kangaroo rats each have five toes and are longer than 47 millimeters (1.85 inches) (ESRP, 2015).

The giant kangaroo rat, by its relative abundance and burrowing activity, is a keystone species in grassland and shrub communities (ESRP, 2015). Giant kangaroo rats are primarily seed eaters, but also eat green plants and insects. They cut the ripening heads of grasses and forbs and cure them in small surface pits located on the area over their burrow system. They also gather individual seeds scattered over the ground surface and mixed in the upper layer of soil. Surface pits are uniform in diameter and depth (about 2.5 centimeters) (.98 inches), placed vertically in firm soil, and filled with seed pods. After placing seeds and seed heads in pits, the animal covers them with a layer of loose, dry soil. Pits are filled with the contents of the cheek pouches after a single trip to harvest seeds. Before being moved underground, the seeds, including filaree and peppergrass (*Lepidium nitidum*), are sun-dried which prevents molding (ESRP, 2015).

Giant kangaroo rats can breed the year of their birth when environmental and social conditions permit (ESRP, 2015). Little information is available on age-specific litter size. The mean of known embryo counts and litter sizes is 3.75, probably a value higher than the number born.

Historically, giant kangaroo rats were believed to inhabit annual grassland communities with few or no shrubs, well-drained, sandy-loam soils located on gentle slopes (less than 11 percent) in areas with about 16 centimeters (6.3 inches) or less of annual precipitation, and free from flooding in winter (ESRP, 2015). However, more recent studies in remaining fragments of historical habitat found that giant kangaroo rats inhabited both grassland and shrub communities on a variety of soil types and on slopes up to about 22 percent and 868 meters (2848 feet) above sea level. This broader concept of habitat requirements probably reflects the fact that most remaining populations are on poorer and marginal habitats compared to the habitats of the large, historical populations in areas now cultivated (ESRP, 2015).

San Joaquin antelope squirrel (*Ammospermophilus nelsoni*)

SJAS is listed as a state threatened species. Adults weigh between 130 to 170 grams (ESRP, 2015). This antelope squirrel has a fusiform body shape that is typically of fossorial squirrels. Coloration for this species is buffy tan with a light stripe on the side of the body. Antelope squirrels are typically smaller than California ground squirrels (*Otospermophilus beecheyi*) and have shorter or less bushy tails.

This species of antelope squirrel is omnivorous and feeds on green vegetation, fungi, insects, and seeds. Antelope squirrels may cache seeds underground (Zeiner *et al*., 1990). Antelope squirrels may have a sympatric relationship with kangaroo rats, benefitting from using burrows and seed caches (Zeiner *et al*., 1990). Domestic sheep and cattle may compete with antelope squirrels for green vegetation.

SJAS breeds in the late winter and early spring. Gestation is typically 26 days and young are born between March and April and emerge from burrows after 30 days (ESRP, 2015).

SJAS occur in arid annual grasslands and shrublands, typically in areas with sparse to moderate cover of shrubs. These antelope squirrels are a fossorial species and excavate their own burrows or utilize existing kangaroo rat burrows (Zeiner *et al*., 1990). Shrubs, rocks, and other topographic features are typically used to evade predators. Friable soils are preferred for the excavation of burrows. They are typically found in the western San Joaquin Valley from 60 to 360 meters (197 to 1181 feet) in elevation. Loss of habitat is due to cultivation and overgrazing, and rodenticides may have contributed to their decline (Zeiner *et al*., 1990).

San Joaquin kit fox (*Vulpes macrotis mutica*)

The San Joaquin kit fox is federally-listed as Endangered and state-listed as Threatened. The primary decline of the San Joaquin kit fox is from habitat loss due to agricultural, industrial, and urban development (ESRP, 2015). The kit fox is the smallest canid species in North America and the San Joaquin kit fox is the larger of the two subspecies in skeletal measurements, body size, and weight (USFWS, 1998). General physical characteristics of kit foxes include a small, slim body, relatively large ears set close together, narrow nose, and a long, bushy tail tapering slightly toward the tip. Color and texture of the fur coat of kit foxes varies geographically and seasonally. The most commonly described colorations are buff, tan, grizzled, or yellowish-gray dorsal coats.

Historically, the kit fox is adapted for arid habitats such as the alkali scrub and arid grasslands throughout the San Joaquin Valley floor from Southern Kern County north to Tracy in San Joaquin County an up into gradual slopes of the surrounding foothills and adjoining valleys of the interior Coast Ranges (USFWS, 2010). Today the San Joaquin kit fox inhabits the remaining suitable habitat of grasslands and scrublands, and even in urban settings.

Kit foxes are primarily nocturnal and utilize subsurface dens for shelter and reproduction. The foxes either construct their own dens, or modify burrows of other animals, such as ground squirrels, badgers, and coyotes (ESRP, 2015). Kit foxes have also been known to den in human-made structures, such as culverts, abandoned pipes, and banks in roadbeds (ESRP, 2015). Kit foxes mate between December and March and litters of two to six pups or born between February and late March. The young begin dispersing in August or September.

Diet of kit foxes varies geographically, seasonally, and annually, based on variation in abundance of potential prey (USFWS, 2010; ESRP, 2015). In the southern portion of their range, kangaroo rats, pocket mice, white-footed mice (*Peromyscus* spp.), and other nocturnal rodents comprise about one-third or more of their diets (USFWS, 1998). Kit foxes also prey on California ground squirrels, black-tailed jackrabbits, San Joaquin antelope squirrels, desert cottontails, ground-nesting birds, and insects (ESRP, 2015).

The primary factors in the decline of the San Joaquin kit fox are the habitat loss due to agricultural, industrial, and urban development (ESRP, 2015; USFWS, 2010). Predation has been the primary factor in mortality of the San Joaquin kit fox by coyote, bob cat, and red fox.

Swainson's Hawk (*Buteo swainsoni*)

The Swainson's hawk is state-listed as a Threatened species. This species is found throughout valley and foothill grasslands, savannah, and open pine-oak woodlands. The natural foraging habitat for the Swainson's hawk is open areas of grassland with sparse shrubs. They

will also forage in agriculture fields of various crops. They are a large broad winged hawk similar in shape and size to the most common hawk in North America, the red-tailed hawk, but have longer and more pointed wingtips. Like many buteos, their plumage types are polymorphic: light morphs, intermediate morphs, and dark morphs. The majority of hawks are light morphs or intermediate morphs. During flight, these hawks are distinguished from similar hawks by their underwing colors. Their flight feathers are dark and contrasting with their pale leading edge. Dark morphs have undertail coverts that are buffy white and barred dark brown, in comparison of other dark morph hawks that have dark undertail coverts.

These hawks have elaborate migrations displays where 100's to 1,000's of Swainson's hawks gather for long migrations. The Swainson's hawk migrate 12,500 miles round-trip during their migration (BLM, 2014). They begin congregating for their long migrations in late August and September, after the young have fledged. The hawks arrive to their wintering grounds by November. Their primary wintering grounds, during the Northern hemisphere winter, is in Argentina, South America. Breeding occurs from early March to mid-May in open areas with scattered trees (Baicich, 1997). They typically brood two young and both parents tend to the young. Their diet consists of a variety of prey of mammals, birds, lizards, snakes, amphibians, and insects. The hawks within the Central Valley forage on California ground squirrel, voles, pocket gopher (*Thomomys* sp.), mourning dove (*Zenaida macroura*), and ring-necked pheasant (*Phasianus colchicus*) (BLM, 2014). Habitat loss and pesticide use has resulted in the decline of the Swainson's hawks (USFWS, 2014).

Other Sensitive Bird, Mammal, and Reptile Species

American badger (*Taxidea taxus*)

The American badger is a California Species of Special Concern. The badger is a large fossorial, mustelid. It is a squat animal with short legs and black and white face stripes (Kays and Wilson, 2002). White stripes run on its nose to the neck and continues down to the base of the tail. Badgers have long coarse, gray fur with a mix of white, brown, buff, rust and orange-colored fur. They have large claws on their forepaws, making them efficient for digging burrows.

Badgers are carnivorous animals (Zeiner *et al*., 1998). They typically hunt fossorial rodents such as rats, mice, ground squirrels, and pocket gophers. They may also eat reptiles, insects, earthworms, eggs, birds, and carrion. The diet of a badger may shift seasonally depending on the availability of prey.

Badgers typically occur in drier open stages of most shrub, forest and herbaceous habitats (Zeiner *et al*., 1998). They typically require friable soils suitable for burrow/den excavation. They may reuse old burrows, although some badgers may dig a new den each night. Badgers typically occur in areas with abundant prey species.

Coast horned lizard (*Phrynosoma blainvillii*)

The coast horned lizard is a California Species of Special Concern. This horned lizard is dorsoventrally flattened with five, backwardly projecting head spines (Jennings and Hayes, 1994). They typically have two parallel rows of pointed scales fringing on each side of the body. This species of horned lizard is typically gray, tan, reddish-brown or whitish and usually resembles the prevailing soil color in the area.

Coast horned lizards are insectivorous and feed primarily on harvester ants (Jennings and Hayes, 1994). Ants typically make up over 90 percent of their diet. Depending on the availability of insect prey, they may also feed on termites, beetles, flies, wasps, and grasshoppers.

This species of horned lizard can occur in a variety of habitats including coastal sage, annual grassland, chaparral, oak woodland, riparian woodland, and coniferous forest (Jennings and Hayes, 1994). Horned lizards prefer loose, fine soils with high sand fraction for cover.

Le Conte's thrasher (*Toxostoma lecontei*)

The Le Conte's thrasher is a California Species of Special Concern is also protected by the Migratory Bird Treaty Act. This thrasher is a plain gray or brown, medium-sized passerine with a long, dark tail and black down-curved bill (Zeiner *et al*., 1998). Adults typically have an unspotted breast, dark eyes, and pale undertail feathers.

The Le Conte's thrasher typically feeds on insects and other terrestrial arthropods (Zeiner *et al*., 1998). They typically forage in leaf litter and under shrubs searching for arthropods. Thrashers will occasionally feed on seeds, small lizards, and other small vertebrates. This species typically occurs in open desert scrub, alkali desert scrub, and desert succulent shrubs and utilizes thick dense desert shrubs for nesting sites (ESRP, 2015). This species of thrasher is typically found in areas dominated by saltbush and dry washes with flat scattered saltbush in the San Joaquin Valley. Nests are typically constructed in tall dense shrubs.

Loggerhead shrike (*Lanius ludovicianus*)

The loggerhead shrike is a California Species of Special Concern and is protected by the Migratory Bird Treaty Act. Loggerhead shrikes have a slim tail, gray and black body with white and black facial markings (Peterson, 1990). They have a bluish-gray head and back with a dark hooked bill.

These shrikes typically feed on insects but may also hunt small birds, mammals, amphibians, and reptiles, fish, carrion, and various other invertebrates (Zeiner *et al.*, 1990). Loggerhead shrikes are known to skewer their prey on thorns, sharp twigs, wire barbs, or other sharp objects to kill its prey.

Loggerhead shrikes are common in the lowlands and foothills with open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches (Zeiner *et al.*, 1990). They may also occur in open-canopied valley foothill hardwood, valley foothill hardwood-conifer woodlands, valley-foothill riparian areas, pinyon-juniper woodland, juniper woodland, desert riparian areas, and Joshua tree woodland.

Mountain plover (*Charadrius montanus*)

The mountain plover is a California Species of Special Concern and is protected by the Migratory Bird Treaty Act. This species of plover has unbanded, white underparts with a buffy tinge on its breast (National Geographic, 2002). Mountain plovers have a similar body shape and appearance to the common killdeer (*Charadrius vociferus*); however, they lack the black banding patterns on the breast that are distinctive of killdeer.

Plovers typically search on the ground for large insects, such as grasshoppers and the like (Zeiner *et al*., 1990). They typically search in grassy or plowed fields with little to no

vegetation. Mountain plovers typically avoid high or dense vegetated areas (Zeiner *et al*., 1990). They frequent grassy or plowed fields, but may also occur in open sagebrush areas. Plovers may roost in depressions in the ground.

Prairie Falcon (*Falco mexicanus*)

The prairie falcon is ranked as a Birds of Conservation Concern by the USFWS and is on the CDFW Watch List; in addition, the prairie falcons are protected under the USFWS Migratory Bird Treaty Act. The prairie falcon is susceptible to habitat loss and degradation of nesting and foraging sites. Most of their habitat, nesting sites, and foraging sites have been converted to agricultural development. Furthermore, since their nest sites occur on rocky outcrops, their nesting grounds have been affected by mining activities and recreational activities, such as rock climbing that result in nest abandonment.

They are approximately the same size of a peregrine falcon. Their plumage is pale brown above and cream-colored below, and they are overall paler than peregrine falcons. In flight, they are identified by their dark axillaries, contrasting with their pale underwing coverts. This species is found throughout the Central Valley, inner Coast Ranges, and lower elevations of the Sierra Nevada (CDFW, 2005). These hawks inhabit grasslands, savannahs, rangeland, some agricultural fields, and desert scrub areas. During the winter the falcon will inhabit cultivated fields, lakeshores, and desert scrub habitats. Their breeding season begins in mid-February and ends in mid-September. They nest on cliff edges or rocky outcrop near open terrain used for foraging. Prairie falcons forage on mostly small mammals, some small birds, and reptiles.

Short-nosed kangaroo rat (*Dipodomys nitratoides breviansus*)

The short-nosed kangaroo rat is a California Species of Special Concern. This kangaroo rat is larger than the other two subspecies of *D. nitratoides*: the Tipton kangaroo rat (*D. n. nitratoides*) and Fresno kangaroo rat (*D. n. exilis*) (ESRP, 2015). They weigh between 39 to 44 grams and have a tail length that ranges between 115 to 130 millimeters (45.3 to 51.18 inches).

Short-nosed kangaroo rats typically forage on seeds (Zeiner *et al*., 1990). They may supplement their diet with green, herbaceous vegetation and insects when available. This subspecies of the San Joaquin Kangaroo rat has similar foraging behaviors as the Tipton and Fresno kangaroo rats (ESRP, 2015). They typically collect seeds and gather them in their fur-lined cheek pouches and store or cache them for later.

Short-nosed kangaroo rats utilized flat and gently sloping terrain (CDFW, 2014). They are often found in grasslands with scattered shrub and desert shrublands with friable soils for burrow excavation. Burrow complexes typically have multiple entrances to evade predators. Burrow entrances are typically vertical shafts and sometimes have additional slanted entrances underground.

San Joaquin whipsnake (*Masticophis flagellum ruddocki*)

The San Joaquin whipsnake is a California Species of Special Concern. This species of snake is considered large measuring between 90 to 155 centimeters (35.5 to 61 inches) (snout to vent length), with smooth scales, large eyes, and slender shape (Jennings and Hayes, 1994). They are a buff citrine, tan-yellow, or olive brown coloration with lengthwise stripes. The ventral color is typically straw yellow to a pinkish to orange hue.

The San Joaquin whipsnake is thought to feed primarily on lizards and rob nests of birds and mammals, but may also feed on other small reptiles and mammals, and carrion (Jennings and Hayes, 1994).

This species of snake typically inhabits open, dry, vegetative associations with little to no tree cover (Jennings and Hayes, 1994). In the San Joaquin Valley, these snakes occur in valley grasslands and saltbush scrub habitats. Whipsnakes typically require the presence of rodents as an occasional food source, but also for the use of their burrows for cover and egg-laying.

Tulare grasshopper mouse (*Onychomys torridus tularensis*)

The Tulare grasshopper mouse is a California Species of Special Concern. This grasshopper mouse has a stout body with a short, relatively thick tail (ESRP, 2015). The fur coloration is bicolored with the head, back and upper sides of the body being pale-brown to grayish or pinkish cinnamon and the under parts being white. The total body length typically measures 119 to 163 millimeters (46.85 to 64.17 inches).

Grasshopper mice are typically carnivorous and feed mostly on insects and other arthropods. They may also prey upon scorpions, spiders, mites, ants, beetles, lizards, frogs, pocket mice and western harvester mice (ESRP, 2015). They have been also observed to feed on seeds when no other food source is available.

The Tulare grasshopper mouse is usually found in arid shrubland communities in hot, arid grasslands and shrubland associations (ESRP, 2015). They are thought to also inhabit blue oak woodlands, upper Sonoran subshrub scrub, alkali sink, mesquite woodlands, and various grassland associations on sloping margins.

Western burrowing owl (*Athene cunicularia hypugea*)

The western burrowing owl is a California Species of Special Concern and is protected by the Migratory Bird Treaty Act. Burrowing owls are small, ground dwelling birds measuring 21.6 to 27.9 centimeters (8.5 to 11 inches) and weigh on average approximately 170 grams (ESRP, 2015). They have long legs with sparse feathers. Burrowing owls have a facial ruff, no eartufts, and a round head. Their wings are typically long and rounded and have a wing span approximately three feet in length. They are a buffy brown with white barred primaries (ESRP, 2015).

Burrowing owls feed primarily on arthropods, small mammals, birds, and sometimes on reptiles and amphibians (ESRP, 2015). These owls typically forage in open short grasslands and/or mowed or overgrazed pastures. Burrowing owls are usually crepuscular but may also forage during the day.

Burrowing owls are usually found in dry, open, shortgrass, treeless plains, desert habitats, and in grass, forb, and open shrub stages of pinyon-juniper and ponderosa pine habitats (Zeiner *et al.,* 1990). The western burrowing owl occurs in areas with rodent and other small mammal burrows as they do not excavate their own burrows, but instead inhabit the previously dug burrows of mammals. Low perches, such as shrubs and fence posts are typically utilized during foraging. Loss of habitat and conversion to agriculture and other development, poisoning of ground squirrels, and vehicle collisions may be the greatest threat to burrowing owls.

APPENDIX B

PHOTOLOG

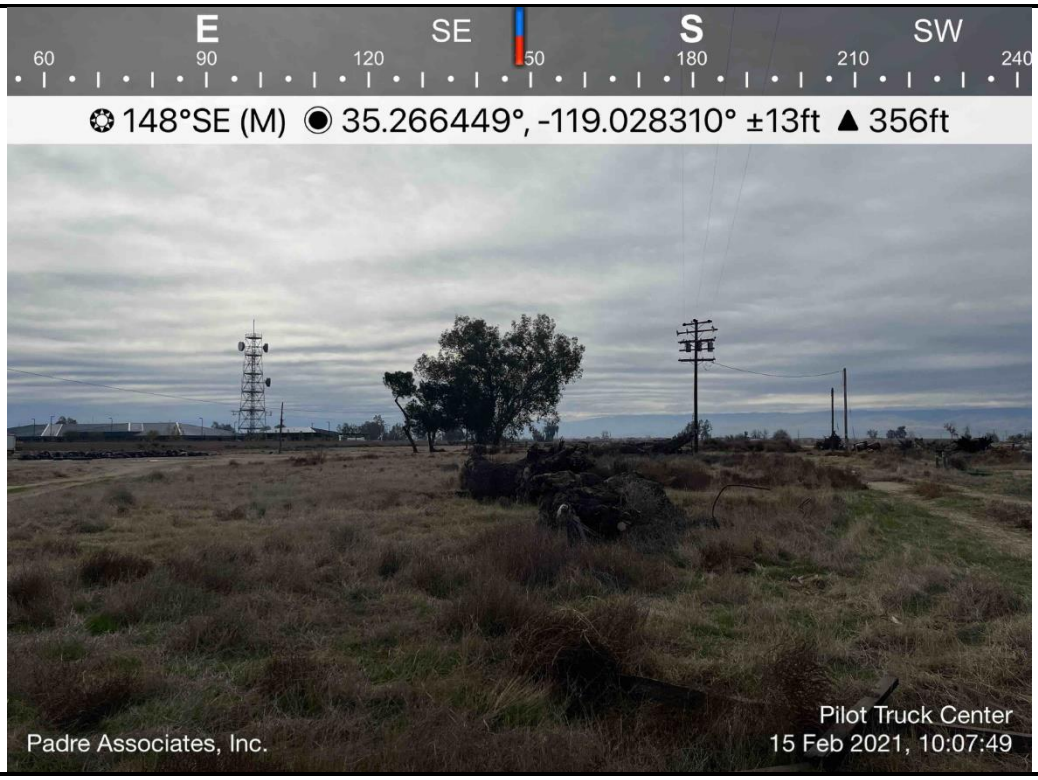

Photo 1. View facing southeast from central portion of the Project site.

Photo 2. View facing east of the Project site.

Photo 3. Large trees and irrigation ditch observed within the Project site.

Photo 4. Disturbed portions of the Project site.

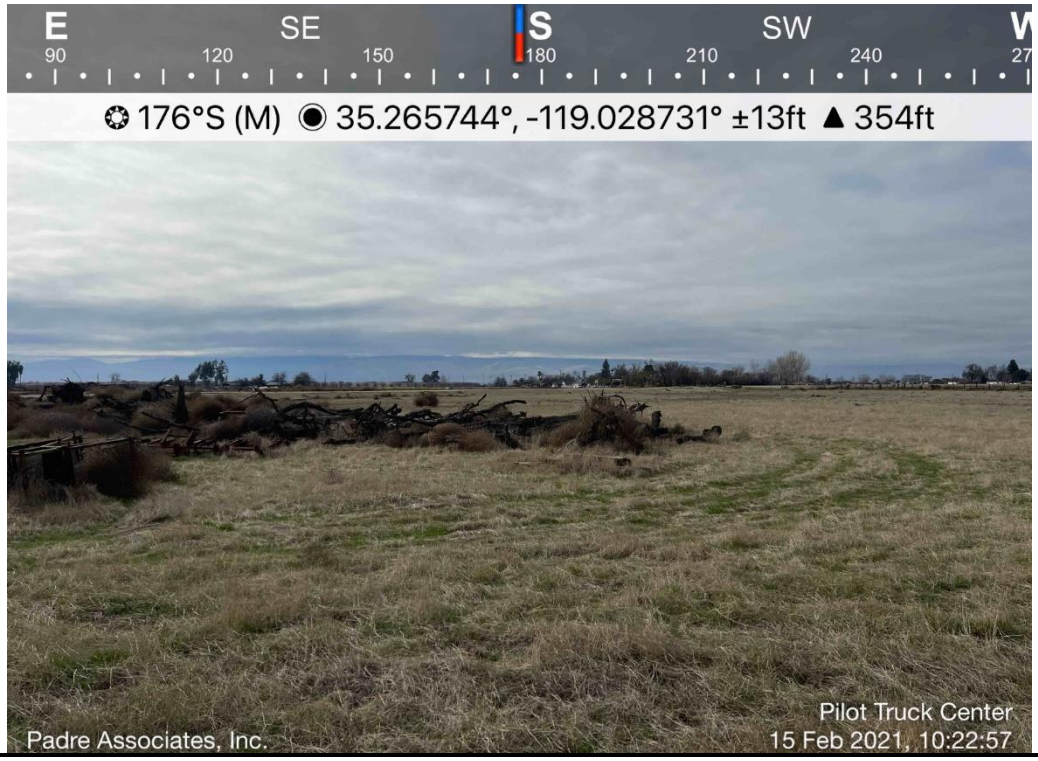

Photo 5. Disturbances where buildings were previously observed in 2017.

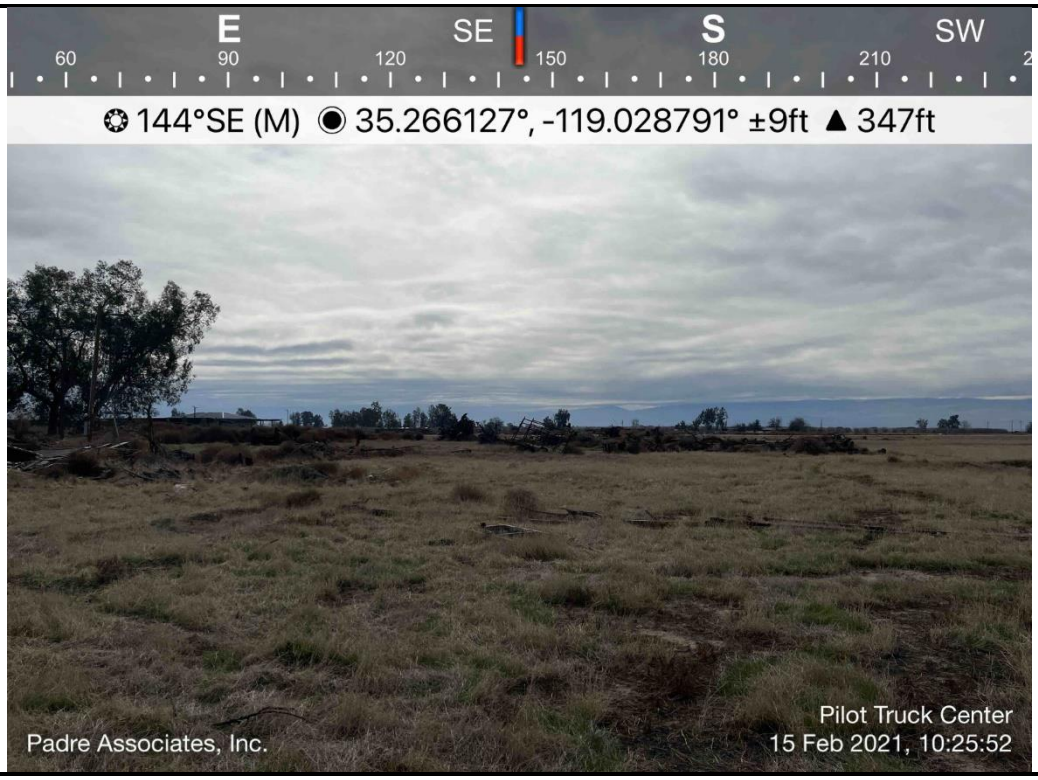

Photo 6. View facing southeast of area where buildings were previously observed in 2017.

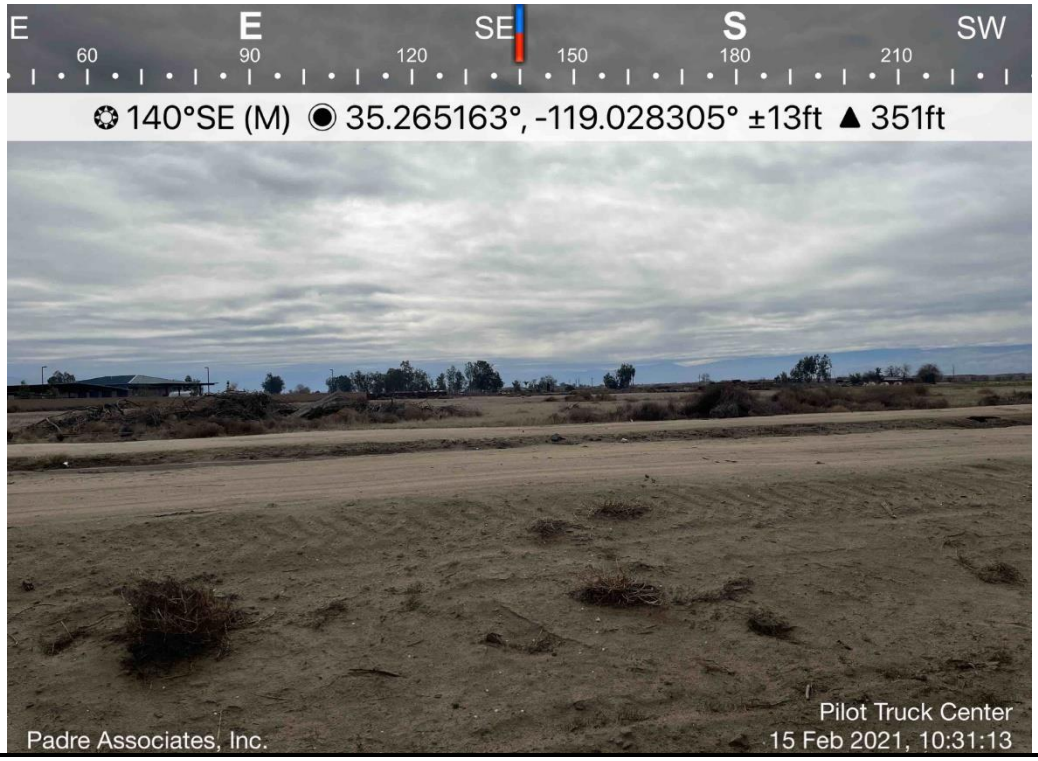

Photo 7. Existing roads and disturbances observed within the Project site.

Photo 8. Large trees and locations where buildings were previously observed in 2017.

Photo 9. View facing east of irrigation ditch and adjacent properties.

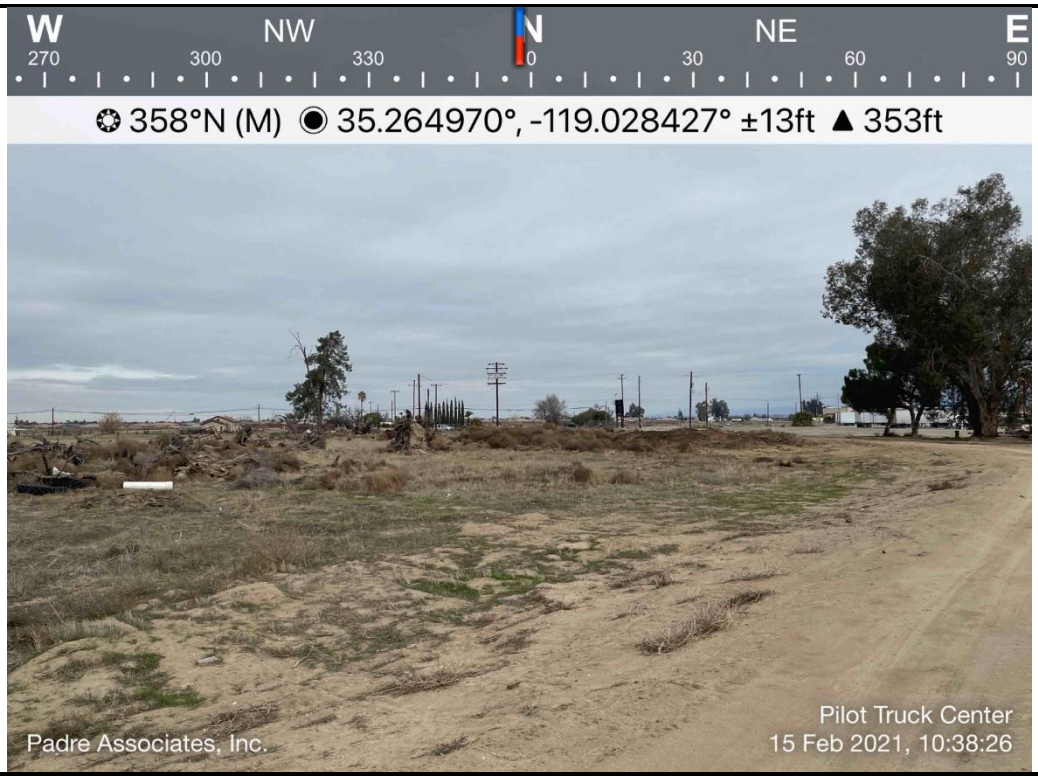

Photo 10. Large trees and disturbed habitat observed within the Project site.

Photo 11. Existing roads and large tree observed within the Project site.

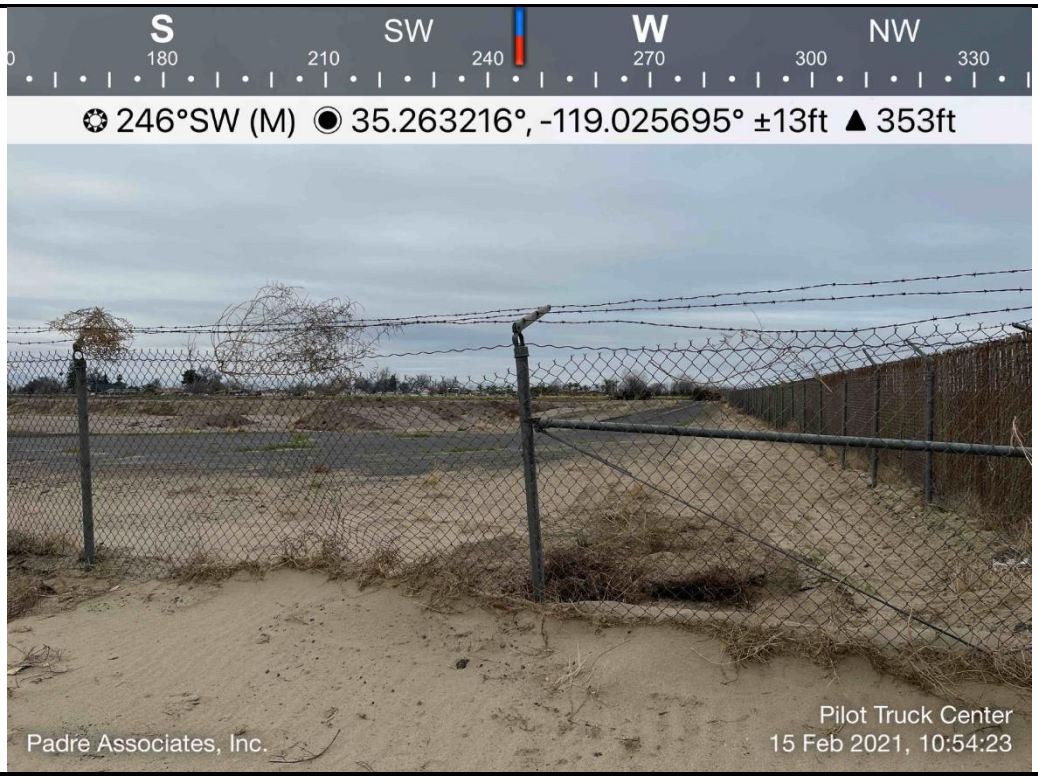

Photo 12. View facing southwest of adjacent roadway and property within the southwest corner of the Project site.

Appendix G:

Noise Study

TAFT HIGHWAY PILOT TRUCK CENTER PROJECT

NOISE STUDY

Prepared for:

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Prepared by:

BIRDSEYE
PLANNING GROUP

June 2021

PILOT TRUCK CENTER PROJECT
BAKERSFIELD, CALIFORNIA
Noise Study

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Appendix A - Monitoring Sheet and Modeling Files

PILOT TRUCK CENTER PROJECT
BAKERSFIELD, CALIFORNIA
NOISE STUDY

This report is an analysis of the potential noise impacts associated with the proposed Pilot Truck Center project, a commercial center proposed for construction in the City of Bakersfield, Kern County, California. The report has been prepared by Birdseye Planning Group, LLC, under contract to the applicant to support the entitlement process and address a request from the City of Bakersfield Planning Department. This study analyzes the potential for temporary impacts associated with construction activity, long-term impacts associated with traffic noise generated on neighboring roadways and stationary source impacts associated with facility operation.

PROJECT DESCRIPTION

The Pilot Truck Center would be located on a 16-acre site at 2201 Taft Highway in the City of Bakersfield, California (APN 184-160-13, -14 and -43). The site is on the southeast corner of Taft Highway and Grewal Street (to be constructed and southwest of the Michele Street intersection (see Figure 1 – Vicinity Map). The project would construct a total of four buildings. Building 1 would be a restaurant/convenience store (16,582 square feet); Building 2 would be truck wash/office (11,700 square feet); Building 3 would be a truck sales office (240 square feet) and Building 4 would be a freight broker office (1,943). A nine-lane truck fueling station/canopy and 10-dispenser gasoline station/canopy will be constructed. A total of 150 parking spaces are required. A total of 152 spaces would be provided. A stormwater basin would be constructed at the southwest corner of the site. To accommodate the fueling facilities, two 12,000 gallon and two 15,000-gallon underground fuel tanks would be installed. A total of four 12,000-gallon tanks and one 9,000 gallon above-ground tank would also be installed.

The project will construct Grewal Street which would serve as the primary access street running north/south generally through the center of the site. As proposed, truck/trailer parking would be developed on the west side of Grewal Street and the remainder of the facility would be located on the east side. Buhlar Street would be constructed along the southern site boundary to provide secondary site access between Grewal Street to the west and Compangoni Street to the east. The preliminary site plan is shown on Figure 2 – Proposed Site Plan.

The site is zoned Light Manufacturing (M-1) (APN 184-160-13, and -43) and General Manufacturing (M-2) (APN 184-160-14) (PD). A truck fueling and storage facility is currently in operation on the project site. Adjacent land uses are vacant land and a gas station/convenience store to the north. Several single-family residences are located northwest of the site. An equipment rental yard, California Highway Patrol facility, fast-food restaurant and two gas station/convenience stores are located to the east, vacant land and then retail and single-family

Figure 1—Project Site

- Project Site

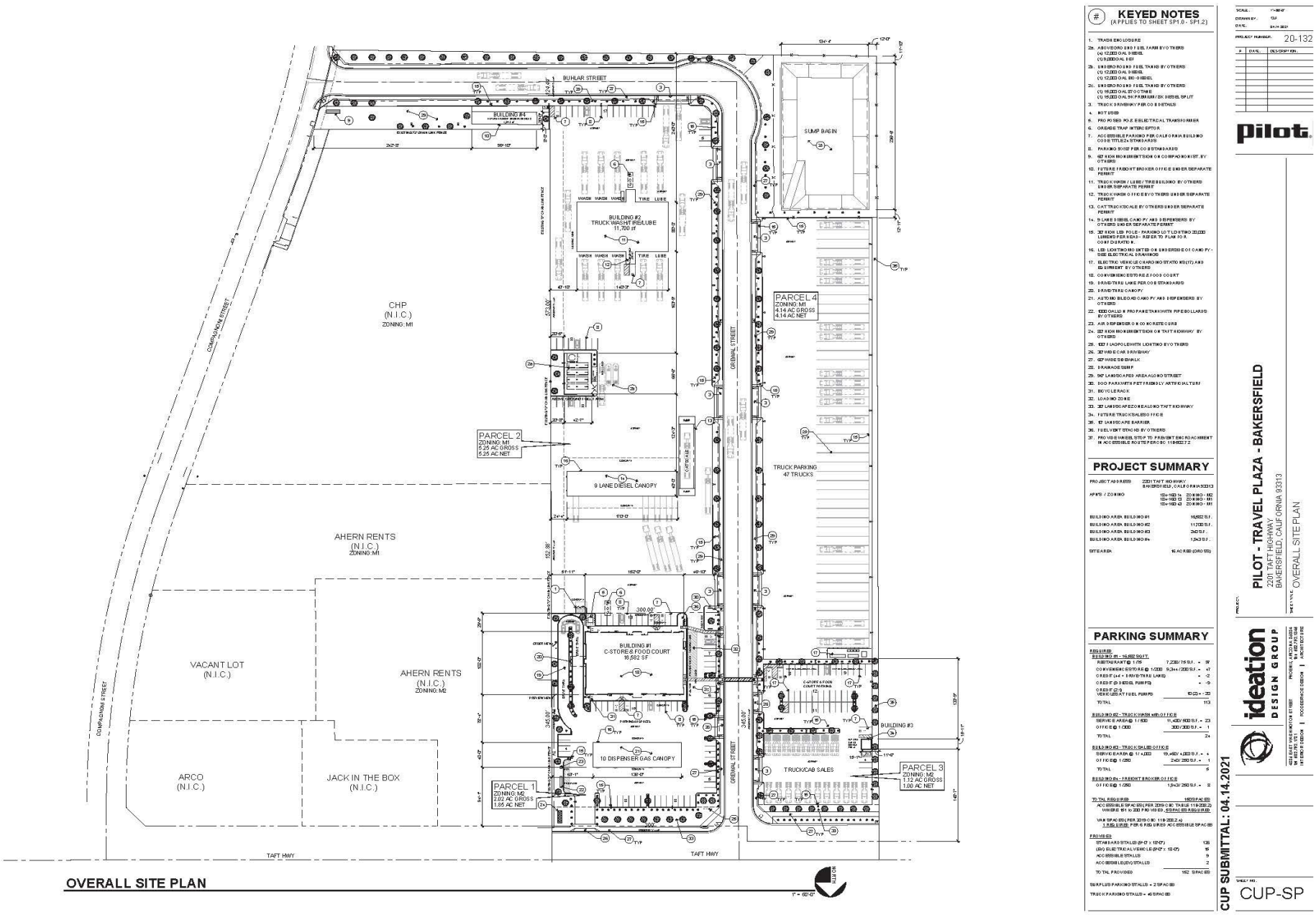


Figure 2—Site Plan

residential are located to the west. Vacant land is located south of the site. The proposed Project is expected to be begin construction in early 2022 and be operational in 2023.

SETTING

Overview of Sound Measurement

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dB level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dB changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range, and ambient noise levels greater than 65 dBA can interrupt conversations. Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (i.e., industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA. The manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. The exterior-to-interior reduction of newer residential units and office buildings construction to California Energy Code standards is generally 30 dBA or more (HMMH, 2006).

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest

RMS (root mean squared) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the day. Community noise is usually measured using Day-Night Average Level (Ldn), which is the 24-hour average noise level with a 10-dBA penalty for noise occurring during nighttime (10 p.m. to 7 a.m.) hours, or Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5 dBA penalty for noise occurring from 7 p.m. to 10 p.m. and a 10 dBA penalty for noise occurring from 10 p.m. to 7 a.m. Table 1 shows sounds levels of typical noise sources in Leq.

Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Urban areas contain a variety of land use and development types that are noise sensitive including residences, schools, churches, hospitals and convalescent care facilities. Nearby sensitive receptors are single-family residences located on the west side of Hughes Lane along Holladay Avenue approximately 405 feet west of the site and single-family residences located approximately 475 feet north of the site. A single-family residence is also located approximately 570 feet northwest of the site. Single-family residences are also located southwest of the site along Hughes Lane. The nearest residence is approximately 490 feet west of the southwestern corner of the site.

Project Site Setting

The project area is located in the southern-most portion of Bakersfield. Land use is a mixture of single-family residential, commercial, agriculture and vacant property. Taft Highway (County Road 119) is a two-lane roadway connecting Highway 99 located approximately 1,000 feet east of the site to Interstate 5 located approximately 11 miles to the west. The most common and primary sources of noise in the project site vicinity are motor vehicles (e.g., automobiles, trucks and utility trailers and heavy (semi-) trucks) operating on Taft Highway. Other sources include the operation of trucks on the project site and movement of equipment on the rental yard located east of the site.

To gather data on the general noise environment at the project site, three weekday morning 15-minute noise measurements were taken on and in proximity to the site on February 16, 2021, using an ANSI Type II integrating sound level meter. The predominant noise source was traffic. The temperature during monitoring was 60-65 degrees Fahrenheit with a 3-5 mile per hour wind.

Site 1 is located near the center of the project site approximately 55 feet south of the Taft Highway centerline. During monitoring, 111 cars/light trucks, seven medium (six tires/two axles) trucks and 11 heavy trucks (all vehicles with three or more axles) passed the site. Site 2 is located on the west side of Hughes Lane adjacent to the northernmost residence located at 2500

Table 1. Sound Levels of Typical Noise Sources and Noise Environments

Noise Source (at Given Distance)	Noise Environment	A-Weighted Sound Level (Decibels)	Human Judgment of Noise Loudness (Relative to Reference Loudness of 70 Decibels*)
Military Jet Takeoff with Afterburner (50 ft)	Carrier Flight Deck	140	128 times as loud
Civil Defense Siren (100 ft)		130	64 times as loud
Commercial Jet Take-off (200 ft)		120	32 times as loud **Threshold of Pain**
Pile Driver (50 ft)	Rock Music Concert Inside Subway Station (New York)	110	16 times as loud
Ambulance Siren (100 ft) Newspaper Press (5 ft) Gas Lawn Mower (3 ft)		100	8 times as loud **Very Loud**
Food Blender (3 ft) Propeller Plane Flyover (1,000 ft) Diesel Truck (150 ft)	Boiler Room Printing Press Plant	90	4 times as loud
Garbage Disposal (3 ft)	Noisy Urban Daytime	80	2 times as loud
Passenger Car, 65 mph (25 ft) Living Room Stereo (15 ft) Vacuum Cleaner (10 ft)	Commercial Areas	70	Reference Loudness **Moderately Loud**
Normal Speech (5 ft) Air Conditioning Unit (100 ft)	Data Processing Center Department Store	60	1/2 as loud
Light Traffic (100 ft)	Large Business Office Quiet Urban Daytime	50	1/4 as loud
Bird Calls (distant)	Quiet Urban Nighttime	40	1/8 as loud **Quiet**
Soft Whisper (5 ft)	Library and Bedroom at Night Quiet Rural Nighttime	30	1/16 as loud
	Broadcast and Recording Studio	20	1/32 as loud **Just Audible**
		0	1/64 as loud **Threshold of Hearing**

Source: Compiled by dBF Associates, Inc., 2016

Holladay Avenue. This location is west of the site and represents existing noise levels at the nearest sensitive receivers located to the western site boundary. During monitoring, 144

cars/light trucks, 13 medium (six tires/two axles) truck and 5 heavy trucks (six axles and 18-wheels) passed the site. Site 3 is located on the north side of Taft Highway and represents the single-family residence located northwest of the site at 2450 Taft Highway. During monitoring, 112 cars/light trucks, eight medium (six tires/two axles) truck and 12 heavy trucks (all vehicles with three or more axles) passed the site.

The dominant noise source is traffic on both Taft Highway; however, traffic operation on Highway 99 east of the site is audible as background noise. Table 2 identifies the noise measurement locations and measured noise levels. Monitoring locations are shown in Figure 3. As shown, the Leq was 63.4 dBA at Site 1, 56.9 dBA at Site 2 and 61.6 at Site 3. The monitoring data sheet is provided as Appendix A.

Table 2
Noise Monitoring Results

Measurement Location	Primary Noise Source	Sample Time	Leq (dBA)
Project site approximately 55 feet south of the Taft Highway centerline.	Traffic	Weekday morning	63.4
North side of the residence at 2500 Holladay Avenue west of the site.	Traffic	Weekday morning	56.9
North side of Taft Highway approximately 125 feet north of the centerline	Traffic	Weekday morning	61.6

Source: Field visit using ANSI Type II Integrating sound level meter.

Regulatory Setting

In 1976, the California Department of Health, State Office of Noise Control published a recommended noise/land use compatibility matrix which many jurisdictions have adopted as a standard in their general plan noise elements. This matrix indicates that residential land uses and other noise sensitive receptors preferentially should be located in areas where outdoor ambient noise levels do not exceed 65 to 70 dBA (CNEL or Ldn).

City of Bakersfield Noise Ordinance

The City of Bakersfield Noise Ordinance is codified in Chapter 9.22 of the Municipal Code. Section 9.22.050 exempts construction noise between the hours of 6:00 am and 9:00 pm on weekdays and between 8:00 am and 9:00 pm on weekends. Construction work performed more than 1,000 feet from the nearest residential building is exempt from the time restrictions stated above.

Figure 3—Monitoring Locations - Project Site

As required by California Government Code §65302, the Bakersfield General Plan Noise Element establishes desirable noise exposures for a range of land uses present in the City. Table 3 shows the City's compatibility standards used to determine whether proposed new development requires mitigation to avoid potential land use conflicts. These standards determine the normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable noise levels for various land uses. Land uses where a quiet environment is particularly desirable include residential, transient lodging (e.g., hotels, motels, and RV parks), and noise-sensitive institutional uses (e.g., hospitals, school, nursing homes, churches, and libraries). All values are shown in A-weight decibels using the CNEL descriptor. As shown in Table 2, measured noise levels at single-family residences located closest to the site are within the nornally or conditionally acceptable limits.

Table 3
Land Use Compatibility for Community Noise Environments

Land Use	Normally Acceptable[a]	Conditionally Acceptable[b]	Normally Unacceptable[c]	Clearly Unacceptable[d]
Single-Family, Duplex, Mobile Homes	50-60	55-70	70-75	Above 70
Multifamily	50-65	60-70	70-75	Above 70
Transient Lodging – Hotels, Motels	50-65	60-70	70-80	Above 80
School, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	Above 80
Auditoriums, Concert Halls, Amphitheaters	-	50-70	-	Above 65
Sports Arena, Outdoor Spectator Sports	-	50-75	-	Above 70
Playgrounds, Neighborhood Parks	50-70	-	67-75	Above 72
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-75	-	70-80	Above 80
Office Building, Business and Professional, Commercial	50-70	67-77	Above 75	-
Industrial, Manufacturing, Utilities, Agriculture	50-75	70-80	Above 75	-

[a] Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
[b] Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning would normally suffice.
[c] Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
[d] Clearly Unacceptable: New construction or development should generally not be undertaken.

Note: Noise levels are provided in A-weighted decibels, CNEL.
Source: Office of Noise Control, California Department of Health

Vibration Standards

Vibration is a unique form of noise as the energy is transmitted through buildings, structures and the ground whereas audible noise energy is transmitted through the air. Thus, vibration is generally felt rather than heard. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB). The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels.

The Bakersfield Municipal Code does not address construction-related vibration; thus, for the purpose of evaluating project-related vibration impacts, thresholds established in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment* (September 2018) are used. A threshold of 65 VdB is used for buildings where low ambient vibration is essential for interior operations. These buildings include hospitals and recording studios. A threshold of 72 VdB is used for residences and buildings where people normally sleep (i.e., hotels and rest homes). A threshold of 75 VdB is used for institutional land uses where activities occur primarily during the daytime (i.e., churches and schools). The threshold used for the proposed project is 72 VdB as single-family residences are the nearest sensitive receptors to the site.

Construction activities such as blasting, pile driving, demolition, excavation or drilling have the potential to generate ground vibrations near structures. With respect to ground-borne vibration impacts on structures, the FTA states that ground-borne vibration levels in excess of 100 VdB would damage fragile buildings and levels in excess of 95 VdB would damage extremely fragile historic buildings. No historic buildings are known to occur near the site; thus, 100 VdB is used to quantify potential vibration impacts to neighboring structures. Construction activities referenced above that would generate significant vibration levels are not proposed. However, to provide information for use in completing the CEQA evaluation, construction-related vibration impacts are evaluated using the above referenced criteria.

IMPACT ANALYSIS

Methodology and Significance Thresholds

Construction noise estimates are based upon noise levels reported by the Federal Transit Administration, Office of Planning and Environment, and the distance to nearby sensitive receptors. Reference noise levels from that document were used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dB per doubling of distance (line-of-sight method of sound attenuation).

The proposed project would be a new use; thus, noise levels associated with existing and future traffic were based on the difference in trip volumes between existing conditions and the proposed use. A doubling of traffic volumes would be required to cause a noticeable increase (3

dBA) in traffic noise. As noted, a noise increase greater than 3 dBA is readily perceptible to the average human ear; and thus, is the level considered to be a substantial noise increase related to traffic operations. For the purpose of this evaluation, the peak hour Leq is used for traffic noise as it provides a conservative estimate of potential noise levels. As discussed, existing noise levels are within the normally and conditionally acceptable range as defined in the City of Bakersfield General Plan Noise Element (Table 3) for single-family residential properties. Thus, the impact determination is based on whether noise levels would exceed those levels considered acceptable for single-family residential areas and whether design features associated with the project would reduce interior noise levels to at least 45 dBA.

Temporary Construction Noise

The main sources of noise during construction activities would include heavy machinery used during, grading/excavation and clearing the site, as well as equipment used during building construction and paving. Table 4 shows typical noise levels associated with heavy construction equipment. As shown, average noise levels associated with the use of heavy equipment at construction sites can range from about 81 to 95 dBA at 25 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction (Hanson, Towers, and Meister, May 2006).

Table 4
Typical Construction Equipment Noise Levels

Equipment Onsite	Typical Level (dBA) 25 Feet from the Source	Typical Level (dBA) 50 Feet from the Source	Typical Level (dBA) 100 Feet from the Source
Air Compressor	84	78	64
Backhoe	84	78	64
Bobcat Tractor	84	78	64
Concrete Mixer	85	79	73
Bulldozer	88	82	76
Jack Hammer	95	89	83
Pavement Roller	86	80	74
Street Sweeper	88	82	76
Man Lift	81	75	69
Dump Truck	82	76	70
Compactor	88	82	76
Grader	91	85	79
Paver	95	89	83
Loader	91	85	79

Table 4
Typical Construction Equipment Noise Levels

Equipment Onsite	Typical Level (dBA) 25 Feet from the Source	Typical Level (dBA) 50 Feet from the Source	Typical Level (dBA) 100 Feet from the Source

Source: Hanson, Towers and Meister, May 2006
Noise levels based on FHWA Roadway Construction Noise Model (2006) Users Guide Table 1.
Noise levels based on actual maximum measured noise levels at 50 feet (Lmax).
Noise levels assume a noise attenuation rate of 6 dBA per doubling of distance.

Noise-sensitive uses nearest the project site are existing single-family residences located approximately 405 feet west of the western property boundary 475 feet northwest of the northern boundary. Table 5 shows typical maximum construction noise levels at various distances from construction activity based on a standard noise attenuation rate of 6 dBA per doubling of distance. The noise level used to estimate the maximum noise level that could occur is based on use of a bulldozer as it is likely to be the noisiest type of equipment used over a sustained period of time during demolition, site preparation and grading activities. Actual noise levels will fluctuate throughout the day and may periodically exceed 88 dBA at the property line depending on the type and location of equipment used and whether multiple pieces of equipment are operating simultaneously in the same area. Maximum construction noise levels at 405 feet from the southern property line will attenuate to approximately 63.8 dBA based on a reference distance of 88 dBA at 25 feet.

Table 5
Typical Maximum Construction Noise Levels at Various Distances from Project Construction

Distance from Construction	Maximum Noise Level at Receptor (dBA)
25 feet	88
50 feet	82
100 feet	76
250 feet	70
500 feet	64
1,000 feet	58

Construction noise may be periodically audible at the nearest receivers; however, provided construction occurs between the hours specified in Section 9.22.050 of the City of Bakersfield Municipal Code, temporary construction noise would be less than significant.

Temporary Construction-Related Vibration

Activities associated with the uses proposed do not generate vibration. Thus, this discussion focuses on temporary vibration caused by construction. As referenced, the closest single-family residence is approximately 405 feet west of the western property line. Based on the information presented in Table 6, vibration levels would attenuate to approximately 63 VdB at 400 feet during construction assuming a bulldozer is the heaviest piece of equipment used during grading or site clearing. As discussed, 100 VdB is the threshold where minor damage can occur in fragile buildings. No fragile buildings are located in proximity to the site and vibration levels are projected to be under this threshold; thus, structural damage is not expected to occur as a result of construction activities associated with the proposed project. Maximum vibration levels would be approximately 63 VdB and below the 72 VdB threshold typically associated with sleep disturbance referenced above. Temporary vibration impacts would be **less than significant.**

Table 6
Vibration Source Levels for Construction Equipment

Equipment	Approximate VdB				
	25 Feet	50 Feet	60 Feet	75 Feet	100 Feet
Large Bulldozer	87	81	79	77	75
Loaded Trucks	86	80	78	76	74
Jackhammer	79	73	71	69	67
Small Bulldozer	58	52	50	48	46

Source: Federal Railroad Administration, 1998

Long-Term Operational Noise Exposure

Long-term operation of the proposed project was evaluated for potential exterior traffic related impacts caused by increased traffic volumes associated with the project as well as interior noise levels caused by traffic.

Exterior Traffic Noise. Traffic is the primary noise source that would be generated by the proposed project. Existing noise levels are within the compatible or conditionally compatible residential standards referenced above in Table 3; thus, whether a traffic-related noise impact would occur is based on whether project traffic, when added to the existing traffic, would cause noise to noticeably increase over ambient conditions (i.e., +3 dBA) and/or exceed the residential compatibility criteria.

The roadway network adjacent to the project site was modeled using the Federal Highway Administration Traffic Noise Model (TNM) version 2.5 software (see Appendix A). Grewal Street and Buhlar Street were added to the with-project condition to estimate noise levels generated by heavy trucks circulating through the site. The model calculates traffic noise at

receiver locations based on traffic volumes, travel speed, mix of vehicle types operating on the roadways (i.e., cars/trucks, medium trucks and heavy trucks) and related factors. Traffic volumes and vehicle mix on Taft Highway are based on traffic counts obtained during monitoring.

Traffic volumes for the project were based on peak hour trip generation rates provided by LAV//Pinnacle Engineering, Inc. (April 2021). The proposed project would generate approximately 3,750 net new daily vehicle trips and 825 truck trips. To provide a conservative estimate of traffic noise levels during operation, 10 percent of the daily trips were added to baseline volumes to calculate peak hour noise levels and determine whether noise levels would increase as a result of project operation. The model was calibrated to calculate noise levels that are +/- 2 dBA those measured on-site and reported in Table 2.

Hourly average baseline noise levels (Leq) were calculated for the residential receivers located along Hughes Lane and Taft Highway west and north/northwest of the site to establish baseline conditions. These are the closest receivers to the project site and would experience the highest concentration of project-related traffic. The receiving properties are defined as follows and shown in Figure 4:

1. Single-family residence at 2500 Holladay Avenue west of the site;
2. Single-family residence at 2450 Taft Highway northwest of the site; and
3. Single-family residence at 2310 Taft Highway north of the site.

Baseline noise levels are shown Table 7. As shown, baseline conditions exceed the 55 dBA exterior standard at existing single-family residences and are consistent with measured noise levels.

Noise levels associated with the project were calculated by distributing the 375 peak hour vehicle trips and 83 truck trips to baseline traffic volumes on Taft Highway and Compangoni Street between Buhlar Street (to be constructed) and Taft Highway to the north. Volumes were concentrated in this area for the purpose of evaluating worst case noise conditions. The results are also shown in Table 7. Project traffic will have no noticeable effect on baseline conditions at the sensitive properties nearest the site.

Table 7
Modeled Noise Levels

Receptor	Existing Leq	With Project Leq	Decibel Change	Significant Impact
Site 1	58.1	58.6	+0.5	No
Site 2	58,0	58.0	+0.0	No
Site 3	62.2	62.4	+0.2	No

Interior Traffic Noise. California Energy Code Title 24 standards specify construction methods and materials that result in energy efficient structures up to a 30 dBA reduction in exterior noise levels (assuming windows are closed). This includes operation of mechanical ventilation (e.g., heating and air conditioning), in combination with standard building construction that includes dual-glazed windows with a minimum Sound Transmission Class

Figure 4—Receiving Properties - Project Site

(STC) rating of 26 or higher. When windows are open, the insertion loss drops to about 10 dBA. The residences within the project may have been constructed before Title 24 standards were implemented. As stated, the manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows. Assuming windows are closed and a 20 dBA insertion loss, interior noise levels at residences modeled would range between 38 dBA and 42 dBA. Interior noise levels would be below the 45 dBA interior standard. In all cases modeled, the existing interior noise levels would not noticeably change with the addition of project traffic.

On-Site Truck Movement. Trucks would move around the project site generally entering from Taft Highway and exiting to Compangoni Street and then traveling north to Taft Highway. To quantify on-site truck movement noise exposure in terms of the Ldn (24-hour average), individual truck movement sound exposure level (SEL) is used. The SEL is a measure of the total energy of a noise event, including consideration of event duration. The SEL is not actually heard, but is a derived value used for the calculation of energy-based noise exposure metrics such as the Ldn. The average measured truck event movement SEL is 78.1 decibels (WJVA Acoustics, 2017). As discussed, it is assumed that 410 truck events would occur each day and that the movements would be evenly distributed over a 24-hour day. The L_{dn} associated with truck movement is quantified using the following equation:

$$Ldn = SEL + 10 \log Neq - 49.4$$

SEL is the average SEL for a truck movement, Neq is the equivalent number of truck movements in a typical 24-hour period determined by adding 10 times the number of nighttime events (10 p.m. - 7 a.m.) to the actual number of daytime events (7 a.m. – 7 p.m.), and 49.4 is a time constant equal to 10 log the number of seconds in the day. Assuming 410 truck events per day, the resulting noise exposure on-site would be approximately 54.9 dB Ldn. Noise associated with on-site truck movement over a distance of 405 feet, the distance to the nearest receiver, would be within the compatibility range referenced in Table 3 above.

Stationary Noise Sources

Idling Refrigeration Units. Truck parking would be provided along the western side of the site. It is possible that trailer refrigeration units (TRUs) would operate on-site while the trucks/trailers are parked. It is unknown how many units would operate on-site or where they would be located relative to one another. For the purpose of this discussion, TRU sound levels are based on measured sound levels for two different types of operating/idling refrigeration trailer units – the Thermo King SB 210 refrigeration trailer and a Carrier X4 7300 refrigeration trailer. Both units have a high-speed and a low-speed setting and the units cycle on and off over time. Typically, the high-speed setting will occur when a unit is turned off after an extended period of non-operation and/or during summer months when exterior ambient temperatures are higher. Measured noise levels at a reference distance of approximately ten (10) feet from a TRU operating on a high-speed setting ranged from approximately 80-83 decibels. Noise levels at 10 feet from a TRU operating on a low-speed setting ranged from approximately 73-76 decibels.

Assuming multiple trailers could be in operation simultaneously, the resulting noise levels associated with idling refrigeration trailers along the southern project boundary would be expected to be in the range of 75-85 decibels along the western property line. The nearest sensitive receivers are located approximately 405 feet west of the western site boundary along Hughes Lane. Over a distance of 405 feet, noise levels ranging from 75-85 decibels would attenuate to 43-53 decibels. Noise levels within this range at single-family residential properties are normally acceptable as shown in Table 3 above. No adverse noise impact associated with operation of TRUs would occur.

Drive Thru Window Speakers. Speaker noise is a variable noise source and subject to change based on volume settings. The nearest drive thru menu board and speaker would be located on the east side of the convenience store/food court building proposed for construction on the east side of the site adjacent to the adjacent equipment rental yard.

There are no sensitive receptors proximal to this location. Menu board/speaker noise is assumed to project to the east. Reference noise levels range from 58 to 65 dBA at 30 feet from the source (Illingsworth & Rodkin, 2010). Taft Highway is approximately 400 feet north of the drive-thru lane Assuming a reference level of 65 dBA at 30 feet, noise would attenuate to approximately 43 dBA at the northern site boundary. This would be an intermittent source with levels that are less than modeled traffic noise. As a condition of project approval, it is recommended that drive thru speaker noise be inaudible beyond the immediate drive thru lane, order and pick-up window. However, as referenced, speaker noise would attenuate to below baseline conditions at the property line and be less than the 50-60 dBA residential compatibility standard.

HVAC Systems. The HVAC system proposed for the restaurant/food court has not been specified and noise levels vary depending on the size of the system. However, multiple HVAC systems will be installed on the roof-tops of restaurant/retail building located along the east side of the site. Reference noise levels for the project are based on noise measurements made at similar outdoor restaurant facilities. HVAC noise levels can be expected to range from 60 to 70 dBA at 5 feet from the roof top equipment and ventilation openings (Illingsworth & Rodkin, 2011). Assuming HVAC units are installed at the center of the roof top, or approximately 400 feet from the northern property line, a 70 dBA reference noise level would attenuate to 32 dBA at the northern property line. HVAC noise would be less than the 50-60 dBA residential compatibility criteria.

CONCLUSION

The proposed project will have no adverse operational noise impacts. Section 9.22.050 of the City's Municipal Code states that noise sources associated with any private construction activity located within 1,000 feet from a residence is permitted between the hours of 6:00 am and 9:00 pm on weekdays and between 8:00 am and 9:00 pm on weekends. Construction activities

occurring between the prescribed hours are exempt. No significant or adverse noise impacts would occur as a result of project construction. Project related traffic would not noticeably change existing noise levels along Taft Highway or Compagnoni Street. Noise from the drive thru window speakers and HVAC systems would not be audible off-site; and thus, would not exceed the residential compatibility standards. On-site truck movement and operation of TRUs would not exceed noise compatibility limits allowed by the City of Bakersfield for single-family residences.

REFERENCES

City of Bakersfield Municipal Code Section 9.22.050, November 2020.

City of Bakersfield General Plan Draft Environmental Impact Report, Rincon Consultants, Inc., January 2018.

Federal Highway Administration. *Roadway Construction Noise Model. 2006.* Users Guide Table 1.

Federal Highway Administration, Transportation Noise Model Version 2.5, 2004.

Federal Transit Administration. *Transit Noise and Vibration Impact Assessment*. September 2018.

Federal Rail Administration (FRA) Guidelines (Report Number 293630-1), December 1998.

Hanson, Carl E., Towers, David A., and Meister, Lance D. (2006, May). *Transit Noise and Vibration Impact Assessment.* Federal Transit Administration, Office of Planning and Environment. http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf

Harris Miller Miller & Hanson Inc. T*ransit Noise and Vibration Impact Assessment, Final Report*. May 2006.

Illingsworth & Rodkin. *Capital Toyota Expansion Initial Study-MND Noise Impact Assessment*, City of San Jose, May, 2014.

Illingsworth & Rodkin. *Noise and Vibration Assessment for the Curtner/Union Retail Project*, City of San Jose, December 2011.

LAV//Pinnacle Engineering, Inc., *Trip Generation Calculations*, April 2021.

WJV Acoustics, Inc., *Acoustical Analysis for the Producers Dairy Parking Lot, 450 East Belmont Avenue, Fresno*, California, January 2017.

Appendix A

Monitoring Data Sheet and Modeling Results

FIELD NOISE MEASUREMENT DATA

Project Name: Pilot Truck Center Page 1 of
Project #: Day / Date FEB 16, 2021 My Name.

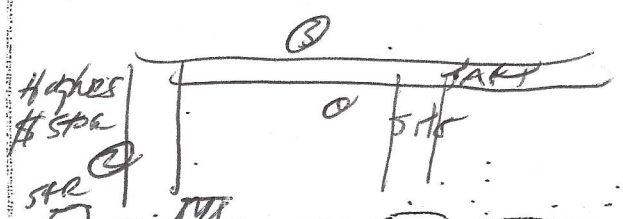
Sound Level Meter	Calibrator	Weather Meter
Model # Piccolo II	Model # Self-calibrated	Model # Serial #
Serial # P0285051702	Serial #	
Weighting: A / C / Flat	Pre-Test: dBA SPL	Terrain: Hard / Soft / Mixed
Response: Slow / Fast / Impl	Post-Test: dBA SPL	Topo: Flat / Hilly (describe)
Windscreen: Yes / No		Wind: Steady / Gusty

ID	Time Start	Time Stop	Leq	Lmin	Lmax	L10	L50	L90	Wind Spd/ Dir (mph)	Temp (°F)	RH (%)	Bar Psr (in Hg)	Cloud Cover (%)
1	8:35	8:50	63.4	47.5	76.9				1-2 mph	60			80%
2	9:00	9:15	56.9	44.9	68.3				1-2 mph	60			80%
3	9:25	9:40	61.6	42.6	76.3				3-5	60			60%

Roadway Name TAFT Highway

Location(s) / GPS Reading(s):

Speed (post/obs)	50	50	50
Number of Lanes	2	2	2
Width (pave/row)	24	24	24
1- or 2- way	2	2	2
Grade	0%	0%	0%
Bus Stops	NO	NO	NO
Stoplights	NO	NO	NO
Street Parking	NO	NO	NO
Automobiles	111	144	112
Medium Trucks	7	13	8
Heavy Trucks	11	5	12



Other Noise Sources: distant aircraft / roadway traffic / trains / landscaping / rustling leaves / children playing / dogs barking / birds vocalizing

Notes and Sketches on Reverse

Montoring Site 1

Start Date	2/16/2021
Start Time	8:36:41 AM
End Time	8:51:40 AM
Duration	00:14:59
Meas Mode	Single
Input Range	Low
Input Type	Mic
SPL Time Weight	Fast
LN% Freq Weight	dBA
Overload	No
UnderRange	No
Sensitivity	18.44mV/Pa

LZeq	75.8
LCeq	73.6
LAeq	63.4
LZFmax	96.3
LCFmax	90.7
LAFmax	76.9
LZFmin	63.7
LCFmin	61.7
LAFmin	47.5
LZE	105.3
LCE	103.1
LAE	92.9
LZpeak	104.7
LCpeak	100.1
LApeak	91.6
1%	72.4
2%	71.5
5%	69.3
8%	68.0
10%	67.3
25%	63.9
50%	59.8
90%	52.1
95%	50.5
99%	48.5

Monitoring Site	2
Start Date	2/16/2021
Start Time	9:05:23 AM
End Time	9:20:22 AM
Duration	00:14:59
Meas Mode	Single
Input Range	Low
Input Type	Mic
SPL Time Weight	Fast
LN% Freq Weight	dBA
Overload	No
UnderRange	No
Sensitivity	18.44mV/Pa

LZeq	70.2
LCeq	67.7
LAeq	56.9
LZFmax	86.4
LCFmax	79.2
LAFmax	69.3
LZFmin	60.2
LCFmin	58.5
LAFmin	44.9
LZE	99.7
LCE	97.2
LAE	86.4
LZpeak	93.9
LCpeak	89.0
LApeak	84.4
1%	65.1
2%	63.7
5%	62.1
8%	61.0
10%	60.4
25%	57.5
50%	54.8
90%	48.5
95%	47.5
99%	46.1

Monitoring Site	3
Start Date	2/16/2021
Start Time	9:32:39 AM
End Time	9:47:38 AM
Duration	00:14:59
Meas Mode	Single
Input Range	Low
Input Type	Mic
SPL Time Weight	Fast
LN% Freq Weight	dBA
Overload	No
UnderRange	No
Sensitivity	18.44mV/Pa

LZeq	77.3
LCeq	72.8
LAeq	61.6
LZFmax	90.4
LCFmax	84.7
LAFmax	76.3
LZFmin	61.4
LCFmin	58.3
LAFmin	42.6
LZE	106.8
LCE	102.3
LAE	91.1
LZpeak	99.9
LCpeak	96.8
LApeak	89.2
1%	71.3
2%	70.1
5%	68.0
8%	66.6
10%	65.8
25%	61.7
50%	56.5
90%	47.6
95%	46.2
99%	43.7

<Organization?> 6 April 2021
<Analysis By?> TNM 2.5
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: <Project Name?>
RUN: Truck Stop - Existing
BARRIER DESIGN: INPUT HEIGHTS
ATMOSPHERICS: 68 deg F, 50% RH

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h Calculated	Crit'n	Increase over existing Calculated	Crit'n Sub'l Inc	Type Impact	With Barrier Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	58.1	66	58.1	10	----	58.1	0.0	8	-8.0
Receiver2	2	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
Receiver3	3	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0

Dwelling Units	# DUs	Noise Reduction Min	Avg	Max
		dB	dB	dB
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

RESULTS: SOUND LEVELS **<Project Name?>**

<Organization?> **6 April 2021**
<Analysis By?> **TNM 2.5**
Calculated with TNM 2.5

RESULTS: SOUND LEVELS
PROJECT/CONTRACT: **<Project Name?>**
RUN: **Truck Stop - W-Project**
BARRIER DESIGN: **INPUT HEIGHTS**
ATMOSPHERICS: **68 deg F, 50% RH**

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver												
Name	**No.**	**#DUs**	**Existing LAeq1h**	**No Barrier LAeq1h Calculated**	**Crit'n**	**Increase over existing Calculated**	**Crit'n Sub'l Inc**	**Type Impact**	**With Barrier Calculated LAeq1h**	**Noise Reduction Calculated**	**Noise Reduction Goal**	**Calculated minus Goal**
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Receiver1	1	1	0.0	58.6	66	58.6	10	----	58.6	0.0	8	-8.0
Receiver2	2	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
Receiver3	3	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0

Dwelling Units	**# DUs**	**Noise Reduction Min**	**Noise Reduction Avg**	**Noise Reduction Max**
		dB	**dB**	**dB**
All Selected	3	0.0	0.0	0.0
All Impacted	0	0.0	0.0	0.0
All that meet NR Goal	0	0.0	0.0	0.0

Appendix H:

Traffic Impact Study

Traffic Impact Study

for

Commercial and Industrial Development on the South Side of Taft Highway, Between Hughes Lane & Michele Street,

Kern County, California

March 31, 2021
Revised June 14, 2021

Project No. 16-760

REGISTERED PROFESSIONAL ENGINEER
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Intersections

Street Segments

Ramps

I. INTRODUCTION

This traffic study has been prepared as a component of the Environmental document for a proposed commercial and industrial development on the south side of Taft Highway (State Route 119), between Hughes Lane and Michele Street in the City of Bakersfield, California. It is noted here that this report has been revised to address comments by the City of Bakersfield. Generally the comments by the City of Bakersfield pertained to inconsistencies in the Project description and elimination of trucks from the calculation of Vehicle Miles Traveled (VMT).

A. Project Description

The proposed project comprises 16-acres, and includes a 16.5k square foot travel plaza with 10 automobile fueling stations, and a 7.2k square foot food court. The Project also includes a 11.7k square foot truck wash with five-bays, a 9-station truck fueling facility, a 1,943 square foot office intended for a freight broker and a 240 square foot office dedicated for truck cab sales. The balance of site is dedicated for truck storage and parking.

The Project site is currently zoned M-1 (Light Manufacturing) and M-2 (General Manufacturing), which is appropriate for the intended use; however, the City of Bakersfield has required a ***Conditional Use Permit*** for Project approval. This Conditional Use Permit, has "triggered" the preparation of this traffic impact study and other environmental studies.

Exhibit "A" shows the proposed site plan. A Tentative Parcel Map (TPM No. 12212), dividing the Project into six lots has also been submitted to the City for approval. Exhibit "A" also shows the proposed lotting of the Project.

It should be noted that Tentative Parcel Map No. 12212 is a revision to a previously approved Map. The Owners of the Project have elected to revise the originally approved map to create a road connection to Compagnoni Street, south of Taft Highway. Compagnoni Street intersects Taft Highway at the southbound State Route 99 off-ramp termini and is signalized at this intersection. The connection to Compagnoni Street will improve circulation allowing a large percentage of Project-generated traffic to avoid using Taft Highway. Prior to submitting a revised map, said modification was discussed and positively received by the City's Traffic, Planning, and Public Works Departments.

B. Surrounding Land Use

The Project will have roughly 200-feet of frontage along the south side of Taft Highway.

Although separated from the Project by Taft Highway, property to the north is zoned agricultural and commercial. Properties abutting the east border of the Project are Zoned M-1 (Light Industrial) and are being used for an equipment rental business, a Jack-in-the Box fast food restaurant, an Arco gas station restaurant with convenience market, a Chevron station with convenience market, and a California Highway Patrol office. Property to the south and west is zoned agricultural, with some parts of it under cultivation. With the exception of an irrigation canal and an abandoned house, the property abutting the west border of the Project is vacant.

II. EXISTING LOCAL STREET NETWORK

The following is a description of streets in the vicinity of the site, which may be impacted to some extent by the Project.

State Route 119, aka Taft Highway, is an east-west State Highway connecting the City of Taft at its west end and terminating 30 miles to the east in Bakersfield at Union Avenue. S.R. 119 connects with S.R. 33 in the City of Taft, which also joins S.R. 58 and 166 leading to the Coast. In addition to travelers to and from the Coast, Taft Highway is a main corridor to the oil fields and agricultural areas of southwest Kern County.

Taft Highway has full interchanges with both Interstate 5 and the State Route 99 Freeways. Taft Highway currently represents the south boundary for much of the Bakersfield City limits. Although continuing annexations are extending the City limits southward, Taft Highway still represents the limits of southward residential development in Bakersfield. West of the S.R. 99 interchange, frontage development along Taft Highway has consisted of both commercial and industrial development. Taft Highway has been widened in these areas of new development, but generally remains a two-lane road with expansions for turning lanes at major intersections.

State Route 99 Freeway: S.R. 99 is a main freeway corridor through central California running well over 400 miles from its southern terminus at I-5 in Kern County through the Central Valley of California to Sacramento. State Route 99 continues further north as an expressway and two-lane road terminating in Red Bluff, not far from the Oregon Border. S.R. 99 connects all main population centers in central California and is a vital route for commerce.

S.R. 99 provides multiple interchanges with most major arterials in Bakersfield, and all east-west State routes, including S.R. 119. The interchange with Taft Highway is a partial cloverleaf, with both on-ramps diverging from S.R. 119. The southbound off-ramp terminates at a signalized intersection with Taft Highway and Compagnoni Street, and has a signal dedicated lane for each movement. The northbound off-ramp terminates at a tee intersection with a frontage street (South "H" Street), and provides a single dedicated lane for both right and left turns. This intersection is "stop-controlled".

It should be noted that the Federal Surface Transportation Assistance Act (STAA) of 1982 has designated a National network of routes designated for larger trucks, which include both State Route 119 and State Route 99.

Compagnoni Street is a north-south local street with its northerly terminus at the signalized intersection with Taft Highway and the S.R. 99 southbound off ramp. Compagnoni Street provides access to recently developed industrial property along its frontage. As discussed, the Project will construct a connector to Compagnoni Street to minimize the use of S.R. 119 by project traffic. This will allow traffic from southbound S.R. 99 to proceed straight through the intersection with S.R. 119 to access the Project. Vehicles departing the Project will mostly use Compagnoni Street to access S.R. 119 and S.R. 99 via a signalized intersection.

South "H" Street is a north-south arterial in the City of Bakersfield. Although classified as an arterial, widening of South "H" has been encumbered since it abuts the west right-of-way of the Kern Island Canal, a major irrigation waterway for Central Valley Agriculture. South "H" exists as a two-lane road in the vicinity of the project.

Figure 1, included in Appendix "A" of this report, shows the existing street network in the vicinity of the Project, including existing "laneage" and intersection control.

In addition, Figure 1 shows facilities for which mitigation improvements are funded by the Regional Transportation Impact Fee (RTIF) Program. The RTIF Program is discussed in greater detail in Section V of this report.

III. METHOD OF ANALYSIS & TRAFFIC ESTIMATES

A. General

Additional detailed descriptions of methods and "findings" are provided in the appropriate sections herein. However, as a preface to the following sections, a brief step-by-step description used for analysis in this report, as follows:

1. Existing conditions of the Project and surrounding area are surveyed, including traffic volumes, laneage, and intersection control.

2. Project-generated traffic, based on the proposed land use, is estimated and distributed onto the street network.

3. Future Traffic Volumes are estimated for Year 2042. Normally growth rates from the local Kern Council of Governments (Kern COG) computer traffic model are applied to existing traffic counts to estimate future volumes. However, in this case, the Kern COG computer traffic model provided negative growth rates for State Route 119, and very little growth for State Route 99, whereas the City of Bakersfield and Kern County have an annual growth rate between 0.63% and 0.71% percent. Therefore, a positive growth rate was used, which is explained in more detail later in this report.

4. The estimated Project-generated traffic is added to existing traffic volumes, and to future traffic volumes, to include Year 2042 and a Project "opening day" scenario.

5. Street segments and intersections are analyzed for "Level of Service" (LOS) for the various scenarios: A) Existing conditions with No Project; B) Existing Conditions with Project traffic; C) Year 2023, or "opening day" with no Project; D) Year 2023, or "opening day" with Project traffic; E) Year 2042 with No Project; F) Year 2042 with Project traffic, and if necessary E) Year 2042 with Project and proposed mitigation improvements.

6. Mitigation or capacity/level of service improvements are determined for any of the above scenarios which result in an unacceptable "Level of Service" (LOS). Resultant or "after mitigation" LOS's are determined for proposed mitigation improvements. If improvements to the facility are funded by the RTIF, they are evaluated for adequacy under future traffic conditions. The Project's obligation for funding of any needed mitigation improvements that are not funded by the RTIF program, is also determined. When necessary mitigation is not funded by the RTIF programs, the Project's obligation, in very simplified terms, is the ratio of Project-generated traffic to total estimate future year traffic volume.

7. Vehicle Miles Traveled: The total daily Vehicle Miles Traveled (VMT) is calculated for Project generated trips. VMT is simply the summation of all Project-generated trips multiplied by their respective trip length.

Again, in the following sections, methodology, findings, and mitigation are discussed in further detail.

B. Traffic Counts

Traffic counts were performed over the existing street network to determine existing intersection volumes, turning movements, and traffic flow patterns. As discussed in the following section, future year traffic volumes are estimated by applying annual growth rates derived from Kern COG modeling, or other approved methods.

Traffic counts were performed during the morning and evening peak periods during weekdays, excluding Mondays, Fridays, holidays, and days preceding or following holidays. Weekdays before or after holidays are not representative of normal traffic patterns.

Counts were performed during the morning peak period between 6:30 am and 8:30 am as well as the evening peak period between 4:00 pm and 6:00 pm. Often the peak period for one intersection or street is slightly different than others. In this study, conservatively, the highest one-hour volumes for each intersection or street segment within the peak periods were used for analysis in this report.

It is noted that the evening existing peak hour traffic volume counts were as much as 47% higher than the morning peak hour field counts, and thus the evening peak hour is considered the worst case scenario.

Additionally, it should be noted that traffic counts were performed in 2019 and again in October 2020. Year 2019 traffic counts actually yielded lesser volumes, and thus the higher 2020 counts were used for analysis.

Figures 2 & 3, included in Appendix "A" of this study, show the peak hour volumes during the morning and evening peak period, respectively, for all facilities counted. These figures also show actual turning movements at all counted intersections.

C. Future Year Traffic Volumes

Future year traffic volumes are normally estimated by applying growth rates derived from the Kern Council of Governments (Kern COG) computer traffic model. Kern COG is an association of city and county governments created to address regional transportation issues. Kern COG maintains a computer traffic model for Kern County, which includes monitoring of demographic trends and estimating growth in traffic for at least 20 years into the future. Growth rates extracted from the KernCOG traffic model have been readily accepted by the agencies. However, in the case of State Route 119, the Kern COG traffic model estimates an annual decrease in traffic for State Route 119 over the next 20 years. It is unlikely any agency would accept an estimate of future traffic that is less than present day volumes. The City of Bakersfield and Kern County have an annual growth rates between 0.63% and 0.71% percent; therefore, conservatively, an annual growth rate of 1.0% percent was used to estimate future traffic volumes.

Table 1 herein shows the projected average annual growth rates for the streets and freeway ramps in the vicinity of the project.

Figures 6a, 6b, 8a and 8b show the Year 2042 and 2023 or "opening day" peak hour volumes and turning movements. Figures 7a, 7b, 9a and 9b show these future years with the addition of Project-generated traffic.

Table 1: Projected Average Annual Growth Rates

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Item No.	**Road Segment**	**From**	**To**	**Year 2015 Average Daily Volume**	**Year 2042 Average Daily Volume**	**Average Annual Growth Rate (%)**	**Factor: Year 2020 to Year 2023**	**Factor: Year 2020 to Year 2042**
1.	Taft Hwy.	Stine	Wible	20,035	22,776	0.5%	1.1154	1.1101
2.	Taft Hwy.	Wible	S. "H"	16,364	10,292	-1.7%	0.6737	0.6853
3.	Taft Hwy.	S. "H"	S. Union	15,195	7,617	-2.5%	0.5553	0.5697
4.	99 NB Off-Ramp	SR 99 NB	S. "H"	1,586	4,074	3.6%	2.2337	2.1570
5.	99 NB On-Ramp (N. side of Taft Hwy)	N. Side of Taft Hwy	SR 99 NB	8,348	7,710	-0.3%	0.9345	0.9373
6.	99 NB On-Ramp (S. side of Taft Hwy)	S. Side of Taft Hwy	SR 99 SB	1,021	1,574	1.6%	1.4459	1.4229
7.	99 SB Off-Ramp	SR 99 SB	N. Side of Taft Hwy	6,504	6,207	-0.2%	0.9610	0.9626
					Weighted Average:	-0.4%	0.9886	0.9191
					Selected Value:	1.0%	1.0303	1.2447

D. Project Generated Traffic

Project generated vehicular trips were estimated using the *Institute of Transportation Engineers Trip Generation Manual*, 10th Edition, (ITE Manual), as well as supporting data from similar

land uses (not addressed by said ITE Manual. The ITE Manual provides mathematical correlations between various land uses and trip generation. Specifically the ITE Manual provides average trip rates and fitted curves for many land use types.

Given the significance of truck traffic, the Project's land uses generating truck traffic were calculated separately. Truck Fueling, the Truck Wash, and Truck Storage, were estimated individually as Items 2, 3, and 4, respectively in the following Table 2. Trip generation for these items was considered entirely truck traffic. In addition, the Trip generation for the service station with convenience market and fast food will also have a component of truck traffic. These trips, (for the service station with convenience market and fast food), were considered to be 14 percent truck traffic. Said percentage of truck traffic, (14%), was derived as a weighted average from several driveway surveys of similar establishments. It should be noted that traffic counts for this project yielded the component of truck that ranged from 2 to 6 percent.

The ITE Manual includes trip rates for most common land uses; but many land uses are not represented. In the case of this Project, the ITE Manual does not provide trip rates for truck washes or truck storage. In this instance daily trips for several truck washes with a similar number of bays were researched. None of the truck washes surveyed for this report exceeded 50 washes per day. Therefore, Item 3: Truck Wash, of Table 2, used an ADT of 50 for trucks with 10 additional trips for employees or deliveries.

In addition, there are 47 spaces for truck parking and truck storage, which again is not modeled in the ITE Manual. These spaces will be rented on a monthly basis for truck storage and to satisfy recent legislation requiring "down time" requirements for truckers. In discussions with the Owner, at a maximum, about 1/3 (33 percent) of the spaces are vacated or newly occupied in any given 24-hour period. However, as a factor of safety, Item 4 of Table 2 assumed 20 spaces were either vacated or occupied during a 24-hour period. Again, given the Project has 47 truck storage parking, assuming trips arriving to or departing from 20 spaces is likely conservative.

Table 2 also reduced traffic by 50 percent for "passby" and 5 percent for "capture". It is noted that no deductions were taken for "diverted link" trips. Although "diverted link" trips do not add traffic onto the primary trip route, they do impact freeway ramps and street segments. The concept and deduction rates of "pass-by", "capture" and "diverted link" trips are discussed in detail in the following sections.

"Pass-By" trips are intermediate stops taken within the process of a primary trip, without diverting from the route of the primary trip. The best explanation of a "pass-by" trip is an example: Stopping for gas or fast food, without diverting from primary route, as part of the primary work to home commute, is considered a "pass-by" trip. The work to home commute is the primary trip, and the stop for gas is the "pass-by" trip, since it is not the primary purpose of the trip. A "pass-by" trip does not add traffic to the street network. Normally the stop at the market or fast-food restaurant would be tallied as two trips (arrival and departure trips). In this example, without an adjustment factor for "pass-by", three trips would be added to the local street network instead of 1 (for the primary commuting trip). Obviously, an over-estimation of Project impact to the local street network would result without a reduction for "pass-by". It should be noted again that a "pass-by" trip does not divert from the route of the primary trip.

Diversions from the primary trips to make an intermediate stop are defined as "diverted link" trips, and fully discussed in the next section.

"Diverted Link" trips are essentially "pass-by" trips, except as part of the primary trip the motorist must depart from the primary route to reach an interim destination, (such as fuel), then return to primary route in continuation of the trip. In the case of this study, exiting the State Route 99 Freeway for fuel or food, then returning to the Freeway to continue the primary trip would be considered two "diverted link" trips. In this case, "Diverted Link" trips do not add to the total freeway traffic, but do impact the freeway ramps, side streets, and potentially add to Vehicle Miles Traveled. Therefore, in this study, there were no deductions taken for diverted link trips for either Level of Service (LOS) analysis or estimation of Vehicle Miles Traveled (VMT).

"Capture": "Capture" can be described as trips that are made internally within the limits of a mixed-use project. An example of captured trips include stopping for gas and fast food within the same commercial center. In this scenario, the stop at the gas station is two trips: arrival trip and departure trip, and the stop at the fast food is also considered two trips. Summing both stops within the same commercial center yields 4 trips, when the correct number of trips to apply to the local street network is two. As with "pass-by", the deduction for "capture" helps offset double counting of trips on the local street network. In the case of this report, the Level of Service analysis reduced trips by 5 percent to account for "capture".

Many agencies recommend a maximum deduction of 15 percent to account for both "capture" and "pass-by". However, for service establishments in close proximity to freeway interchanges, such as the Project, said rate is contrary to most publications and "findings" from numerous driveway surveys. Although not addressed in recent editions, earlier editions of the ITE manual indicate pass-by rate of up to 80 precent for gas stations with convenience markets. Numerous driveway surveys by the author of this report for gas stations and truck stops at freeway interchanges yielded percentages of "pass-bys" and "diverted link" trips ranging from 99 to 100 percent. The one percent not falling into these categories was gas station, convenience store, or fast food employees. This aligns with common sense: Rarely during the weekday morning or evening peak hour is a specific trip made for gas or convenience items, (that isn't either a "pass-by" or "diverted link" trip).

As discussed below, driveway surveys of other similar establishments on Taft Highway yielded a "pass-by" rate of 78 percent and a "diverted link" rate of 22 percent. It should be noted that the Average Annual Daily Traffic (ADT) for State Highway 119 (Taft Highway), from Caltrans' published data is 14,000 vehicles per day. As shown in Table 2, without deductions for "passby" and "capture", the Project's Average Daily Traffic (ADT), at 8,334, would account for 6 out of every 10 cars on Taft Highway. Logic indicates that the Project's traffic, (at over 8,000 ADT), without deductions for "pass-by" and "capture", would be grossly over-estimated. Even the adjusted Project-generated ADT, at 3,750 trips, can be considered conservative since it means that roughly 3 out of every 10 vehicles on Taft Highway either originated from the Project, or the Project was their primary destination and reason for the trip.

In the case of the driveway surveys, the combined rates of "pass-by" and "diverted link" trips totaled 100 percent. Although employee arrivals and departures to any travel center would constitute "primary" trips, the random driveway surveys did not tally any primary trips.

Table 2 indicates the Project is estimated to generate 3,750 average daily trips (ADT), 209 evening peak hour trips, and 231 morning peak hour trips.

Driveway Survey of ARCO and Convenience Market with Fast Food Counters: As part of this study, a driveway survey was performed at the ARCO gas station with Convenience Store located approximately 400 feet east of the Project on Taft Highway. This survey, performed during the evening peak period yielded "pass-by" and "diverted link" trip rates of 78 and 22 percent, respectively. This is consistent with numerous other driveway surveys performed by the author of this report. Again, the LOS analysis, discussed in Section IV of this report, used a much lesser rate for "pass-bys" and took no deductions for "diverted link" trips. However, as discussed in Section IV of this report, the actual surveyed driveway percentages for pass-by and diverted link were used in the estimate Vehicle Miles Traveled.

Table 2 herein in the following, shows the Project trip generation rates and estimated trips used for the LOS analysis.

Table 2: Vehicle Trip Generation for Commercial Development on Taft Highway, SW of Michele Street, Bakersfield

Commercial - Land Uses					***24 Hour Trips***		***A.M. Peak Hour Trips***				***P.M. Peak Hour Trips***			
Item No.	**Proposed Land Use**	**ITE Code**	**Gross Leasable Floor Area (1K S.F.)**	**Vehicle Positions**	**Trip Rate**	**Veh Trips (vpd)**	**Trip Rate**	**Veh Trips (vph)**	**Split In**	**Split Out**	**Trip Rate**	**Veh Trips (vph)**	**Split In**	**Split Out**
1	Travel Plaza: Gasoline/Service Station w/Convenience Market & Fast Food	950	16.5	N/A	455.53	7,516	26.49	437	219	219	22.73	375	188	188
2	Truck Fueling	950	N/A	9	77.96	702	7.18	65	32	32	8.41	76	38	38
3	Truck Wash w/ Office (Note 2)	N/A	N/A	5	12.00	60	1.20	6	3	3	1.20	6	3	3
4	Truck Storage and Parking	N/A	N/A	47	0.43	20	0.04	2	1	1	0.04	2	1	1
5	Truck Sales Office	840	0.2	N/A	27.84	6	1.87	0	0	0	2.43	0	0	0
6	Freight Broker Office	712	1.9	N/A	16.19	31	1.92	4	3	1	2.45	5	1	3
					Subtotal:	8,334		514	258	256		464	231	233
					5% Reduction for "Capture" - All Land Uses:	(417)		(26)	(13)	(13)		(23)	(12)	(12)
					50% Reduction for "Pass-by" - All Land Uses:	(4,167)		(257)	(129)	(128)		(232)	(116)	(116)
					Vehicle Trip Total:	3,750		231	116	115		209	104	105
					Truck Trip Total:	825		60	30	30		61	31	30

Notes:

1) Driveway surveys of adjacent gas station and convenience markets indicated 22% of the trips were "Diverted Link"; and 78% of the trips were "Pass-Bys". Based on said drive surveys, conservatively project-generated trips were reduced by 50 percent for "pass-bys" and 5 percent for "capture". It should be noted that no deductions were taken for "diverted link", and the trip generation calculations are still considered conservative, given the project trip generated ADT is 3,750 vpd and the total ADT for Taft Highway is 14,000 vpd.
2) In the absence of an ITE Code, several truck washes were surveyed for average daily traffic and all were below 60 vehicles per day. Therefore, an ADT of 60 was used for Item 3, "Truck Wash"; and peak hour was taken as 10 percent of said ADT.
3) Total Truck traffic was taken as 100 percent of Items 2, through 4, and 14 percent of Item 1 (after said deductions for "pass-by" and "capture"). Said percentage of truck traffic for Item 1 was derived as a weighted average from several driveway surveys of similar establishments.

E. Trip Distribution and Assignment

After deductions for "pass-by" and "capture", all remaining trips are considered either primary trips or "diverted-link" trips. All "diverted link" trips either arrive from or depart to the State Route 99 Freeway. Therefore the component of "diverted link" trips were assigned to arrive from, and return to either northbound or southbound SR 99 based on the existing directional pro-rata breakdown of said freeway traffic. Similarly, the balance of Project trips were broken down into "arrivals" and "departures" and assigned to Taft Highway based on a pro-rata basis of existing eastbound and westbound traffic. Project traffic was further distributed at each intersection as either a turning or "through" based on the pro-rata breakdown of existing traffic patterns.

Figures 4a and 4b, included in Appendix "A" of this report, shows the distribution of Project-generated traffic onto the local street network.

F. Trip Assimilation

Based on information provided by the Kern Council of Governments (Kern COG), the average work commute travel time for Kern County is 20 minutes. At an average speed of 33 miles per hour, this yields an average work-commute trip of 11 miles. Assuming a 50/50 split of work-commute trips less than and greater than 11 miles, an average trip assimilation rate of 8.33 percent per mile is derived. This rate of assimilation is likely conservative since the market area for commercial centers is typically less than 5 miles. However, the above rate has been accepted by various reviewing agencies, and thus has been used in the distribution of Project-generated traffic.

IV. IMPACT OF PROJECT TRAFFIC

A. Level of Service (LOS)

Operational analysis of streets and intersections were performed using methods outlined in the *Transportation Research Board, National Research Council* *Highway Capacity Manual*, HCM, 2010.

Level of Service (LOS) is the generally accepted gauge for describing the quality of operation of either a road segment or street intersection. Other attributes of operational quality associated with each Level of Service are v/c - volume to capacity ratio, vehicle delay through an intersection, and reserve capacity of an intersection approach. For each type of street segment or intersection analysis, the Level of Service criteria varies slightly. Levels of Service for every type of roadway or intersection are described thoroughly in the *Highway Capacity Manual*, however, the following brief descriptions have been provided:

Table 3: Level of Service for Signalized Intersections

Level of Service	Stopped Delay per Vehicle (sec.)
A	≤ 5.0
B	5.1 to 15.0
C	15.1 to 25.0
D	25.1 to 40.0
E	40.1 to 60.0
F	> 60.0

Table 4: Level of Service for Un-Signalized Intersections

Level Of Service	Reserve Capacity (DCPH)	Expected Delay to Minor Street Traffic
A	≥ 400	Little or no delay
B	300-399	Short traffic delay
C	200-299	Average traffic delay
D	100-199	Long traffic delay
E	0-99	Very long traffic delay
F	Note 1	See Note 1

Note 1: When demand volume exceeds the capacity of the lane, extreme delays will be encountered. This condition usually warrants improvement to the intersection.

Table 5: Level of Service for Highways and Arterials

Level of Service	Description
A	Free flow conditions, unimpeded ability to maneuver and pass, very little delay, no platoons, highest average travel speeds.
B	Mostly free flow conditions; presence of other vehicles begins to be noticeable. Passing is required to maintain speeds, slightly less average travel speeds than Level of Service "A".
C	Traffic density clearly affects the ability to pass and maneuver within the stream. Speeds are reduced to about 50 mph on highways and to about 50% of the average on urban arterials.
D	Unstable flow. Speeds are reduced from 40% to 60% of normal. Passing demand is high although mostly impossible on 2-Lane Highways. Traffic disruptions usually cause extensive queues.
E	Very unstable flow at or near capacity. Passing and maneuvering virtually impossible. Extensive platooning on highways and queuing on arterials. Speeds range from 20 mph or less on arterials and 2-Lane Highways, and up to 50 mph on Multi-Lane Highways.
F	Forced or breakdown flow. Demand exceeds capacity. Vehicles experience short spurts of movement followed by stoppages. Intersection congestion, long queues and delays are common.

Table 6: Level of Service Criteria for Freeway Merge and Diverge Segments

Level of Service	Density (pc/mi/ln)	Comments
A	≤10	Unrestricted operations
B	>10-20	Merging and diverging maneuvers noticeable to drivers
C	>20-28	Influence area speeds begin to decline
D	>28-35	Influence area turbulence becomes intrusive
E	>35	Turbulence felt by virtually all drivers
F	Demand exceeds capacity	Ramp and freeway queues form

Note 1: Table 6 is Exhibit 13-2 from the Highway Capacity Manual 2010.

B. Traffic Impact Analysis

As discussed in Section III herein, Project generated traffic was distributed onto the existing street network based on existing patterns. In accordance with local agency criteria, any street segment or intersection, currently operating at or above a "C" Level of Service, must be analyzed if it receives 50 or more Project-generated peak hour trips. If the facility currently operates at a "D", "E" or "F", the analysis threshold drops to 40, 20 and 10 trips, respectively.

. The following lists the various scenarios that were analyzed for Level of Service (LOS).

1. **Existing Year 2020 A.M Peak Hour without Project-Generated traffic – (No Project Scenario).** These volumes are actual traffic counts, as discussed in Section III, and are shown in Figure 2 herein.

2. **Year 2020 A.M. Peak Hour Volumes with the addition of Project-Generated traffic.** These volumes can be referenced in Figure 5a of this report.

3. **Existing Year 2020 P.M Peak Hour without Project-Generated traffic – (No Project Scenario).** These volumes are actual traffic counts, as discussed in Section III, and are shown in Figure 3 herein.

4. **Year 2020 P.M. Peak Hour Volumes with the addition of Project-Generated traffic.** These volumes can be referenced in Figure 5b of this report.

5. **Year 2023, "Opening Day" A.M Peak Hour without Project-Generated traffic – (No Project Scenario).** These volumes can be referenced in Figure 6a of this report.

6. **Year 2023 "Opening Day" A.M. Peak Hour Volumes with the addition of Project-Generated traffic.** These volumes can be referenced in Figure 7a of this report.

7. **Year 2023, "Opening Day" P.M Peak Hour without Project-Generated traffic – (No Project Scenario).** These volumes can be referenced in Figure 6b of this report.

8. **Year 2023 "Opening Day" P.M. Peak Hour Volumes with the addition of Project-Generated traffic.** These volumes can be referenced in Figure 7b of this report.

9. **Year 2042 A.M. Peak Hour Volumes without the addition of Project-Generated Traffic ("No Project" Scenario).** These volumes can be referenced in Figure 8a of this report.

10. **Year 2042 A.M. Peak Hour Volumes plus Project-Generated Traffic.** These volumes can be referenced in Figure 8b of this report.

11. **Year 2042 P.M. Peak Hour Volumes without the addition of Project-Generated Traffic ("No Project" Scenario).** These volumes can be referenced in Figure 9a of this

report.

12. **Year 2040 P.M. Peak Hour Volumes with the addition Project-Generated Traffic.** These volumes can be referenced in Figure 9b of this report.

13. If warranted, Level of Service calculations were performed for the facility with proposed mitigation improvements. The criterion for mitigation has been discussed in Section V of this report.

Level of Service calculation methods were taken from the above referenced *Highway Capacity Manual*. Computer software from "McTrans Highway Capacity" package was used to facilitate extensive calculations. All computer-generated reports have been included in Appendix "B" of this report.

Summaries of the Level of Service calculations for the various scenarios described have been included in the following tables:

- Table 7 shows the results of the intersection Level of Service calculations. Table 7 also shows the resultant Level of Service under mitigated conditions.

- Tables 8a and 8b shows the results of Level of Service calculations for various street segments within the scope of this study. Tables 8a and 8b also shows the resultant Level of Service under mitigated conditions.

- Tables 9a and 9b shows the results Level of Service calculations for S.R. 99 Freeway Ramps

TABLE 7: Intersection Level of Service (LOS) - Peak Hour

Legend: **S = Signalized** **1W = One Way Stop Control** **4W = All Way Stop** **R = Roundabout**

No.	Intersection	Time Period	Control	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Comp LOS	Intersection Delay (sec/veh)	Peak Hour Warrant Met (Yes/No)
1)	SR 119 and Wible Rd	Year 2020 A.M. Existing	S	-	E	-	-	E	-	A	A	-	A	A	A	B	16.8	N/A
		Year 2020 A.M. with Project	S	-	E	-	-	E	-	A	A	-	A	A	A	B	16.7	N/A
		Year 2023 A.M. Existing	S	-	E	-	-	E	-	A	A	-	A	A	A	B	16.9	N/A
		Year 2023 A.M. with Project	S	-	E	-	-	E	-	A	A	-	A	A	A	B	16.9	N/A
		Year 2042 A.M. without Project	S	-	E	-	-	E	-	A	A	-	A	A	A	B	16.9	N/A
		Year 2042 A.M. with Project	S	-	E	-	-	E	-	A	A	-	A	A	A	B	16.9	N/A
		Year 2020 P.M. Existing	S	-	E	-	-	E	-	B	B	-	B	A	A	B	18.7	N/A
		Year 2020 P.M. with Project	S	-	E	-	-	E	-	B	B	-	B	A	A	B	18.6	N/A
		Year 2023 P.M. Existing	S	-	E	-	-	E	-	B	B	-	B	A	A	B	19.1	N/A
		Year 2023 P.M. with Project	S	-	E	-	-	E	-	B	B	-	B	A	A	B	19.1	N/A
		Year 2042 P.M. without Project	S	-	E	-	-	E	-	B	B	-	C	B	A	C	21.5	N/A
		Year 2042 P.M. with Project	S	-	E	-	-	E	-	B	B	-	C	B	A	C	21.6	N/A
2)	SR 119 and Compagnoni St/ 99 SB Off-Ramp	Year 2020 A.M. Existing	S	D	-	A	D	D	D	-	B	A	B	A	-	C	23.2	N/A
		Year 2020 A.M. with Project	S	D	-	A	D	C	C	-	B	B	B	A	-	C	21.2	N/A
		Year 2023 A.M. Existing	S	D	-	A	D	D	D	-	B	A	B	A	-	C	21.9	N/A
		Year 2023 A.M. with Project	S	D	-	A	D	C	C	-	B	B	B	A	-	C	21.3	N/A
		Year 2042 A.M. without Project	S	D	-	A	D	C	D	-	B	B	B	A	-	C	22.7	N/A
		Year 2042 A.M. with Project	S	D	-	A	D	C	C	-	B	B	C	B	-	C	22.5	N/A
		Year 2020 P.M. Existing	S	D	-	A	D	C	C	-	B	B	C	B	-	C	23.4	N/A
		Year 2020 P.M. with Project	S	D	-	A	C	C	C	-	C	B	C	B	-	C	23.5	N/A
		Year 2023 P.M. Existing	S	D	-	A	D	C	C	-	C	B	C	B	-	C	23.6	N/A
		Year 2023 P.M. with Project	S	D	-	A	C	C	C	-	C	B	C	B	-	C	23.9	N/A
		Year 2042 P.M. without Project	S	D	-	A	C	C	C	-	C	B	C	B	-	C	25.8	N/A
		Year 2042 P.M. with Project	S	D	-	A	C	C	C	-	C	C	D	C	-	C	27.1	N/A

TABLE 7: Intersection Level of Service (LOS) - Peak Hour (Continued)

Legend: **S = Signalized** **1W = One Way Stop Control** **4W = All Way Stop** **R = Roundabout**

No.	Intersection	Time Period	Control	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Comp LOS	Intersection Delay (sec/veh)	Peak Hour Warrant Met (Yes/No)
3)	SR 119 and S. H Street	Year 2020 A.M. Existing	S	E	D	D	D	D	E	A	A	-	A	A	A	B	17.5	N/A
		Year 2020 A.M. with Project	S	E	D	D	D	D	E	A	A	-	A	A	A	C	20.1	N/A
		Year 2023 A.M. Existing	S	E	D	D	D	D	E	A	A	-	A	A	A	B	17.6	N/A
		Year 2023 A.M. with Project	S	E	D	D	D	D	E	A	A	-	A	A	A	C	20.2	N/A
		Year 2042 A.M. without Project	S	E	D	A	E	D	E	E	A	-	F	B	A	C	22.5	N/A
		Year 2042 A.M. with Project	S	E	D	A	E	D	E	E	A	-	F	B	A	C	22.0	N/A
		Year 2020 P.M. Existing	S	E	D	D	E	D	E	A	A	-	B	A	A	B	18.5	N/A
		Year 2020 P.M. with Project	S	E	D	D	E	D	E	A	A	-	B	A	A	C	20.2	N/A
		Year 2023 P.M. Existing	S	E	D	D	E	D	E	A	A	-	B	A	A	B	18.7	N/A
		Year 2023 P.M. with Project	S	E	D	D	E	D	E	B	B	-	B	A	A	C	20.4	N/A
		Year 2042 P.M. without Project	S	E	D	D	E	D	E	B	B	-	B	A	A	B	19.9	N/A
		Year 2042 P.M. with Project	S	D	D	D	D	D	E	B	B	-	C	A	A	C	22.6	N/A
4)	SR 119 and Union Ave	Year 2020 A.M. Existing	S	E	D	D	E	E	E	E	A	A	E	A	-	C	29.4	N/A
		Year 2020 A.M. with Project	S	E	E	E	E	E	E	E	A	A	E	A	-	C	27.8	N/A
		Year 2023 A.M. Existing	S	E	E	E	E	E	E	E	A	A	E	A	-	C	28.1	N/A
		Year 2023 A.M. with Project	S	E	E	E	E	E	E	E	A	A	E	A	-	C	27.8	N/A
		Year 2042 A.M. without Project	S	E	D	D	E	D	E	E	A	A	E	A	-	C	30.1	N/A
		Year 2042 A.M. with Project	S	E	D	D	E	D	E	E	A	A	E	A	-	C	28.9	N/A
		Year 2020 P.M. Existing	S	E	D	D	E	D	D	E	A	A	E	B	-	D	36.1	N/A
		Year 2020 P.M. with Project	S	E	D	D	E	D	D	E	A	A	E	B	-	D	36.0	N/A
		Year 2023 P.M. Existing	S	E	D	D	E	D	D	E	A	A	E	B	-	D	36.2	N/A
		Year 2023 P.M. with Project	S	E	D	D	E	D	D	E	A	A	E	B	-	D	36.1	N/A
		Year 2042 P.M. without Project	S	E	D	D	E	D	D	E	B	A	E	B	-	D	36.6	N/A
		Year 2042 P.M. with Project	S	E	D	D	E	D	D	E	B	A	E	B	-	D	36.5	N/A
		Year 2042 P.M. with Project Mitigated (Note 1)	S	E	D	D	E	D	D	E	A	A	B	B	A	C	34.7	No

TABLE 7: Intersection Level of Service (LOS) - Peak Hour (Continued)

Legend: **S = Signalized** **1W = One Way Stop Control** **4W = All Way Stop** **R = Roundabout**

No.	Intersection	Time Period	Control	Northbound Left	Northbound Thru	Northbound Right	Southbound Left	Southbound Thru	Southbound Right	Eastbound Left	Eastbound Thru	Eastbound Right	Westbound Left	Westbound Thru	Westbound Right	Comp LOS	Intersection Delay (sec/veh)	Peak Hour Warrant Met (Yes/No)
5)	S. H Street and 99 NB Off-Ramp	Year 2020 A.M. Existing	1W	-	-	-	-	-	-	A	-	A	-	-	-	B	10.8	No
		Year 2020 A.M. with Project	1W	-	-	-	-	-	-	A	-	A	-	-	-	A	9.8	No
		Year 2023 A.M. Existing	1W	-	-	-	-	-	-	A	-	A	-	-	-	A	9.4	No
		Year 2023 A.M. with Project	1W	-	-	-	-	-	-	A	-	A	-	-	-	A	9.8	No
		Year 2042 A.M. without Project	1W	-	-	-	-	-	-	A	-	A	-	-	-	A	9.6	No
		Year 2042 A.M. with Project	1W	-	-	-	-	-	-	B	-	A	-	-	-	B	10.0	No
		Year 2020 P.M. Existing	1W	-	-	-	-	-	-	B	-	A	-	-	-	B	10.8	No
		Year 2020 P.M. with Project	1W	-	-	-	-	-	-	B	-	A	-	-	-	B	11.2	No
		Year 2023 P.M. Existing	1W	-	-	-	-	-	-	B	-	A	-	-	-	B	10.8	No
		Year 2023 P.M. with Project	1W	-	-	-	-	-	-	B	-	A	-	-	-	B	11.3	No
		Year 2042 P.M. without Project	1W	-	-	-	-	-	-	B	-	A	-	-	-	B	11.6	No
		Year 2042 P.M. with Project	1W	-	-	-	-	-	-	B	-	A	-	-	-	B	12.3	No

Notes:

1) Mitigation includes the addition of a left turn lane to each leg of the intersection, and a right turn lane on SR 119 WB at Union Ave. The addition of Project traffic does not degrade the LOS in any scenario.

TABLE 8a: Street Segment Level of Service for AM Peak Hour

				Year 2020 Existing A.M. Volumes (Figure 2)		Year 2020 A.M. Plus Project Traffic (Figure 5 A)		Year 2023 A.M. Without Project Traffic (Figure 6 A)		Year 2023 A.M. Plus Project Traffic (Figure 7 A)	
Item	**Street Segment**	**Limits**	**Existing Laneage - Both Directions**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**
1)	Taft Hwy.	Wible Rd/ Compagnoni St	2	288/385	C	405/297	C	397/297	C	417/306	C
2)	Taft Hwy.	99 SB Onramp/ Compagnoni St	2	188/627	C	227/733	C	194/645	C	251/751	C
3)	Taft Hwy.	99 NB onramp / SB onramp	2	205/543	B	261/602	C	212/559	B	269/618	C
4)	Taft Hwy.	South H St/99 NB onramp	2	558/395	D	615/407	D	575/407	D	632/419	D
5)	Taft Hwy.	Union Ave/South H St	2	412/302	C	421/313	C	424/311	D	433/322	D
6)	South H. St.	99 NB Offramp/ Taft Hwy.	2	58/106	A	154/58	B	109/60	A	157/60	B

(Table continued on next page)

TABLE 8a: Street Segment Level of Service for AM Peak Hour (Continued)

				Year 2023 A.M. Plus Project Traffic - Mitigated (Note 1)		Year 2042 A.M. Without Project Traffic (Figure 8 A)		Year 2042 A.M. Plus Project Traffic (Figure 9 A)		Year 2042 A.M. Plus Project Traffic - Mitigated (Note 2)	
Item	**Street Segment**	**Limits**	**Existing Laneage - Both Directions**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**
7)	Taft Hwy.	Wible Rd/ Compagnoni St	2	-	-	478/357	D	498/366	D	498/366	A
8)	Taft Hwy.	99 SB Onramp/ Compagnoni St	2	-	-	233/777	C	290/883	C	-	-
9)	Taft Hwy.	99 NB onramp / SB onramp	2	-	-	254/674	C	311/733	C	-	-
10)	Taft Hwy.	South H St/99 NB onramp	2	632/419	A	691/490	D	748/502	D	748/502	A
11)	Taft Hwy.	Union Ave/South H St	2	433/322	A	510/375	D	519/386	D	519/386	A
12)	South H. St.	99 NB Offramp/ Taft Hwy.	2	-	-	72/131	B	179/72	B	-	-

Notes:

1) Mitigation involves the addition of one lane on both East bound and West bound street segments of Taft highway. The specific street segments are between South H St and the 99 NB onramp and also the segment between the Union Ave and South H St.

2) Mitigation involves the addition of one lane on both East bound and West bound street segments of Taft highway. The specific street segments are between Wible Rd and Compagnoni St, Union Ave & South H St, and South H St. & the 99 NB Onramp.

TABLE 8b: Street Segment Level of Service for PM Peak Hour

				Year 2020 Existing P.M. Volumes (Figure 3)		Year 2020 P.M. Plus Project Traffic (Figure 5 B)		Year 2023 P.M. Without Project Traffic (Figure 6 B)		Year 2023 P.M. Plus Project Traffic (Figure 7 B)	
Item	**Street Segment**	**Limits**	**Existing Laneage - Both Directions**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**
1)	Taft Hwy.	Wible Rd/Compagnoni St	2	541/538	D	549/549	D	555/558	D	566/566	D
2)	Taft Hwy.	99 SB Onramp/ Compagnoni St	2	385/992	C	436/1089	D	397/1021	D	448/1118	D
3)	Taft Hwy.	99 NB onramp / SB onramp	2	400/944	C	451/998	D	412/972	C	463/1026	D
4)	Taft Hwy.	South H St/99 NB onramp	2	667/729	D	718/740	D	687/751	D	738/762	D
5)	Taft Hwy.	Union Ave/South H St	2	429/577	C	437/588	C	442/595	C	450/606	C
6)	South H. St.	99 NB Offramp/Taft Hwy	2	152/209	B	252/152	C	215/157	B	258/157	C

(Table continued on next page)

TABLE 8b: Street Segment Level of Service for PM Peak Hour (Continued)

				Year 2023 P.M. Plus Project Traffic - Mitigated (Note 1)		Year 2042 P.M. Without Project Traffic (Figure 8 B)		Year 2042 P.M. Plus Project Traffic (Figure 9 B)		Year 2042 P.M. Plus Project Traffic - Mitigated (Note 2)	
Item	**Street Segment**	**Limits**	**Existing Laneage - Both Directions**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**	**PH Vol (vph) (wb/eb) or (sb/nb)**	**Level of Service (LOS)**
7)	Taft Hwy.	Wible Rd/Compagnoni St	2	566/566	A	668/671	D	679/679	D	679/679	A
8)	Taft Hwy.	99 SB Onramp/ Compagnoni St	2	448/1118	A	477/1231	D	528/1328	D	528/1328	A
9)	Taft Hwy.	99 NB onramp / SB onramp	2	463/1026	A	496/1171	D	547/1225	D	547/1225	A
10)	Taft Hwy.	South H St/99 NB onramp	2	738/762	A	827/903	E	878/914	E	878/914	A
11)	Taft Hwy.	Union Ave/South H St	2	450/606	A	715/532	D	540/726	D	540/726	A
12)	South H. St.	99 NB Offramp/Taft Hwy	2	-	-	188/259	C	302/188	C	-	-

Notes:

1) Mitigation involves the addition of one lane on both East bound and West bound street segments of Taft highway. The specific street segments are between South H St and the 99 NB onramp and also the segment between the Union Ave and South H St.

2) Mitigation involves the addition of one lane on both East bound and West bound street segments of Taft highway. The specific street segments are between Wible Rd and Compagnoni St, Union Ave & South H St, and South H St. and the 99 NB Onramp.

TABLE 9a: Freeway Ramp Junction Levels of Service

				A.M. Volumes			Mitigated Ramp (Note 3 and 4)	
Item	**Ramp Segment**	**Junction Type**	**Analysis Scenario**	**PH Vol (vph)**	**Density (pc/mi/ln)**	**Level of Service (LOS)**	**Density (pc/mi/ln)**	**Level of Service (LOS)**
1)	Taft Hwy and 99 SB On-Ramp (N. Side Taft Hwy)	Merge	2020	17	15.7	B	N/A	N/A
			2020 + Project	17	15.7	B	N/A	N/A
			2023	18	16	B	N/A	N/A
			2023 + Project	18	16	B	N/A	N/A
			2042	21	19.2	B	N/A	N/A
			2042 + Project	21	19.2	B	N/A	N/A
2)	Taft Hwy and 99 SB On-Ramp (S. Side Taft Hwy)	Merge	2020	62	16.1	B	N/A	N/A
			2020 + Project	109	16.5	B	N/A	N/A
			2023	64	16.4	B	N/A	N/A
			2023 + Project	111	16.8	B	N/A	N/A
			2042	77	19.6	B	N/A	N/A
			2042 + Project	124	20	B	N/A	N/A
3)	Taft Hwy and 99 NB On-Ramp (N. Side Taft Hwy)	Merge	2020	207	18.1	B	N/A	N/A
			2020 + Project	207	18.1	B	N/A	N/A
			2023	213	18.5	B	N/A	N/A
			2023 + Project	213	18.5	B	N/A	N/A
			2042	257	22.1	C	N/A	N/A
			2042 + Project	257	22.1	C	N/A	N/A
4)	Taft Hwy and 99 NB On-Ramp (S. Side Taft Hwy)	Merge	2020	148	17.6	B	N/A	N/A
			2020 + Project	195	18	B	N/A	N/A
			2023	152	18	B	N/A	N/A
			2023 + Project	199	18.4	B	N/A	N/A
			2042	184	21.5	C	N/A	N/A
			2042 + Project	231	21.9	C	N/A	N/A

TABLE 9a: Freeway Ramp Junction Levels of Service (Continued)

				A.M. Volumes				Mitigated Ramp (Note 3 and 4)	
Item	**Ramp Segment**	**Junction Type**	**Analysis Scenario**	**PH Vol (vph)**	**Density (pc/mi/ln)**	**Level of Service (LOS)**		**Density (pc/mi/ln)**	**Level of Service (LOS)**
5)	Taft Hwy and 99 SB Off-Ramp	Diverge	2020	362	21	C		N/A	N/A
			2020 + Project	409	21.1	C		N/A	N/A
			2023	372	21.3	C		N/A	N/A
			2023 + Project	419	21.4	C		N/A	N/A
			2042	448	24.9	C		N/A	N/A
			2042 + Project	495	25	C		N/A	N/A
6)	Taft Hwy and 99 NB Off-Ramp	Diverge	2020	26	19.5	B		N/A	N/A
			2020 + Project	74	19.6	B		N/A	N/A
			2023	27	19.8	B		N/A	N/A
			2023 + Project	75	19.9	B		N/A	N/A
			2042	333	23.2	C		N/A	N/A
			2042 + Project	81	23.2	C		N/A	N/A

TABLE 9b: Freeway Ramp Junction Levels of Service

				P.M. Volumes			Mitigated Ramp (Note 3 and 4)	
Item	**Ramp Segment**	**Junction Type**	**Analysis Scenario**	**PH Vol (vph)**	**Density (pc/mi/ln)**	**Level of Service (LOS)**	**Density (pc/mi/ln)**	**Level of Service (LOS)**
1)	Taft Hwy and 99 SB On-Ramp (N. Side Taft Hwy)	Merge	2020	12	15.7	B	N/A	N/A
			2020 + Project	12	15.7	B	N/A	N/A
			2023	12	16	B	N/A	N/A
			2023 + Project	12	16	B	N/A	N/A
			2042	15	19.1	B	N/A	N/A
			2042 + Project	15	19.1	B	N/A	N/A
2)	Taft Hwy and 99 SB On-Ramp (S. Side Taft Hwy)	Merge	2020	48	16	B	N/A	N/A
			2020 + Project	91	16.3	B	N/A	N/A
			2023	49	16.3	B	N/A	N/A
			2023 + Project	92	16.6	B	N/A	N/A
			2042	60	19.5	B	N/A	N/A
			2042 + Project	103	19.9	B	N/A	N/A
3)	Taft Hwy and 99 NB On-Ramp (N. Side Taft Hwy)	Merge	2020	267	18.6	B	N/A	N/A
			2020 + Project	267	18.6	B	N/A	N/A
			2023	275	19	B	N/A	N/A
			2023 + Project	275	19	B	N/A	N/A
			2042	331	22.7	C	N/A	N/A
			2042 + Project	331	22.7	C	N/A	N/A
4)	Taft Hwy and 99 NB On-Ramp (S. Side Taft Hwy)	Merge	2020	223	18.2	B	N/A	N/A
			2020 + Project	266	18.6	B	N/A	N/A
			2023	230	18.6	B	N/A	N/A
			2023 + Project	273	19	B	N/A	N/A
			2042	277	22.3	C	N/A	N/A
			2042 + Project	320	22.7	C	N/A	N/A

TABLE 9b: Freeway Ramp Junction Levels of Service (Continued)

				P.M. Volumes				Mitigated Ramp (Note 3 and 4)	
Item	**Ramp Segment**	**Junction Type**	**Analysis Scenario**	**PH Vol (vph)**	**Density (pc/mi/ln)**	**Level of Service (LOS)**		**Density (pc/mi/ln)**	**Level of Service (LOS)**
5)	Taft Hwy and 99 SB Off-Ramp	Diverge	2020	556	21.4	C		N/A	N/A
			2020 + Project	598	21.5	C		N/A	N/A
			2023	572	21.8	C		N/A	N/A
			2023 + Project	614	21.9	C		N/A	N/A
			2042	690	25.4	C		N/A	N/A
			2042 + Project	732	25.5	C		N/A	N/A
6)	Taft Hwy and 99 NB Off-Ramp	Diverge	2020	115	19.6	B		N/A	N/A
			2020 + Project	158	19.7	B		N/A	N/A
			2023	118	20	B		N/A	N/A
			2023 + Project	161	20.1	C		N/A	N/A
			2042	142	23.3	C		N/A	N/A
			2042 + Project	185	23.4	C		N/A	N/A

C. Traffic Signal Warrant Analysis

Non-signalized intersections within the Project vicinity were analyzed for satisfaction of the Peak Hour Volume Warrant as described in Section 9 of the Caltrans Traffic Manual and the **Manual of Uniform Traffic Control Devices**. A brief explanation of the intersection warrant analysis is provided as follows:

The Manual of Uniform Traffic Control Devices (MUTCD) prescribes "tests" which are conducted to determine the need for installation of a traffic signal. These "tests" are referred to as "warrants". The MUTCD list minimum signal "warrants", which have been adopted by the California Department of Transportation and most California agencies, including the City of Bakersfield and the County of Kern. These "warrants" consist of evaluation of various criteria that have been determined as critical for the installation of a signal. The warrant criterion has been derived empirically.

In actual practice, justification for signal installation is usually based on satisfaction of a number of warrants as well as poor Levels of Service for multiple movements. In keeping within the scope of this traffic study, non-signalized intersections were evaluated for signalization, including expansion of the intersection, based solely on satisfaction of the Peak Hour Signal Warrant described in The Manual of Uniform Traffic Control Devices (MUTCD).

Table 7 herein provides a column indicating whether or not the Peak Hour Warrant was satisfied for each scenario.

Table 10 herein provides intersection volumes and indicates whether or not the Peak Hour Warrant is satisfied for all existing and future scenarios.

Table 10: Peak Hour Warrant Analysis

		Year 2020 Existing Volumes (Figures 2&3)			Year 2020 Existing Volumes Plus Project (Figures 5A&5B)			Year 2023 Existing Volumes (Figures 6A & 6B)		
No.	**Existing Non-Signalized Intersection**	**Highest Minor Approach Volume (vph)**	**Total Major Approach Volume (vph)**	**Peak Hour Warrant Satisfied**	**Highest Minor Approach Volume (vph)**	**Total Major Approach Volume (vph)**	**Peak Hour Warrant Satisfied**	**Highest Minor Approach Volume (vph)**	**Total Major Approach Volume (vph)**	**Peak Hour Warrant Satisfied**
1)	99 NB Offramp and South H St AM	26	138	No	74	138	No	27	142	No
	99 NB Offramp and South H St PM	115	204	No	157	204	No	118	210	No

		Year 2023 Existing Volumes Plus Project (Figures 7A & 7B)			Year 2042 Existing Volumes (Figures 8A & 8B)			Year 2042 Existing Volumes Plus Project (Figures 9A & 9B)		
No.	**Existing Non-Signalized Intersection**	**Highest Minor Approach Volume (vph)**	**Total Major Approach Volume (vph)**	**Peak Hour Warrant Satisfied**	**Highest Minor Approach Volume (vph)**	**Total Major Approach Volume (vph)**	**Peak Hour Warrant Satisfied**	**Highest Minor Approach Volume (vph)**	**Total Major Approach Volume (vph)**	**Peak Hour Warrant Satisfied**
2)	99 NB Offramp and South H St AM	75	142	No	33	171	No	81	171	No
	99 NB Offramp and South H St PM	161	210	No	142	253	No	185	253	No

V. PROJECT VEHICLE MILES TRAVELED

A. Background

The California Legislature, through Senate Bill 746, Senate Bill 32, and Executive Order, have required the California Environmental Quality Act (CEQA) to consider the effects of a project on the surrounding transportation system, with Vehicle Miles Traveled (VMT) as an appropriate measure of impact. The specific goal is reduction of greenhouse gas emission by reducing reliance on individual vehicles, improving mass transit, and reduction in trip length via denser infill development.

Senate Bill 32 requires the State of California to reduce greenhouse gas emission to 40 percent below 1990 levels by Year 2030; and Executive Order requires reduction of greenhouse gas emission to 90 percent below 1990 levels by Year 2050.

The calculation of VMT of any project, simply put, is the number of project-generated trips multiplied by the travel length of each trip. Obviously, there is no completely precise method for determining VMT for any project prior to development and occupancy; however, the best available data must be used for estimating both project-generated trips and trip length.

B. Project Generated Trips for VMT Calculation

The phenomena of "Capture", "Pass-by" and "Diverted Link" trips have been previously discussed. However; trip reductions taken for these phenomena for the purpose of Level of Service (LOS) analysis are typically under-represented. To ensure a conservative analysis of Level of Service (LOS) impact, various agencies generally mandate maximum trip reduction rates for the combined effects of "Capture", "Pass-by" and "Diverted-Link" trips, to around 15 percent. This provides a factor of safety for Level of Service Analysis and development of mitigation. However, for fast food counters, gas stations, or convenient stores, it is difficult, if not impossible, to find a traffic engineering publication that indicates "pass-by", "capture" and "diverted-link" trips all combined to be as low as 15 percent. As in one example, the *Institute of Transportation Engineers Trip Generation Manual* (ITE) indicates a P.M. peak hour "Pass-By" rate of 61 percent for convenience markets. Similarly, the ITE Manual indicates "pass-by" rates of 34 percent for shopping centers, 36 percent for supermarkets, and 50 to 80 percent for convenience stores with gas pumps. Again, these are only the rates of "pass-by" and do not include reductions for "capture" or "diverted link" trips.

Furthermore, a driveway surveys for the similar establishment roughly 400 hundred feet east of the Project, (an ARCO gas station with convenience market with fast food counter), by the author of this report yielded 78 percent and 22 percent for "pass-bys" and "diverted link" trips respectively. Given "pass-bys" are not considered to generate VMT, the balance of the trips being all "diverted link" trips from the SR 99 freeway, were used to determine Vehicle Miles Traveled.

C. Trip Length

Although "Pass-by" and "Captured" trips would not add to VMT, "Diverted Link Trips" add vehicle travel distance by its definition. In the case of the Project, "Diverted Link Trip" lengths are the distances from the Project to either the SR 99 off-ramp termini or on-ramp entrance. Although the Diverted Link Trip should not be added to freeway traffic, there is a distance traveled from the freeway to Project and back again. In a LOS analysis, these trips have little or no effect on the Freeway, but do impact the freeway off and on ramps as well as the freeway cross-street. In this example, the argument against adding this distance to total VMT is that if the Project's fueling station and convenience market wasn't available, the Diverted Link Trip would be required at another location, resulting in no net increase vehicle miles traveled due to the Project. However, again in this study, VMT for "Diverted" link arrivals was calculated as the distance from the respective off-ramp termini to the project, multiplied by the trip number. Whether the arriving "Diverted Link trip used the northbound or southbound off-ramp, (with slightly different distances) was pro-rated based on the existing directional split of the freeway. Similarly, VMT for "Diverted Link" departures was taken as the number of trips multiplied by the distance to the freeway on-ramps, again pro-rated by the directional split of freeway traffic. It is noted that "diverted link trips" were assumed to continue in their original direction once they returned to the State Route 99 freeway. In response to comments from the City of Bakersfield, truck traffic, as shown in Table 2, was not included in the calculation for VMT.

Table 11 herein shows the VMT for "Diverted Link Trips".

Table 11: Total Vehicle Miles Traveled

Total Vehicle Trips (Note 3)	% Capture	% Diverted Link	Diverted Link Vehicle Trips
2925	5%	22%	**611**

Scenario	(Primary Trip) Arriving From	(Primary Trip) Departing To	Percentage of Trips (%)	Vehicle Trips	Distance (mi)	Daily Vehicle Miles Travelled	Annual Vehicle Miles Travelled
Arrivals	SB Off-Ramp	-	29%	177	0.25	44	16,177
	NB Off-Ramp	-	21%	128	0.51	65	23,898
Departures	-	SB On-Ramp	29%	177	0.29	51	18,766
	-	NB On-Ramp	21%	128	0.38	49	17,806
		Total:	100%	611		**210**	**76,646**

Notes:

1) VMT calculations are based on "diverted-link" & "primary trip" scenarios. "Pass-by" scenarios have a distance of 0 miles and are therefore not included.
2) Driveway Surveys for similar establishments yielded only "pass-by" and "diverted link" trips.
3) The 2,925 Trips was calculated by taking the difference between total vehicle trips and total truck trips provided in table 2.

V. TRAFFIC MITIGATION

A. Requirements for Mitigation

Mitigation is normally considered necessary if a particular intersection or street segment, under any existing or future scenario, (with or without the addition of project-generated traffic), is anticipated to function at a less than Level of Service (LOS) "C". Generally, the objective of traffic mitigation is to restore the Level of Service to a "C" or better.

B. Funding for Mitigation Improvements

A more complicated issue is funding for traffic mitigation improvements, and the Project's obligation or share of those costs. Prior to 1997, needed mitigation improvements were often attached as a *Condition of Approval* to abutting or nearby land development projects. In theory, these land development projects were the cause of increased traffic and degraded Level of Service, and therefore were responsible for mitigation to restore a satisfactory LOS. In reality, these land development projects often only contributed the last increment of traffic, (or the proverbial last straw), to an existing Level of Service already on threshold of dropping below "C".

Attaching the entirety of mitigation costs rendered many projects economically infeasible and caused land developers to avoid sites that would trigger costly improvements, (such as bridge widening, canal culverts, grade separations, and even traffic signals). This contributed to "leap-frog" development and created a street system with many bottlenecks, since segments remained unimproved, un-widened, or un-signalized. A common euphemistic slang, when referring to the state of road improvements in Bakersfield has been "gap-osis".

In 1997, the Metropolitan Bakersfield Transportation Impact Fee (TIF) program was greatly expanded to include and fund a comprehensive list of transportation improvements intended to restore and maintain an overall satisfactory LOS within the metropolitan Bakersfield area as well as some main corridors well beyond the City limits. A nexus study at that time calculated the cost of that comprehensive improvement list, and derived fees for all new development to fund said list. In theory, all new land development, to include residential homes and commercial sites, with payment of the RTIF, would fund engineering and construction of traffic mitigation improvements identified by the RTIF program. Although new development was burdened with the majority of the cost of constructing the RTIF improvement list, it was more palatable to land developers since the cost was spread equally to all projects. Since 1997, the RTIF program has been updated to account for inflation in construction costs.

Generally, the RTIF program funds road widening and intersection signalization for all main arterials, again with the intent of maintaining an overall satisfactory LOS. In addition, the RTIF also funds high-cost items such as bridges, canal culverts and grade separations.

Although the RTIF program is intended to be comprehensive, it is still the obligation of any TIS to substantiate that traffic impact from new developments is mitigated. This includes validating

that improvements listed in the RTIF program list are sufficient to improve affected facilities to a LOS of "C" or better. If the improvements listed on the RTIF program are insufficient, or incomplete, additional improvements must be identified by the TIS. This is the part of the scope of this study, and any development related TIS.

If RTIF funded improvements are proven sufficient to mitigate traffic for a specific project, then the Project's only obligation is to pay the Regional Transportation Impact Fee. However, a project must contribute funding for additional mitigation if the following conditions are met: 1) Project-generated traffic degrades the LOS to less than "C"; 2) The Project degrades any facility, already operating at less than "C", to a lower LOS; and 3) Improvements necessary to mitigate the facility are not included and funded by the RTIF program. In these cases, the Project must contribute its pro-rata share of the mitigation cost. The derivation of Project share is discussed in detail in the following section.

C. Project's Pro-Rata Share of Mitigation

Again, in a condition where degradation of a facility's LOS to less than "C" is directly attributable to the Project, and the RITF program does not fund specific improvements, the Project is obligated to pay its pro-rata share of needed mitigation. It is noted that in these cases, if a facility's LOS was a "C" or better prior to the addition of project-generated traffic, the required mitigation is to restore the LOS to a "C" or better. If the facilities existing LOS was a "D" or worse, mitigation is only required to restore the LOS to a pre-project condition.

Generally, the Project's pro-rata share of mitigation improvement cost is computed as the ratio of Project traffic to future traffic in the Year 2042. Year 2042 volume is considered as the "Base" volume plus Project-generated traffic. In other words, in the pro-rata share calculation, Project-generated traffic is the numerator and the total Year 2042 traffic volume is the denominator. There are a number of agency variations of this formula to determine Project share of mitigation.

D. Proposed Mitigation

As discussed in detail earlier in this report, a poor operational Level of Service for multiple movements, and satisfaction of the Peak Hour Warrant were considered justification for installation of a traffic signal or upgrading an existing signalized intersection (to full expansion in accordance with all local standards).

Degradation of the LOS of a street segment to less than "C", whether or not attributable to Project-traffic, was considered justification for mitigation. However, as discussed, the Project's obligation for funding mitigation is based on a number of factors, including the Project's pro-rata share of traffic, and the existing and future Level of Service without the addition of Project-generated traffic.

The actual proposed mitigation improvements are based on the estimated future year traffic, in this case, Year 2042.

In the following, each of the intersections, street segments, and freeway ramps included within the scope of this study are discussed with regard to existing and future level of service, the need for mitigation improvements, and the Project's obligation towards funding improvements.

In the following descriptions, the quadrants of the intersection are alternatively referred to as "legs" or "approaches": the north leg of the intersection is the street approaching from the north. The north leg is sometimes referred to as the "southbound approach". Similarly, the "east leg" is also the "westbound approach", and so on for the other legs.

Intersections:

1. **Taft Highway and Wible Road:** Both Taft Highway and Wible Road are two-lane roads at this intersection, however; this intersection is currently signalized with limited widening. The northeast corner of this intersection has been developed as a fast food restaurant and has widened Wible and Taft Highway along its limited frontage, including curb, gutter and sidewalk.

   The eastbound and westbound approaches for Taft Highway have single dedicated lanes for left turns, the through movement, and right turns. The north and south approaches of Wible Road both share a single lane for all movements.

   Under existing conditions, and with the addition of Project-generated traffic, this intersection calculates to a LOS of "B".

   Under Year 2023 and 2042 scenarios, both with and without the addition of Project-generated traffic, the LOS does not drop below a "C".

   Since the LOS of this intersection does not degrade below a "C" under any scenario, no further mitigation is proposed.

   RTIF Funding: It is noted that the Regional Transportation Impact Fee program lists this intersection to receive funding for signal installation. It is assumed this funding has already been spent.

2. **Taft Highway and Compagnoni Street/SB Off-Ramp Terminus:** This intersection has been widened and signalized in recent history as part of commercial development along the frontage of Taft Highway. Although Taft Highway has been widened at this location, due to road narrowing constrictions to the east and west, it is only striped to provide one lane. At this intersection, the east and west approaches of Taft Highway provide single dedicated lanes for each required movement. The northbound approach of Compagnoni provides a dedicated lane for both left and right turn movements (the through movement is not permitted). The southbound Ramp Terminus provides a single dedicated lane for each movement: lefts, throughs, and rights.

Under all existing and future year scenarios, with or without the addition of Project-generated traffic this intersection has been calculated to operate at a "C". ***Therefore, no further mitigation is proposed.***

Since the LOS of this intersection does not degrade below a "C" under any scenario, no further mitigation is proposed.

RTIF Funding: The RTIF programs includes roughly $7.3 M to funding bridge widening for the S.R. 119 overpass, thus allowing multiple lanes to be striping at this intersection.

3. **Taft Highway and South "H" Street:** This intersection is currently signalized. The north, east, and south legs are widened sufficiently that single dedicated lanes are provided for each turning movement and the through movement. The west leg has a dedicated lane for left turns, but only a shared lane for the through and right-turn movements.

   Under all existing and future year scenarios, with or without the addition of Project-generated traffic this intersection has been calculated to operate at a "C" or better. ***Therefore, no further mitigation is proposed.***

   RTIF Funding: Although the RTIF list does not specifically mention this intersection, it does include widening of South "H" for limits that include this location. Widening will allow multiple left turn lanes and multiple through lanes, all of which improve the LOS.

4. **Taft Highway and S. Union Avenue:** This intersection is currently signalized. The east and west legs of the intersection are widened sufficiently that single dedicated lanes are provided for each turning movement and the through movement. The north and south legs have single lanes for left turns, two dedicated through lanes (each way), and a single dedicated right turn lane.

   Under existing conditions, and with the addition of Project-generated traffic, this intersection calculates to a LOS of "C".

   Under Year 2023 and 2042 scenarios, both with and without the addition of Project-generated traffic, the LOS of this intersection is a "D". Adding an additional left-turn lane to each leg of the intersection and striping a dedicated right-turn lane to the east leg of the intersection would bring this intersection to an LOS of "C". However, since the Project-generated traffic does not degrade the LOS of the intersection in any scenario, ***no further mitigation is proposed.***

   RTIF Funding: Although the RTIF list does not specifically mention this intersection, it does include widening of South "H" for limits that include this location. Widening will allow multiple left turn lanes and multiple through lanes, all of which improve the LOS.

5. **South "H" Street and the S.R. 99 Northbound Off-Ramp:** It is assumed that this off ramp was terminated at "H" due to the physical restraint of the Kern Island Canal, and the close proximity of South "H" Street to the Freeway. In any event, this off-ramp terminates at an un-signalized "tee" intersection with South H Street. The ramp terminus provides a dedicated lane for the left turn and the right turn.

   Under all existing and future year scenarios, with or without the addition of Project-generated traffic, this intersection has been calculated to operate at a "B" or better. ***Therefore, no further mitigation is proposed.***

<u>Street Segments:</u>

1. **Taft Highway/ S.R. 119:** Within the Project's vicinity, Taft Highway is at various stages of widening, but due to constrictions discussed, cannot be striped for more than one lane in each direction.

   With exception of segment of Taft Highway between the freeway ramps, the addition of Project traffic does not degrade the LOS in any present day or future year scenario. However, Year 2020 and opening day traffic scenarios, the addition of project traffic degrades the LOS from a "C" to a "D".

   Proposed Mitigation: The addition of one lane in both directions will improve the LOS of Taft Highway to "A" under all scenarios.

   RTIF Funding: The RTIF program funds widening of Taft Highway, as well as signal installation, signal modifications, and bridge widening from Interstate 5 to Union Avenue.

   Therefore, other than payment of the RTIF development fee, the Project should have no further obligation for funding mitigation improvements for Taft Highway.

2. **South "H" Street:** The two-lane street segment of S. "H" Street, from the S.R. 99 northbound off-ramp to Taft Highway, under all existing and future scenarios (with or without the addition of Project-generated traffic) has been calculated to operate at an LOS no higher than "E". Again, the addition of Project-generated traffic, in any scenario, did not affect the LOS.

   Proposed Mitigation: The addition of one lane in both directions will improve the LOS of S. "H" Street to an "A" under any of the studied scenarios.

   RTIF Funding: The RTIF program funds widening of the road by two lanes from Taft Highway to Arvin-Edison Canal and the relocation of the Kern Island Canal from Taft Highway to White Lane.

   Therefore, other than payment of the RTIF development fee, the Project should have no further obligation for funding mitigation improvements for Taft Highway.

Freeway Ramps:

The State Route 99 on and off ramps at Taft Highway were analyzed existing year counts (for the northbound and southbound ramp volumes) and S.R. 99's Freeway Peak Hour Traffic Volume. The Freeway volume and percent heavy vehicles were based on Caltrans published traffic data. Under all current-year scenarios the ramps operated at a LOS of "B". and "C". Future-year scenarios also resulted in a LOS of "B" and "C". ***Therefore, the Project has no obligation to fund further improvements to the S.R. 99 on and off ramps.***

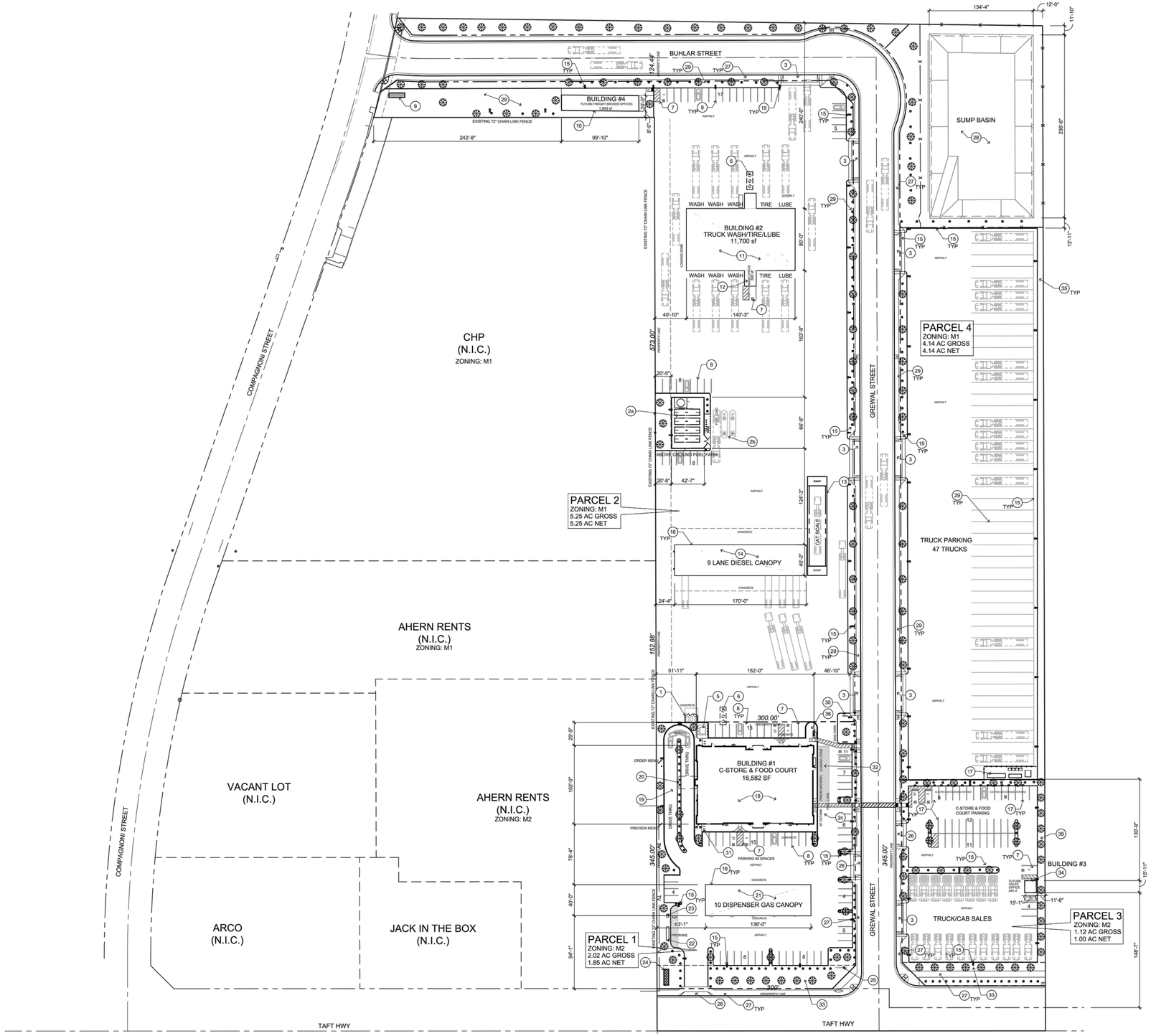
VI. CONCLUSIONS & RECOMMENDATIONS

The Study has shown that with recommended mitigation, the Level of Service for streets, roads and intersections which are impacted to some extent by the Project, can be mitigated to a pre-project condition. In all cases, mitigation is funded by the Regional Transportation Impact Fee Program (RTIF). This Study has validated that the improvements included as part of the RTIF program are sufficient to successfully mitigate future traffic.

The analysis has shown that the majority of trips are "pass-bys", adding no vehicle miles traveled. The balance of trips, with the exception of employees, are "diverted link" that add a relatively small amount of vehicle miles traveled. However, it can be argued, if the Project was not developed, that the computed VMT would be used at another travel center location. Given the proximity of the travel center to the freeway, stopping at a similar facility at another location could conceivably generate more VMT.

It should be noted again that this study was prepared conservatively, erring towards high Projected-generated traffic. Finally, the calculations and "findings" of this report have shown that with implementation of mitigation currently funded by the Regional Transportation Impact Fee Program, the impact of the Project to its surrounding street network will be "less-than-significant".

Appendix “A”
Exhibit and Figures



OVERALL SITE PLAN

1" = 60'-0"
(REDUCED)

KEYED NOTES
(APPLIES TO SHEET SP1.0 - SP1.2)

1. TRASH ENCLOSURE
2a. ABOVE GROUND FUEL FARM BY OTHERS
(4) 12,000 GAL DIESEL
(1) 9,000 GAL DEF
2b. UNDERGROUND FUEL TANKS BY OTHERS
(1) 12,000 GAL DIESEL
(1) 12,000 GAL BIO-DIESEL
2c. UNDERGROUND FUEL TANKS BY OTHERS
(1) 15,000 GAL 87 OCTANE
(1) 15,000 GAL 9K PREMIUM / 8K DIESEL SPLIT
3. TRUCK DRIVEWAY PER COB DETAILS
4. NOT USED
5. PROPOSED PG & E ELECTRICAL TRANSFORMER
6. GREASE TRAP INTERCEPTOR
7. ACCESSIBLE PARKING PER CALIFORNIA BUILDING CODE TITLE 24 STANDARDS
8. PARKING 9'X18' PER COB STANDARDS
9. 60' HIGH MONUMENT SIGN ON COMPAGNONI ST. BY OTHERS
10. FUTURE FREIGHT BROKER OFFICE UNDER SEPARATE PERMIT
11. TRUCK WASH / LUBE / TIRE BUILDING BY OTHERS UNDER SEPARATE PERMIT
12. TRUCK WASH OFFICE BY OTHERS UNDER SEPARATE PERMIT
13. CAT TRUCK SCALE BY OTHERS UNDER SEPARATE PERMIT
14. 9 LANE DIESEL CANOPY AND DISPENSERS BY OTHERS UNDER SEPARATE PERMIT
15. 30' HIGH LED POLE - PARKING LOT LIGHTING 20,000 LUMENS PER HEAD - REFER TO PLAN FOR CONFIGURATION.
16. LED LIGHTING MOUNTED ON UNDERSIDE OF CANOPY - SEE ELECTRICAL DRAWINGS
17. ELECTRIC VEHICLE CHARGING STATIONS (17) AND EQUIPMENT BY OTHERS
18. CONVENIENCE STORE & FOOD COURT
19. DRIVE-THRU LANE PER COB STANDARDS
20. DRIVE-THRU CANOPY
21. AUTOMOBILE GAS CANOPY AND DISPENSERS BY OTHERS
22. 1000 GALLON PROPANE TANK WITH PIPE BOLLARDS BY OTHERS
23. AIR DISPENSER ON CONCRETE CURB
24. 80' HIGH MONUMENT SIGH ON TAFT HIGHWAY BY OTHERS
25. 100' FLAGPOLE WITH LIGHTING BY OTHERS
26. 30' WIDE CAR DRIVEWAY
27. 60" WIDE SIDEWALK
28. DRAINAGE SUMP
29. 96" LANDSCAPED AREA ALONG STREET
30. DOG PARK WITH PET FRIENDLY ARTIFICIAL TURF
31. BICYCLE RACK
32. LOADING ZONE
33. 30' LANDSCAPE ZONE ALONG TAFT HIGHWAY
34. FUTURE TRUCK SALES OFFICE
35. 10' LANDSCAPE BARRIER
36. FUEL VENT STACKS BY OTHERS
37. PROVIDE WHEEL STOP TO PREVENT ENCROACHMENT IN ACCESSIBLE ROUTE PER CBC 11B-502.7.2

PROJECT SUMMARY

PROJECT ADDRESS	2201 TAFT HIGHWAY BAKERSFIELD, CALIFORNIA 93313
APN'S / ZONING	184-160-14 ZONING - M2 184-160-13 ZONING - M1 184-160-43 ZONING - M1
BUILDING AREA BUILDING #1	16,582 S.F.
BUILDING AREA BUILDING #2	11,700 S.F.
BUILDING AREA BUILDING #3	240 S.F.
BUILDING AREA BUILDING #4	1,943 S.F.
SITE AREA	16 ACRES (GROSS)

PARKING SUMMARY

REQUIRED

BUILDING #1 - 16,582 SQFT.

RESTAURANT @ 1 /75	7,238 / 75 S.F. =	97
CONVENIENCE STORE @ 1 /200	9,344 / 200 S.F. =	47
CREDIT (44' + DRIVE-THRU LANE)	=	-2
CREDIT (9 DIESEL PUMPS)	=	-9
CREDIT (2:1) VEHICLES AT FUEL PUMPS	10 (2) =	- 20
TOTAL		113

BUILDING #2 - TRUCK WASH with OFFICE

SERVICE AREA @ 1 / 500	11,400 / 500 S.F. =	23
OFFICE @ 1 /300	300 / 300 S.F. =	1
TOTAL		24

BUILDING #3 - TRUCK SALES OFFICE

SERVICE AREA @ 1 / 4,000	19,460 / 4,000 S.F. =	4
OFFICE @ 1 /250	240 / 250 S.F. =	1
TOTAL		5

BUILDING #4 - FREIGHT BROKER OFFICE

OFFICE @ 1 /250	1,943 / 250 S.F. =	8

TOTAL REQUIRED 150 SPACES

ACCESSIBLE SPACES (PER 2019 CBC TABLE 11B-208.2) WHERE 151 to 200 PROVIDED, 5 SPACES REQUIRED

VAN SPACES (PER 2019 CBC 11B-208.2.4) 1 REQUIRED PER 6 REQUIRED ACCESSIBLE SPACES

PROVIDED

STANDARD STALLS (9'-0" x 18'-0")	126
(EV) ELECTRICAL VEHICLE (9'-0" x 18'-0")	15
ACCESSIBLE STALLS	9
ACCESSIBLE (EV) STALLS	2
TOTAL PROVIDED	152 SPACES

SURPLUS PARKING STALLS = 2 SPACES

TRUCK PARKING STALLS = 46 SPACES

CUP SUBMITTAL: 04.14.2021

SCALE:	1"=60'-0"
DRAWN BY:	CLF
DATE:	04.14.2021
PROJECT NUMBER:	20-132

#	DATE:	DESCRIPTION:

pilot

PROJECT: **PILOT - TRAVEL PLAZA - BAKERSFIELD**
2201 TAFT HIGHWAY
BAKERSFIELD, CALIFORNIA 93313

SHEET TITLE: OVERALL SITE PLAN

ideation DESIGN GROUP
4835 E.EAST WASHINGTON STREET PHOENIX, ARIZONA, 85034
tel: 602.791.1735 fax: 602.791.1544
INTERIOR DESIGN I FOODSERVICE DESIGN I ARCHITECTURE

SHEET NO: CUP-SP

LAV// Pinnacle Engineering
ENGINEERING • PLANNING • SURVEYING
12418 Rosedale Hwy., Suite A, Bakersfield, CA 93312
Phone: (661) 869-0184 Fax: (661) 885-4155

MATTHEW K. VOYLLA RCE 43330 EXP. 3/31/22

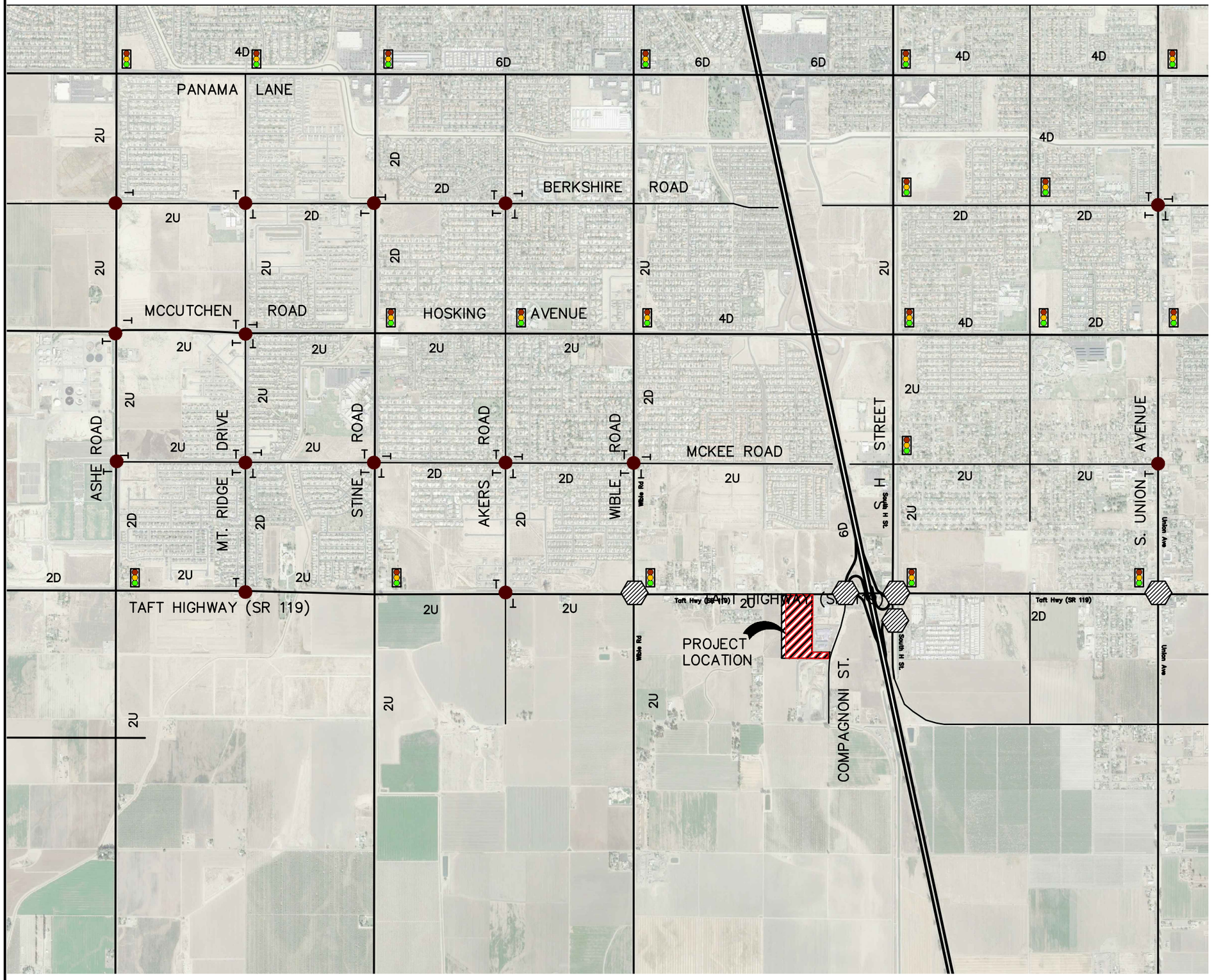
REVISIONS	DATE
	.
	.
	.
	.
	.
	.

EXHIBIT "A"
CUP SITE PLAN
TRAFFIC IMPACT STUDY
TAFT HWY. TRAVEL CENTER

JOB No.:	16-760
DWG NO.:	EXHIBITS
DATE:	04/16/2021
DRAWN BY:	ADA
CHECKED BY:	MKV
SHEET	1
OF	1 SHEETS

FIGURE 1

PROJECT LOCATION AND EXISTING STREET NETWORK



LEGEND

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- T — EXISTING STOP SIGN
- EXISTING TRAFFIC SIGNAL
- 2U — TWO LANE UNDIVIDED
- 2D — TWO LANE DIVIDED
- 4D — FOUR LANE DIVIDED
- 6D — SIX LANE DIVIDED
- RTIF — REGIONAL TRANSPORTATION IMPACT FEE
- INTERSECTION STUDIED
- NEW SIGNAL AND/OR SIGNAL MODIFICATION FUNDED BY RTIF PROGRAM
- ROAD WIDENING AND/OR OTHER IMPROVEMENTS FUNDED BY RTIF PROGRAM

NORTH

0 1000' 2000'

DATE: MARCH 2021

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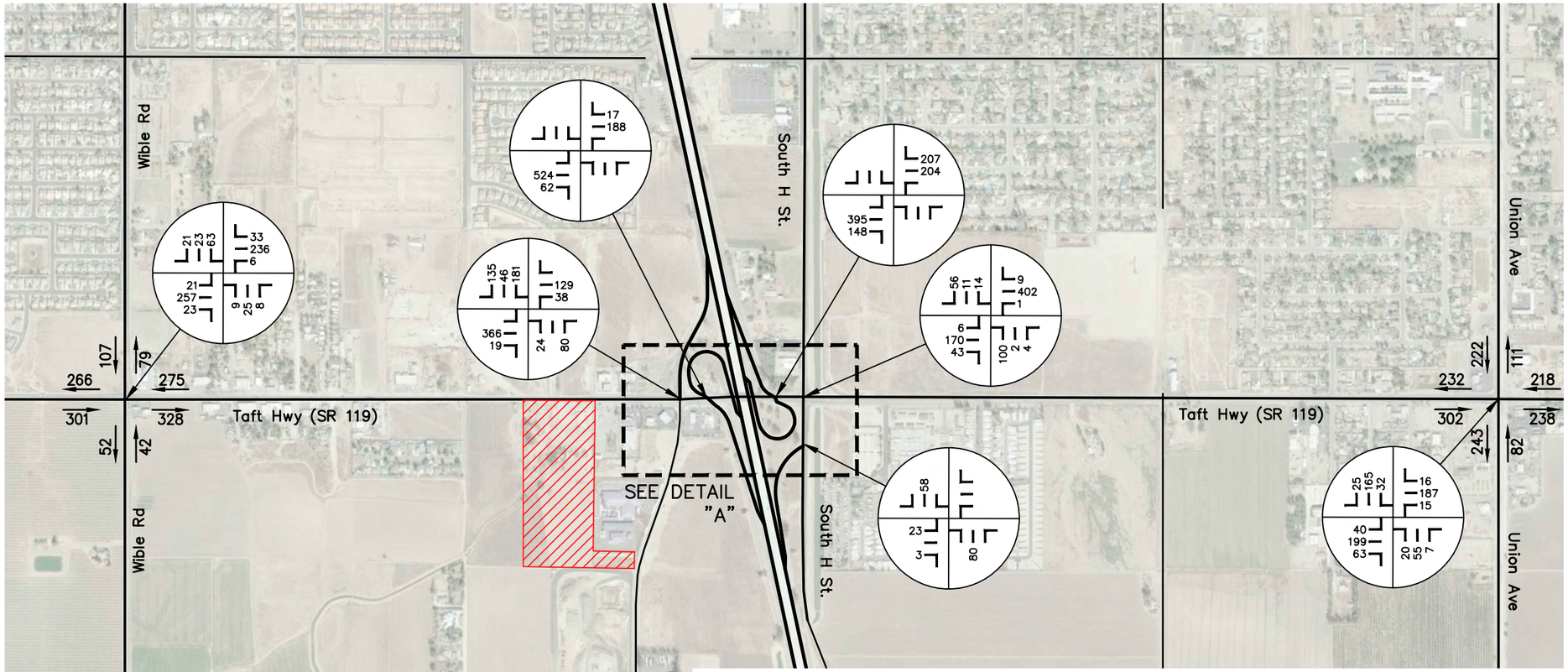
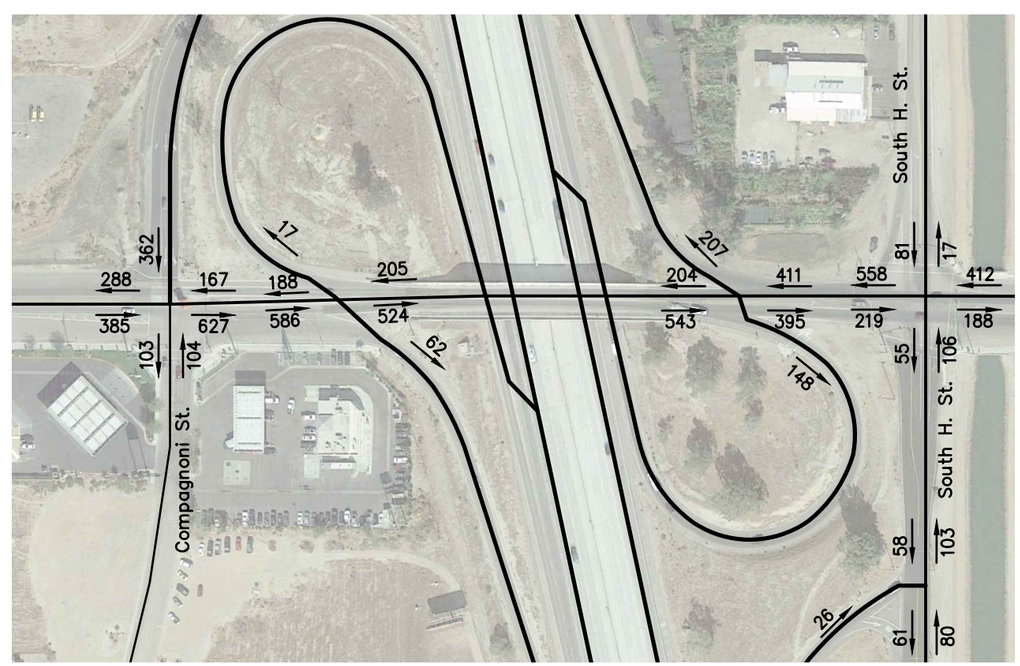
FIGURE 2

YEAR 2020 EXISTING A.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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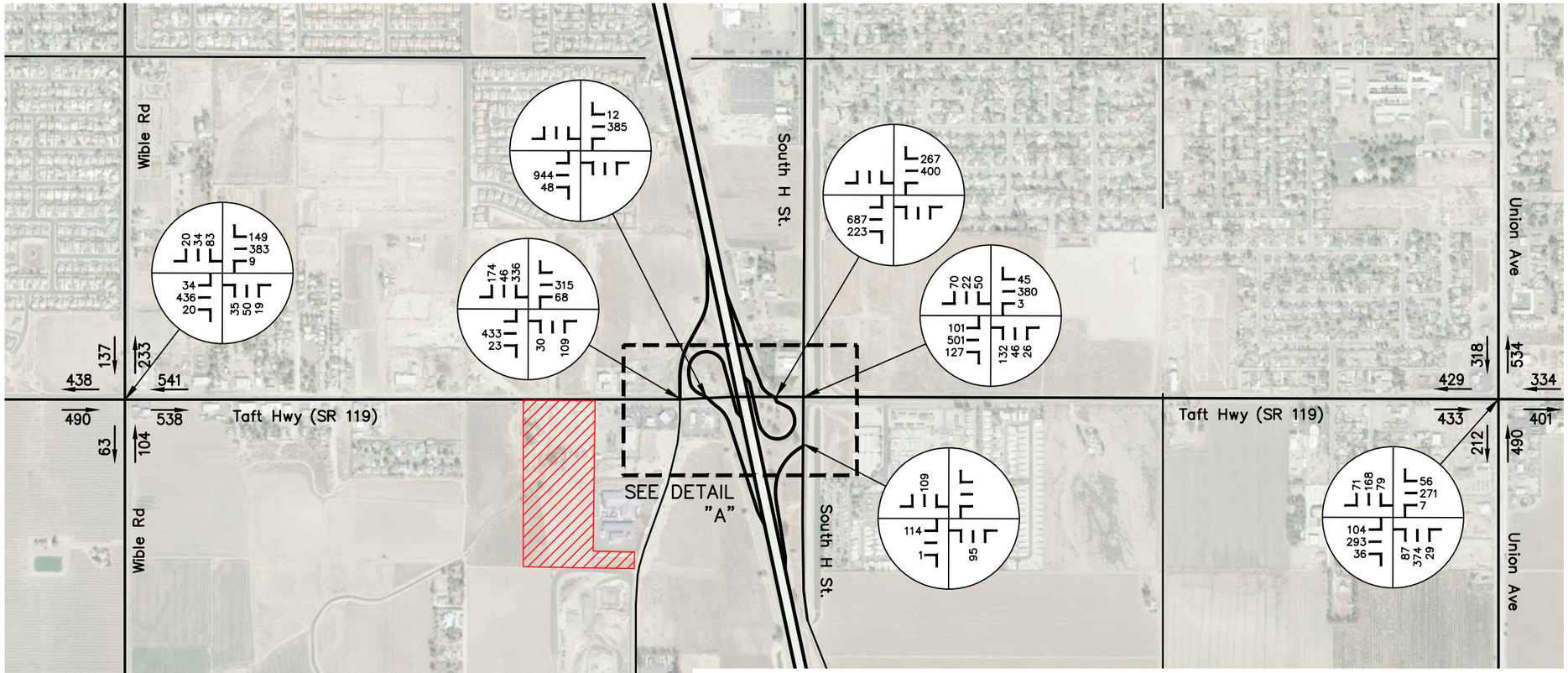
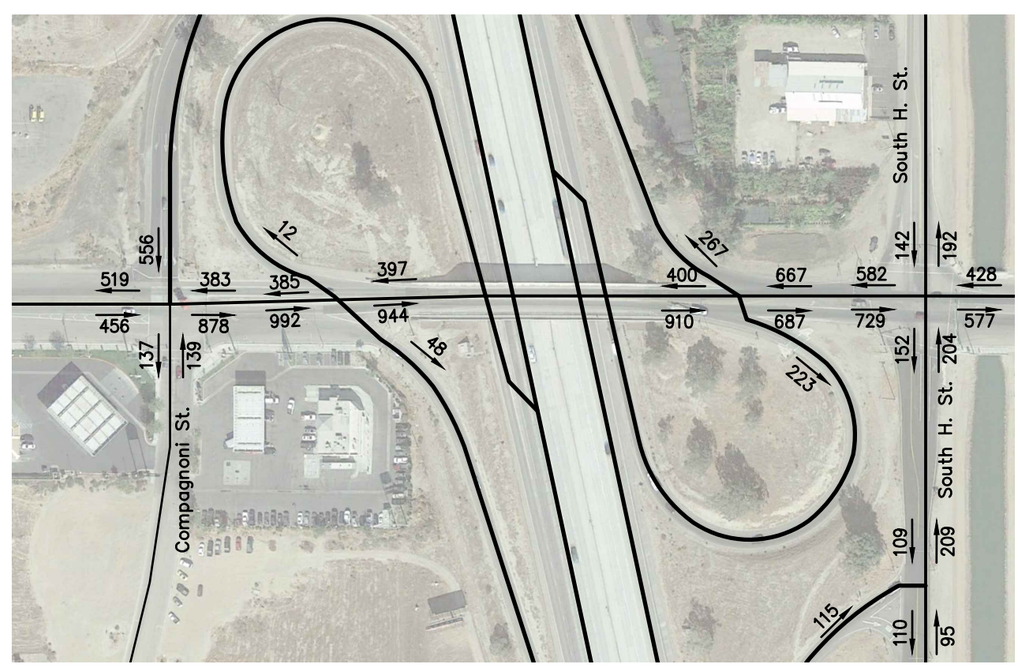
FIGURE 3

YEAR 2020 EXISTING P.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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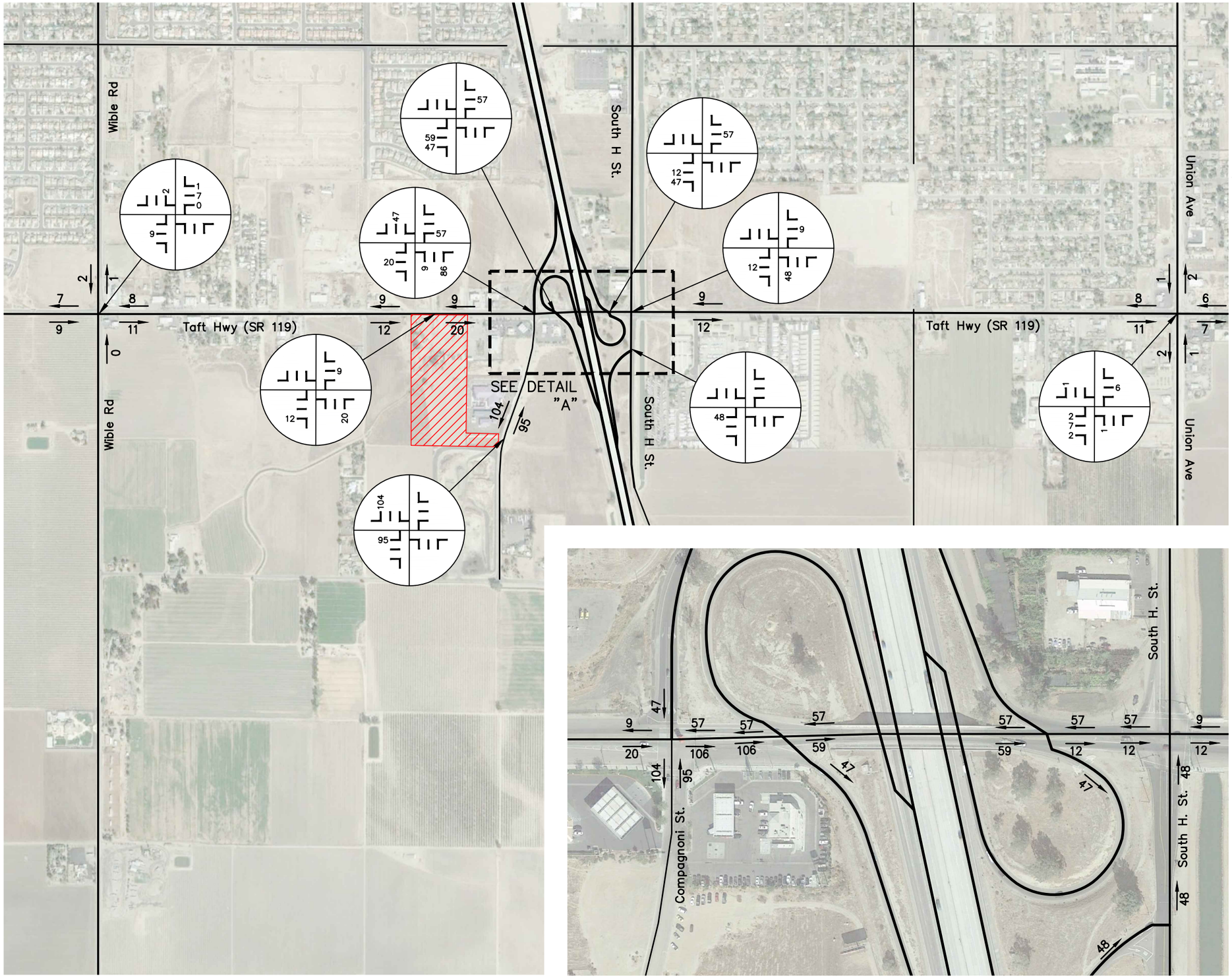
FIGURE 4A

A.M. PROJECT GENERATED TRAFFIC



LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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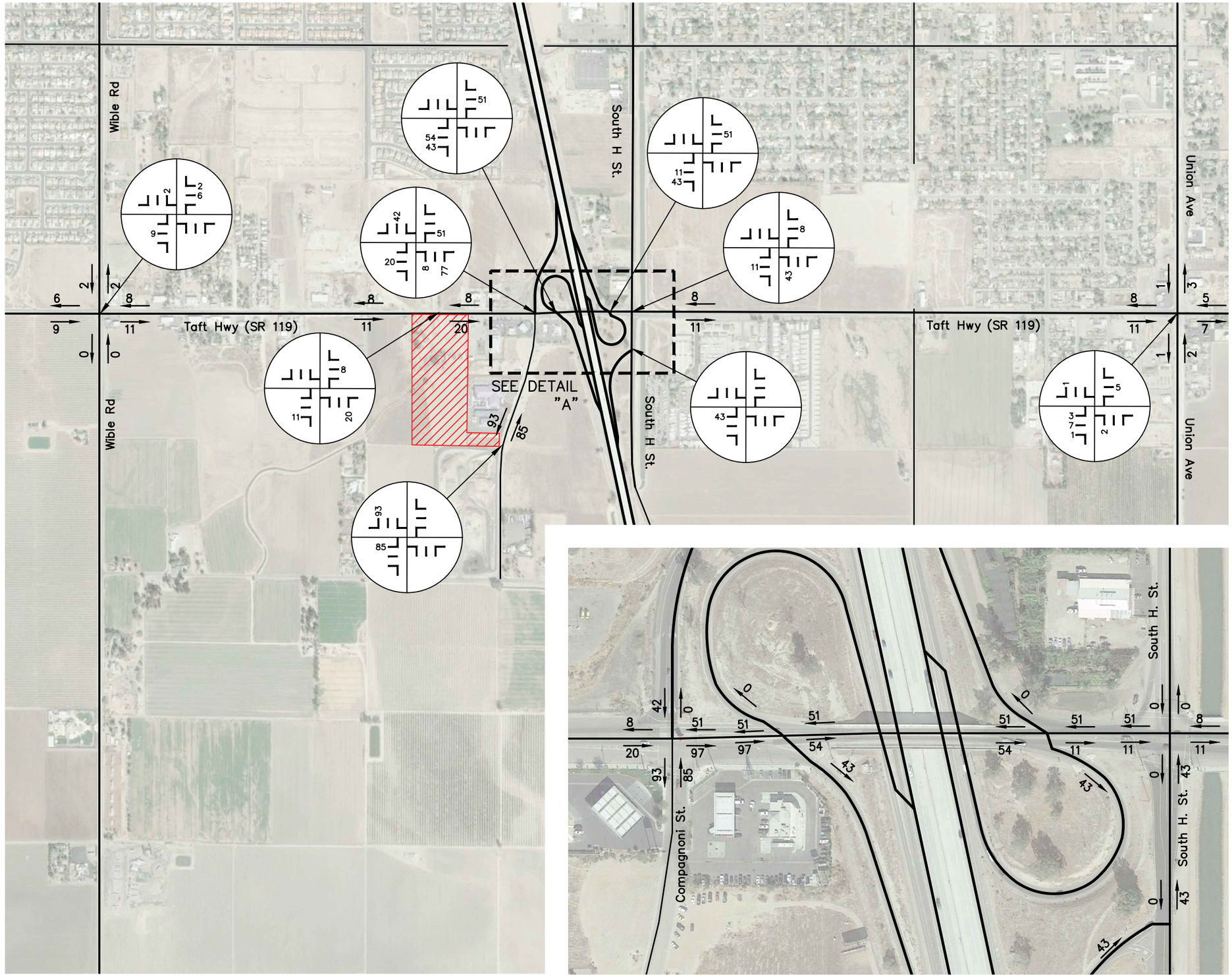
FIGURE 4B

P.M. PROJECT GENERATED TRAFFIC



LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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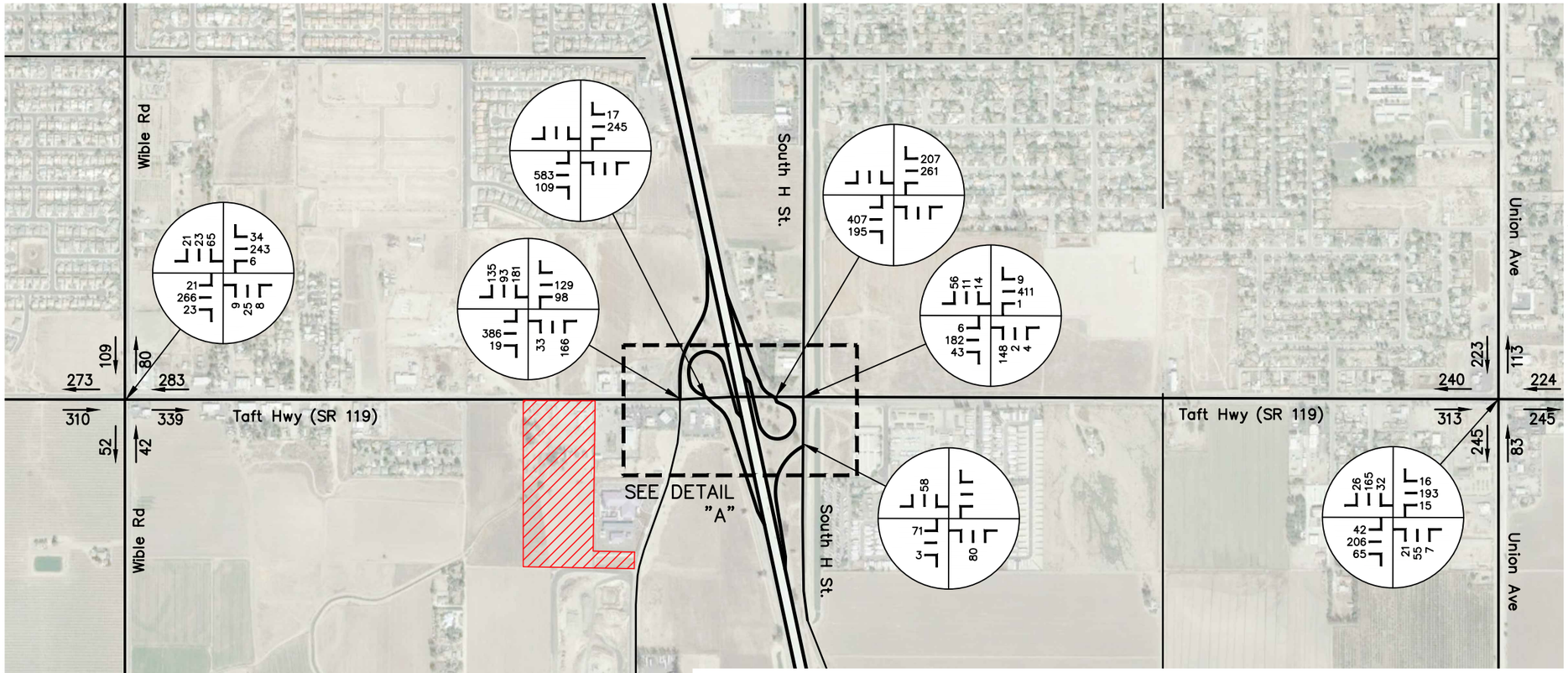
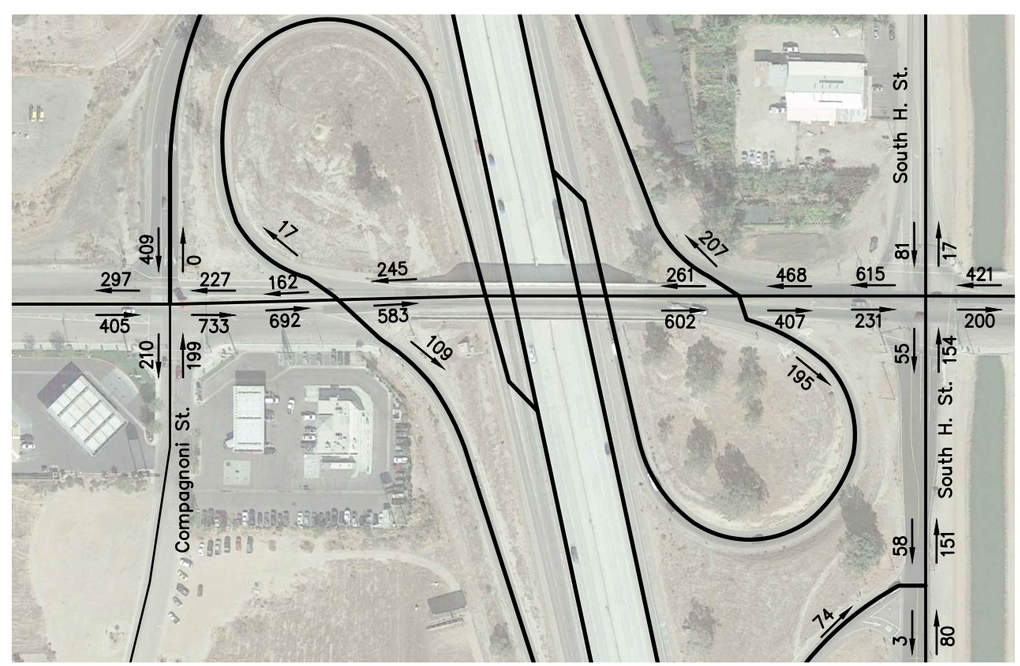
FIGURE 5A

YEAR 2020 EXISTING
A.M. PEAK HOUR VOLUMES AND
TURNING MOVEMENTS PLUS
PROJECT GENERATED TRAFFIC





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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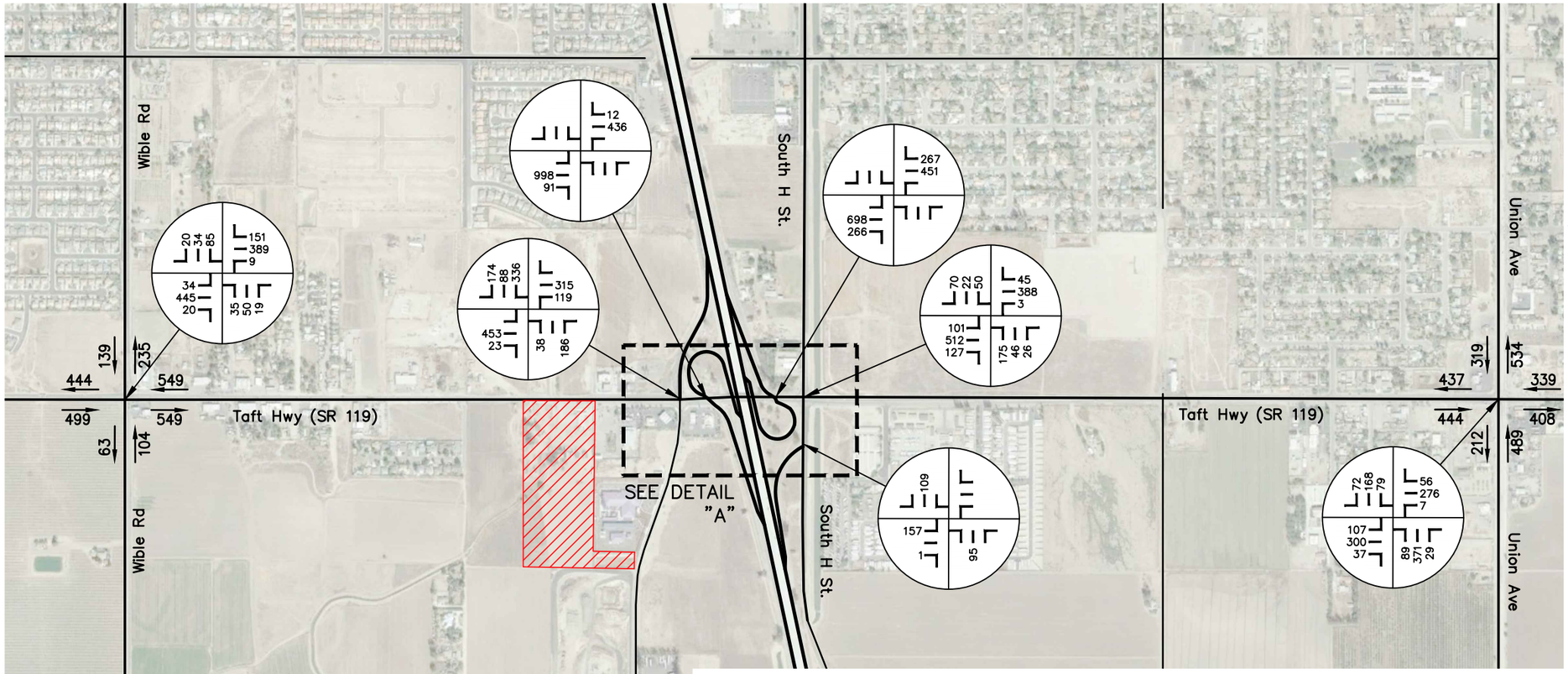
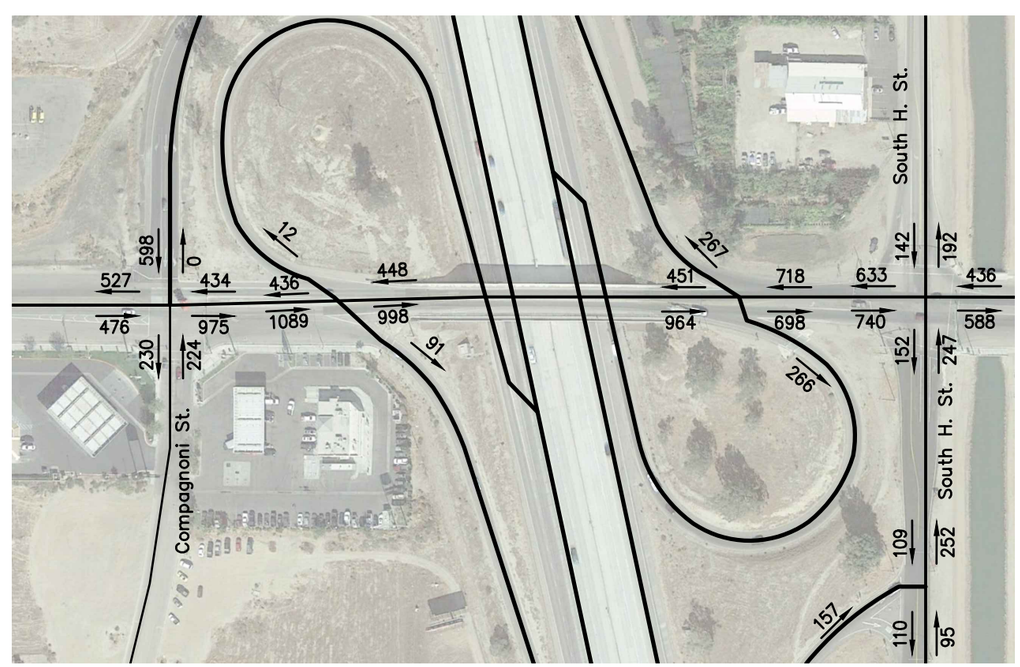
FIGURE 5B

YEAR 2020 EXISTING
P.M. PEAK HOUR VOLUMES AND
TURNING MOVEMENTS PLUS
PROJECT GENERATED TRAFFIC





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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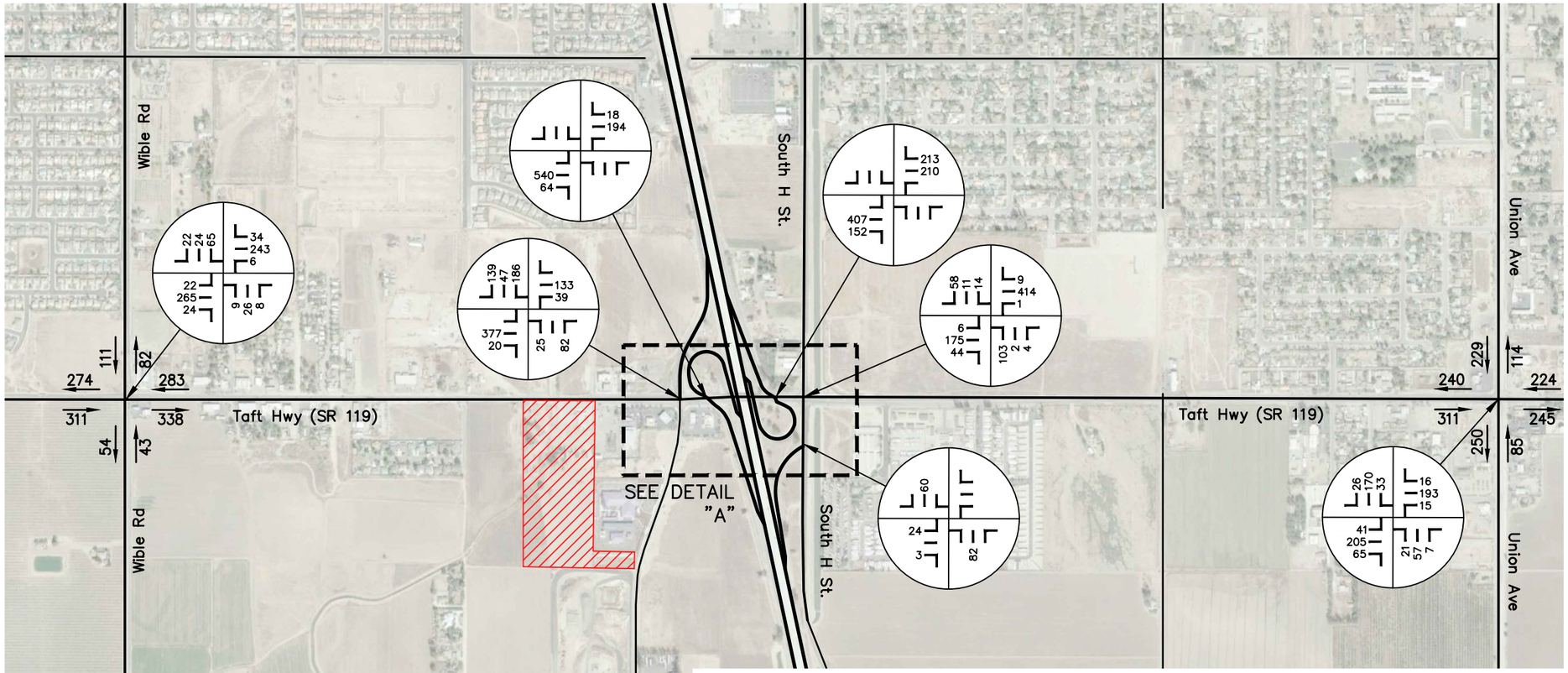
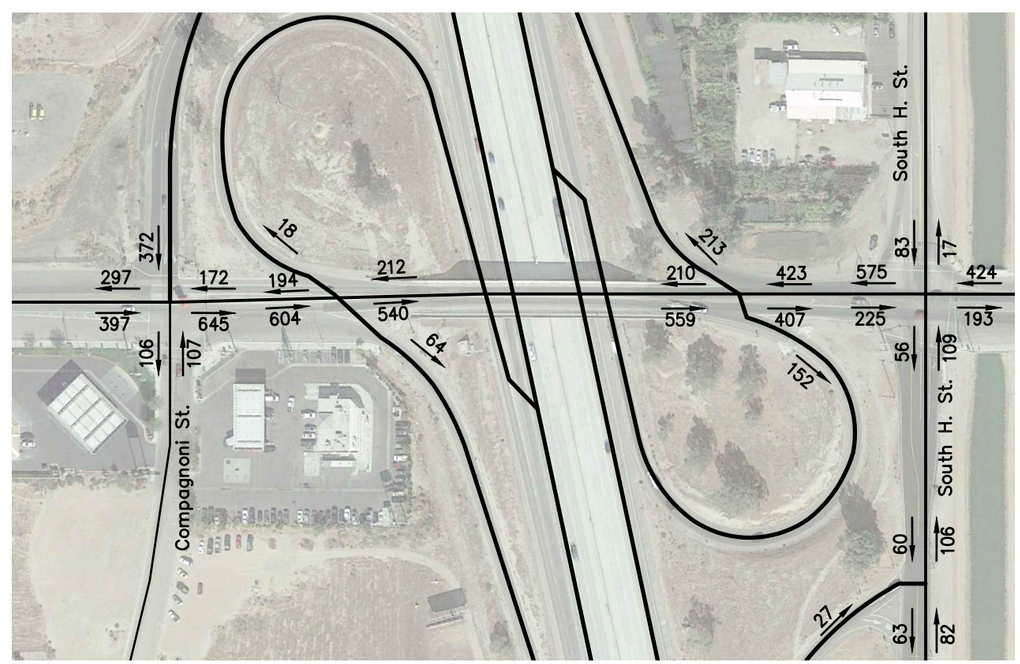
FIGURE 6A

YEAR 2023 A.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS (OPENING DAY)





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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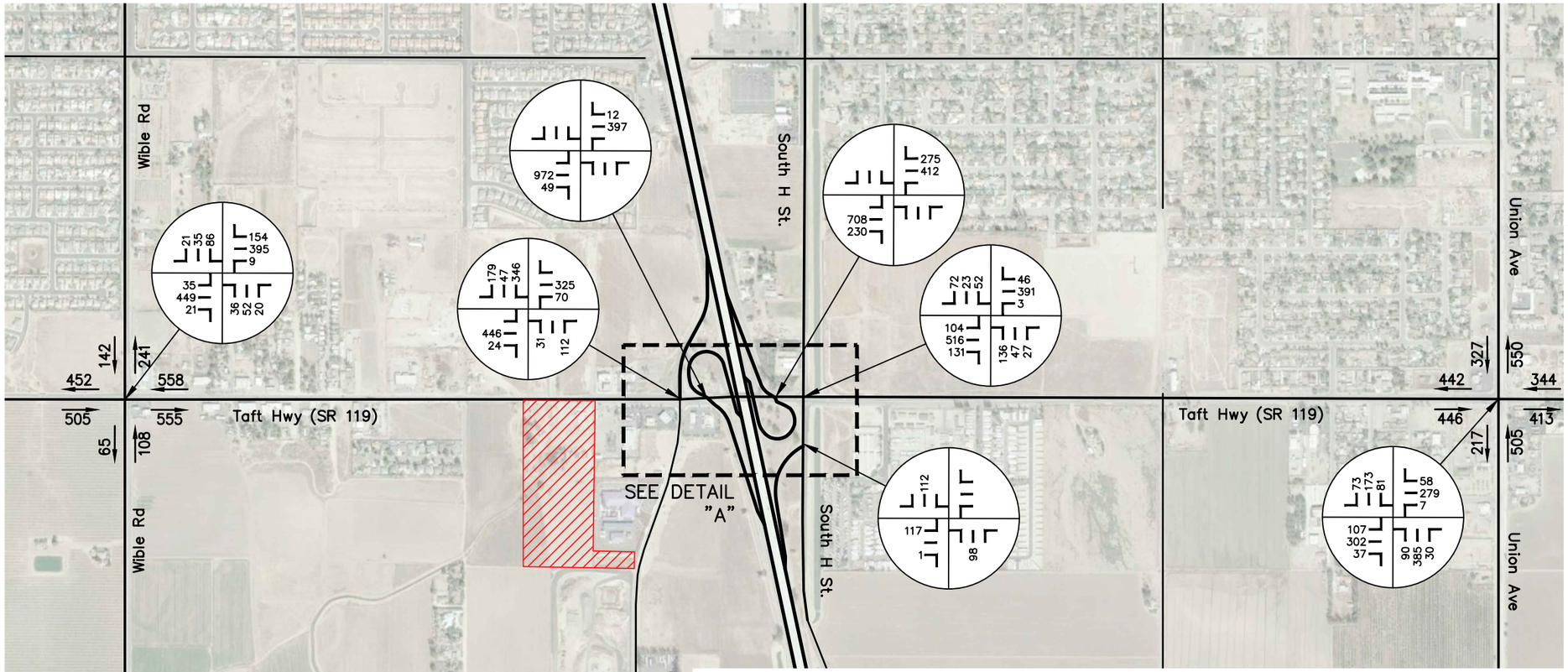
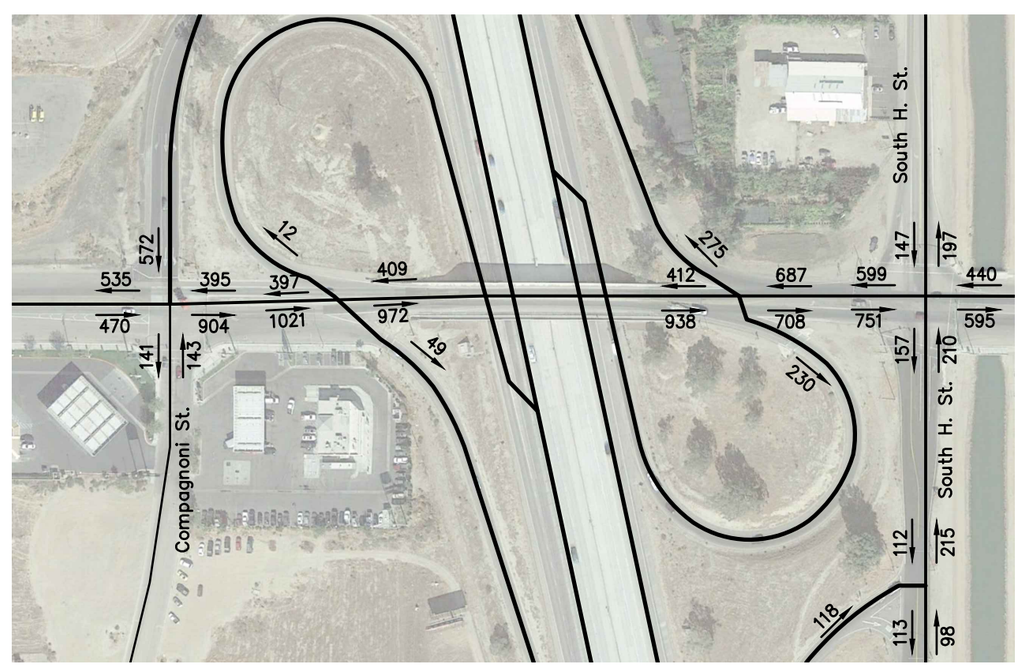
FIGURE 6B

YEAR 2023 P.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS (OPENING DAY)





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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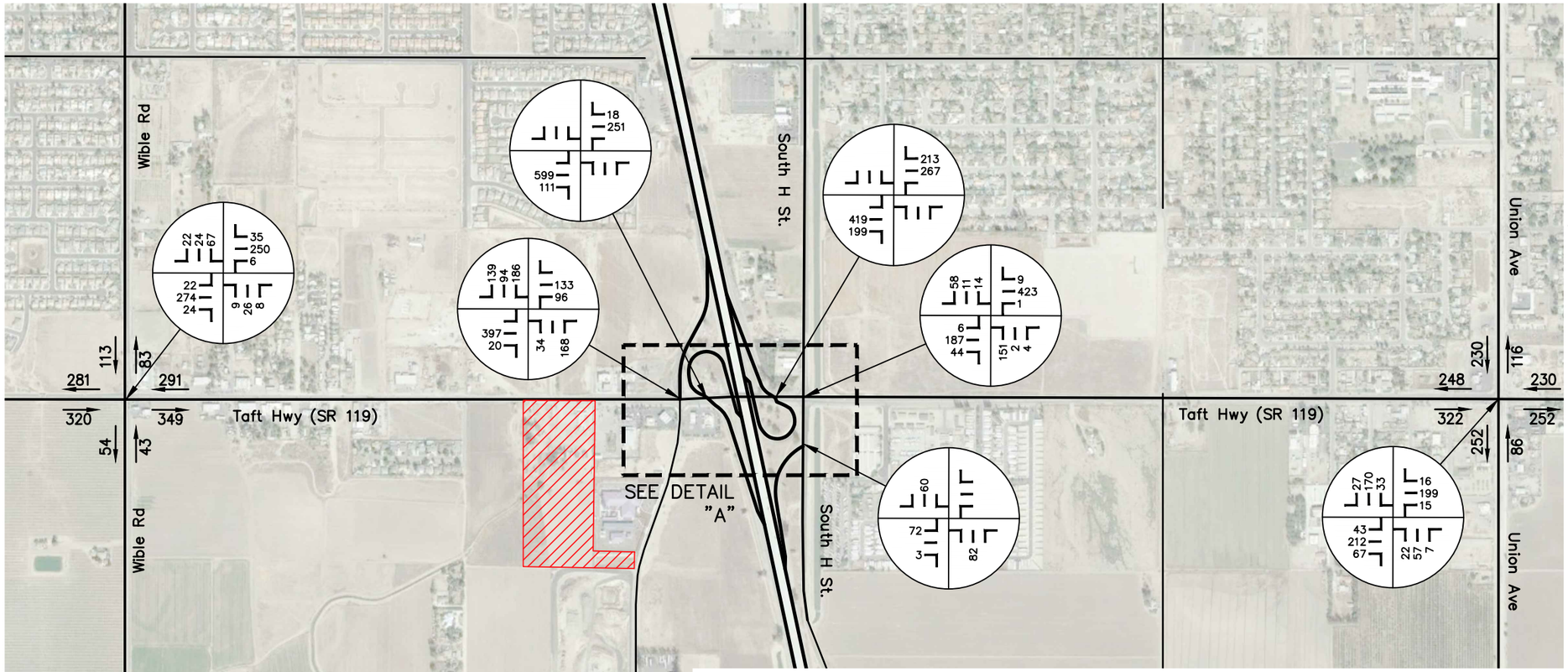
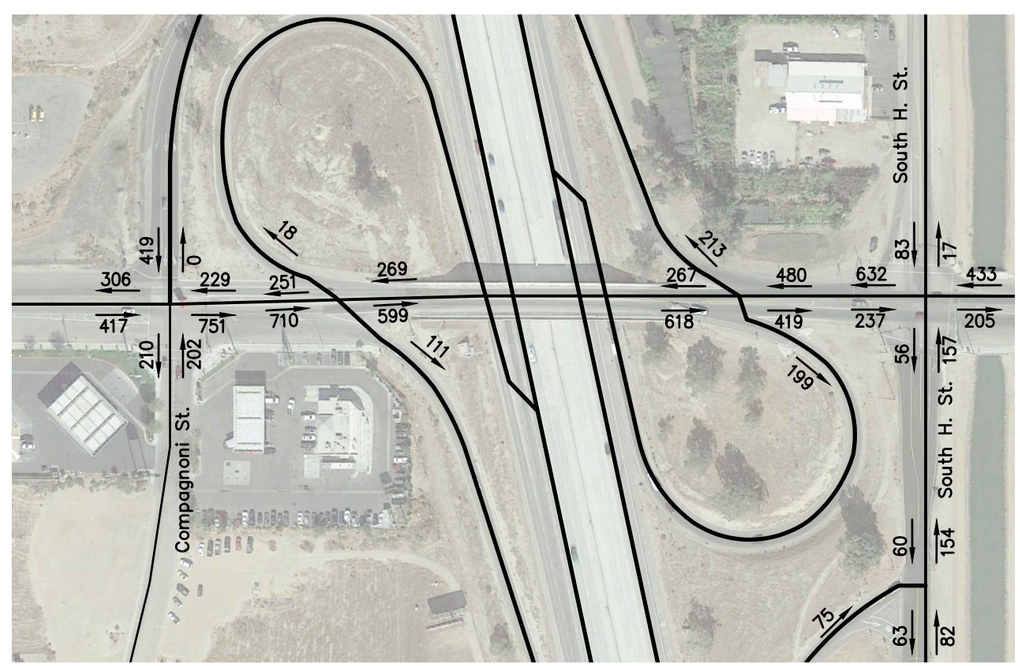
FIGURE 7A

YEAR 2023 A.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS PLUS PROJECT GENERATED TRAFFIC (OPENING DAY)





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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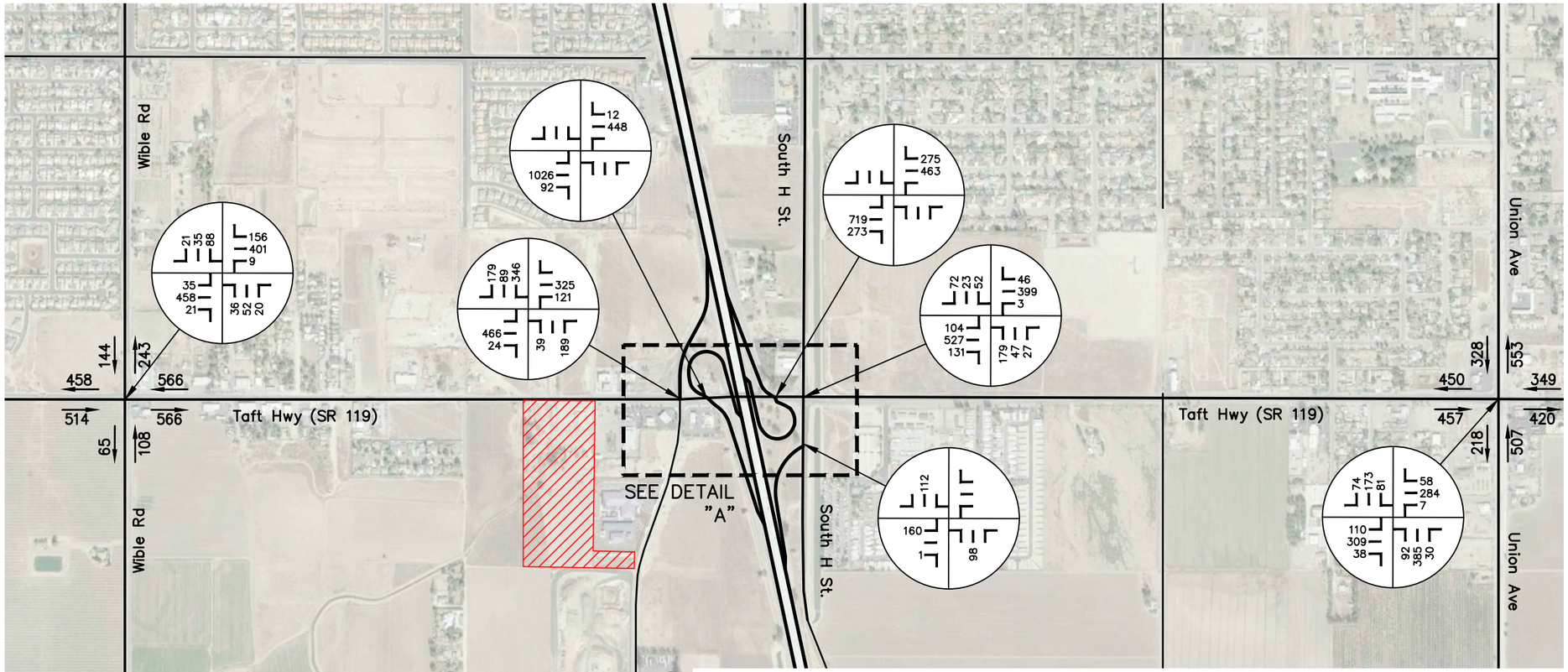
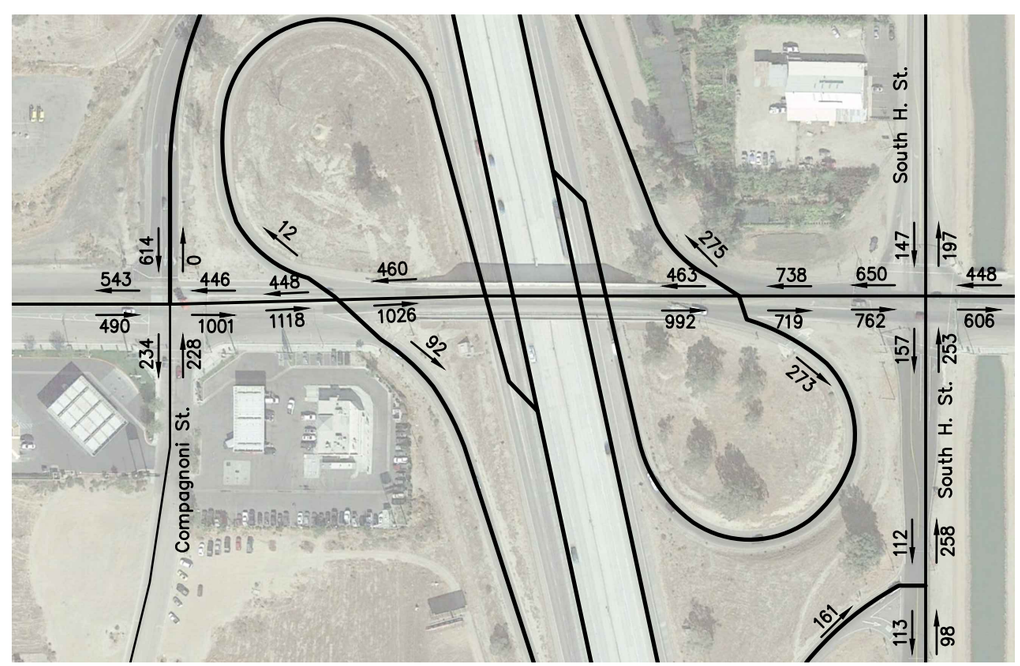
FIGURE 7B

YEAR 2023 P.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS PLUS PROJECT GENERATED TRAFFIC (OPENING DAY)





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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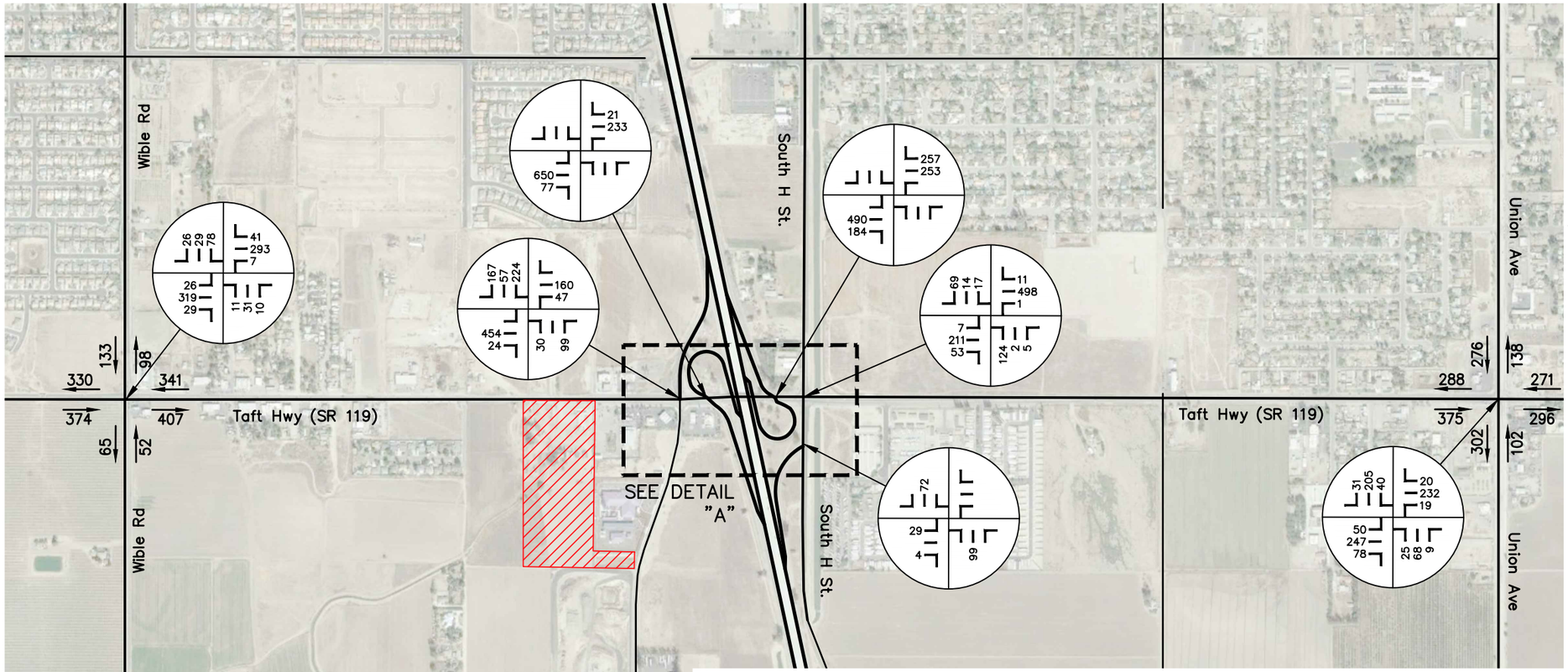
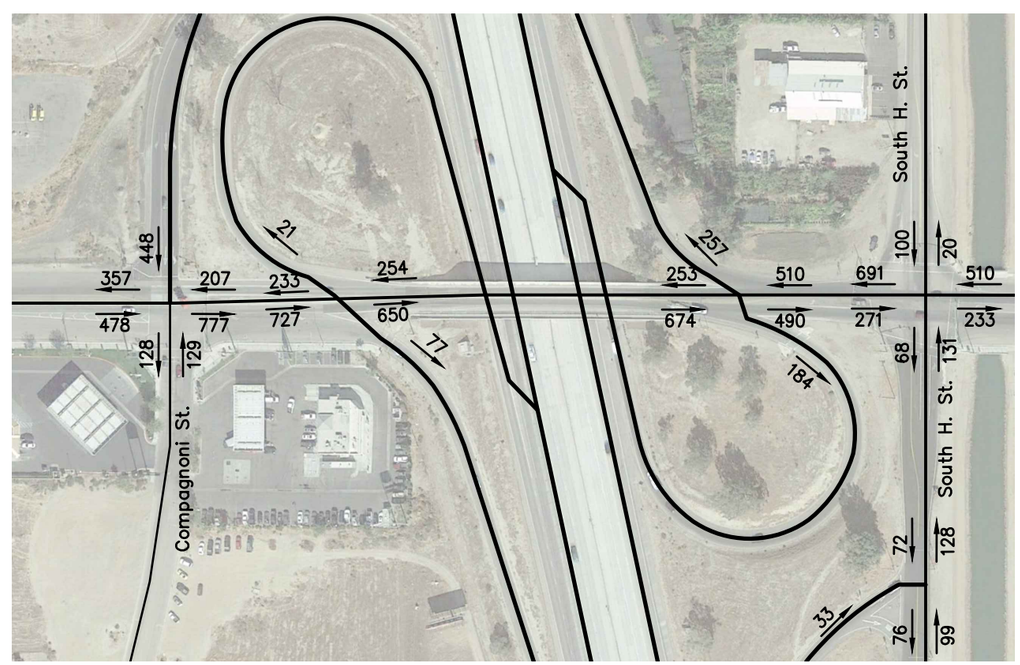
FIGURE 8A

YEAR 2042 A.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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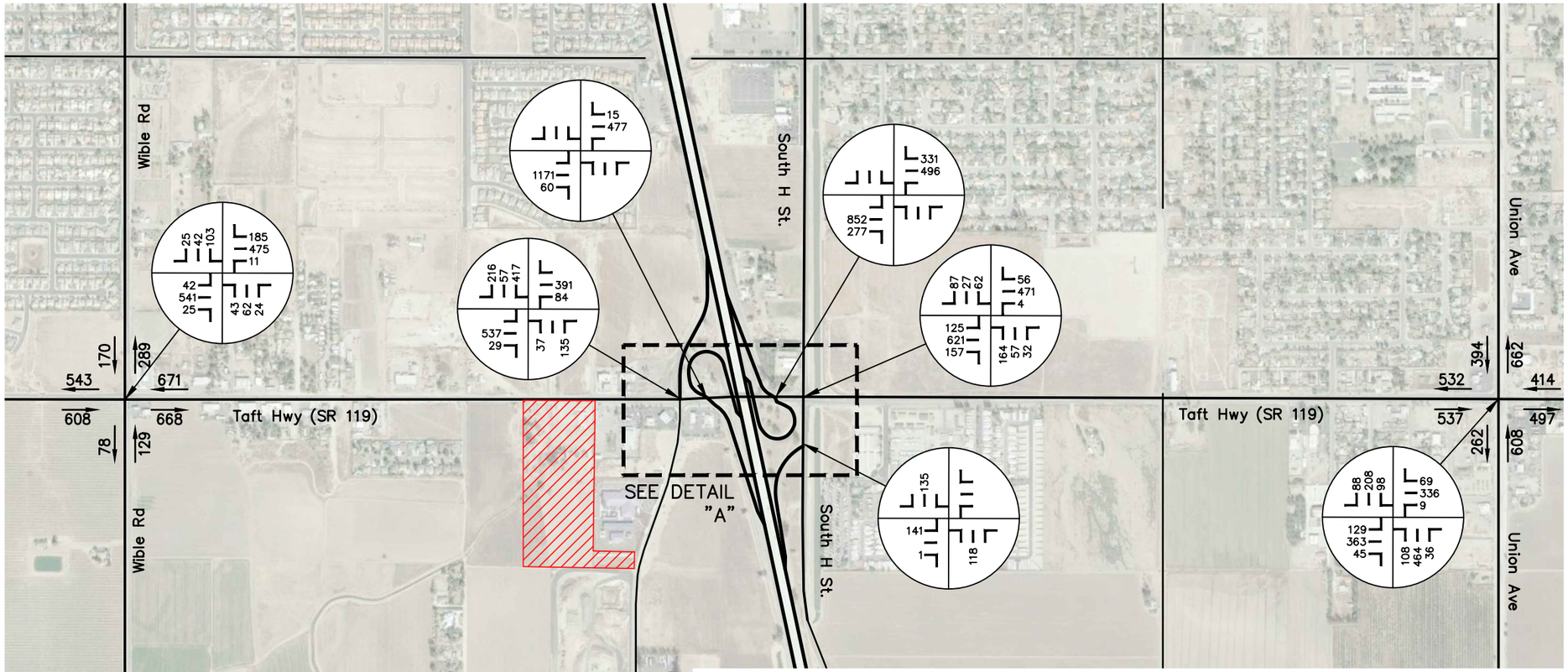
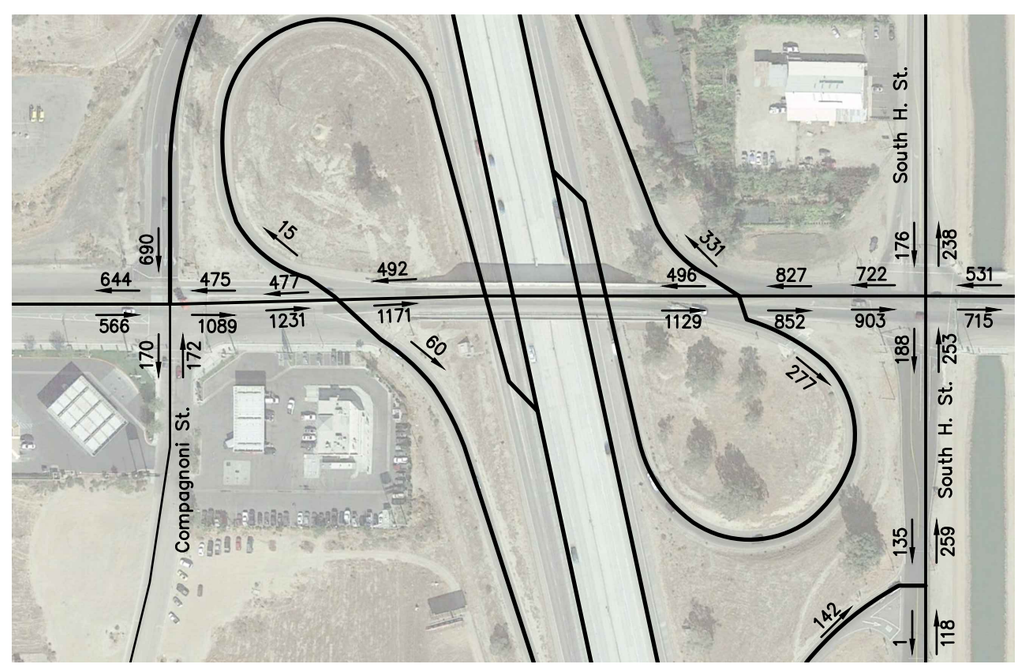
FIGURE 8B

YEAR 2042 P.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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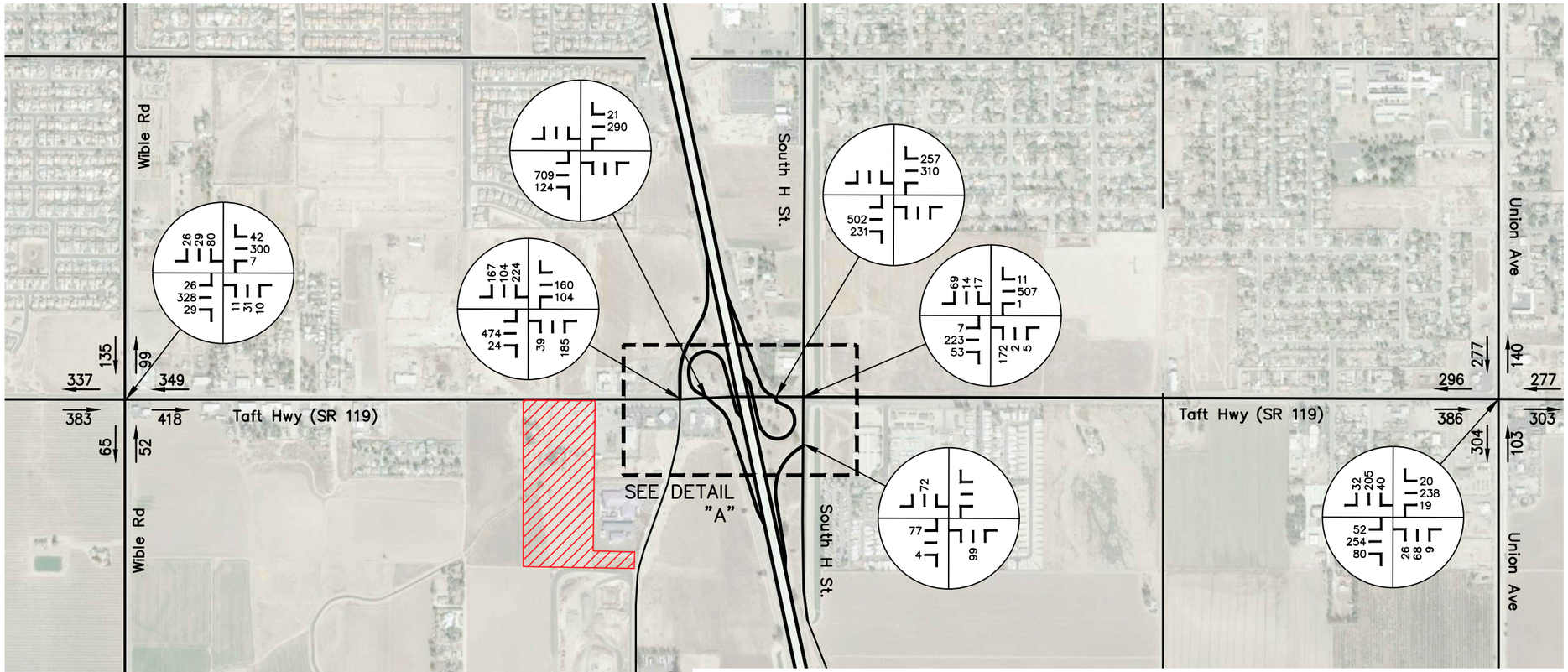
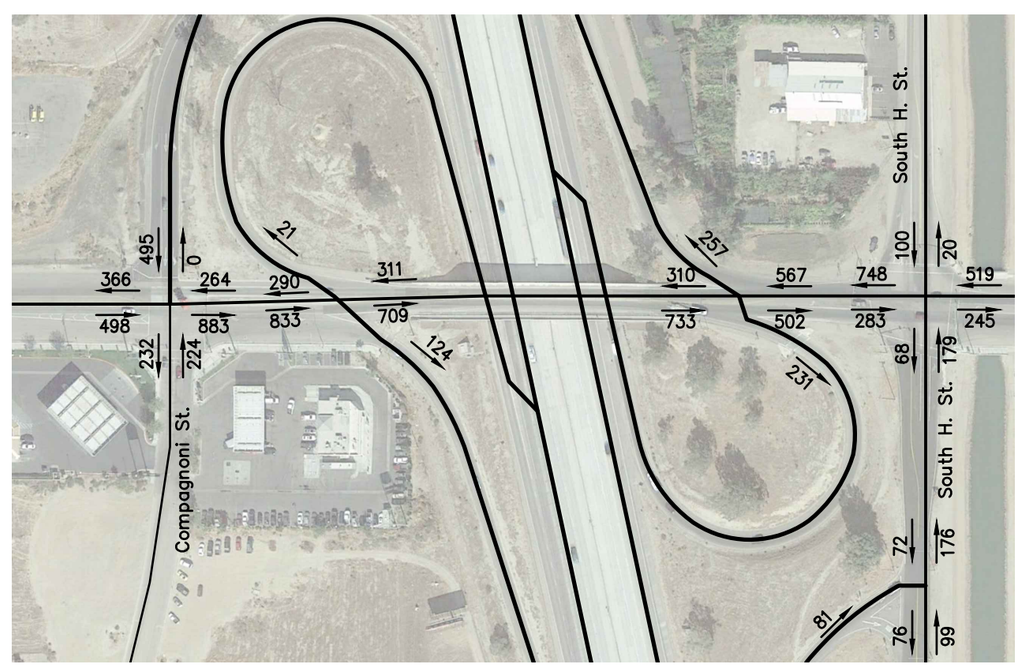
FIGURE 9A

YEAR 2042 A.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS PLUS PROJECT GENERATED TRAFFIC





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

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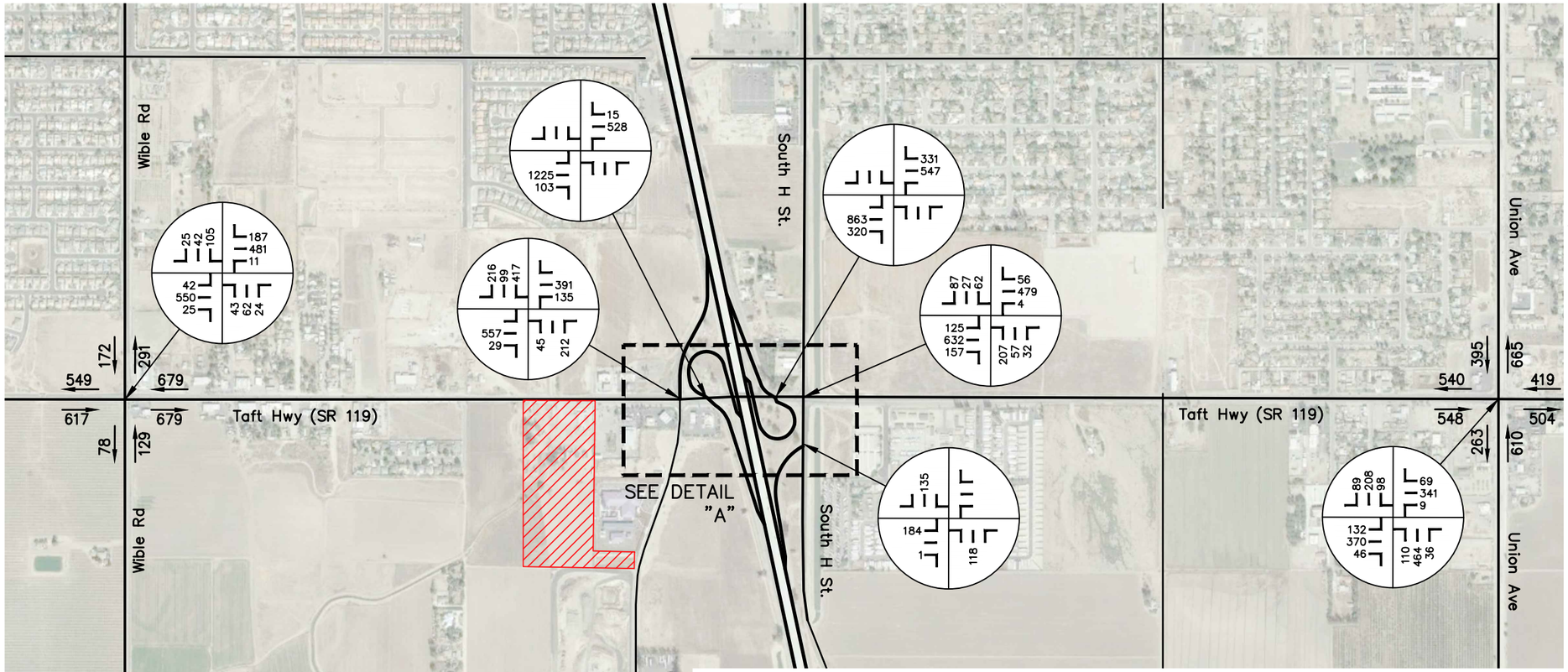
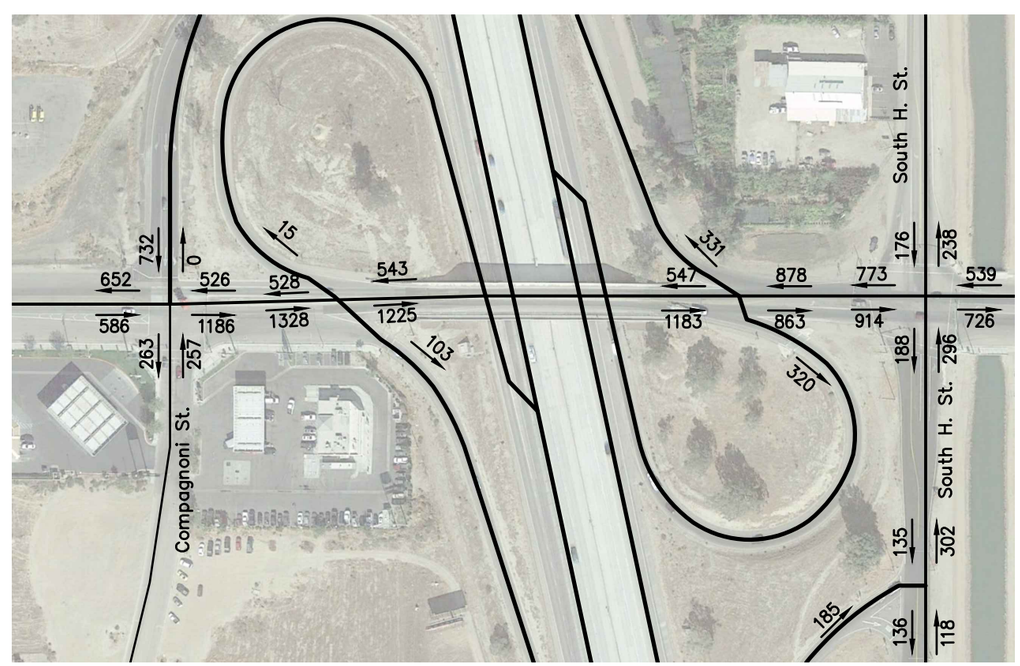
FIGURE 9B

YEAR 2042 P.M. PEAK HOUR VOLUMES AND TURNING MOVEMENTS PLUS PROJECT GENERATED TRAFFIC





DETAIL "A"

LEGEND:

- EXISTING FREEWAY
- EXISTING ARTERIAL STREET
- EXISTING COLLECTOR STREET
- xxx SEGMENT VOLUME – PEAK HOUR
- INTERSECTION TURNING MOVEMENTS

NORTH

0 500' 1000'

DATE: MARCH 2021

LAV// Pinnacle Engineering
12418 Rosedale Hwy, Suite A, Bakersfield, CA 93312
Phone: (661) 869-0184 Fax: (661) 885-4155

Appendix “B”
LOS Calculations

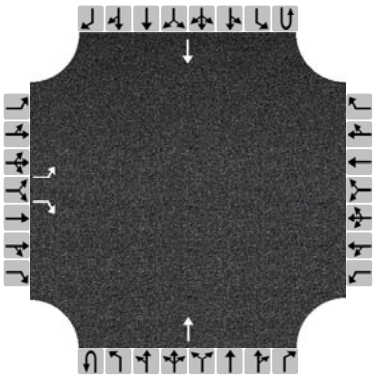
Intersections

HCS7 Two-Way Stop-Control Report

General Information / Site Information

General Information		Site Information	
Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2020	North/South Street	South H St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		114		1							95				109	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		130		1												
Capacity, c (veh/h)		754		923												
v/c Ratio		0.17		0.00												
95% Queue Length, Q_{95} (veh)		0.6		0.0												
Control Delay (s/veh)		10.8		8.9												
Level of Service, LOS		B		A												
Approach Delay (s/veh)	10.8															
Approach LOS	B															

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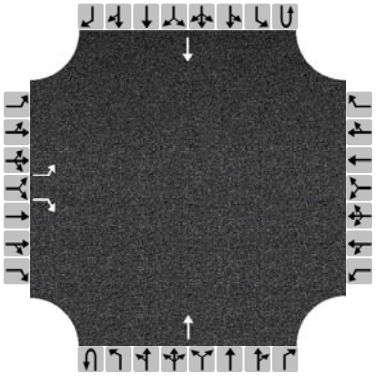
HCS7 Two-Way Stop-Control Report

General Information

Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2020	North/South Street	South H St
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		71		3							80				58	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		81		3												
Capacity, c (veh/h)		831		994												
v/c Ratio		0.10		0.00												
95% Queue Length, Q_{95} (veh)		0.3		0.0												
Control Delay (s/veh)		9.8		8.6												
Level of Service, LOS		A		A												
Approach Delay (s/veh)	9.8															
Approach LOS	A															

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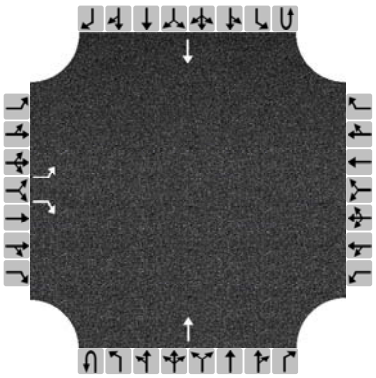
HCS7 Two-Way Stop-Control Report

General Information / Site Information

General Information		Site Information	
Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2023	North/South Street	South H St
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		24		3							82				60	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		27		3												
Capacity, c (veh/h)		827		992												
v/c Ratio		0.03		0.00												
95% Queue Length, Q_{95} (veh)		0.1		0.0												
Control Delay (s/veh)		9.5		8.6												
Level of Service, LOS		A		A												
Approach Delay (s/veh)	9.4															
Approach LOS	A															

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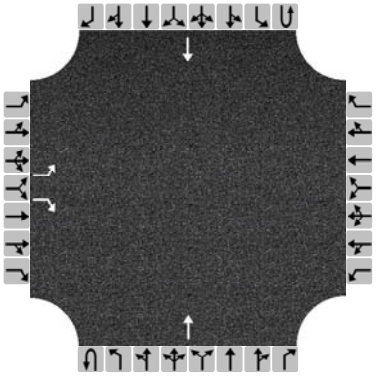
HCS7 Two-Way Stop-Control Report

General Information

Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2023	North/South Street	South H St
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		72		3							82				60	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		82		3												
Capacity, c (veh/h)		827		992												
v/c Ratio		0.10		0.00												
95% Queue Length, Q_{95} (veh)		0.3		0.0												
Control Delay (s/veh)		9.8		8.6												
Level of Service, LOS		A		A												
Approach Delay (s/veh)	9.8															
Approach LOS	A															

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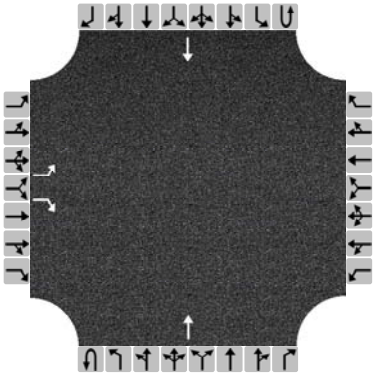
HCS7 Two-Way Stop-Control Report

General Information

Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2021	North/South Street	South H St
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		29		4							99				72	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		33		5												
Capacity, c (veh/h)		792		974												
v/c Ratio		0.04		0.01												
95% Queue Length, Q_{95} (veh)		0.1		0.0												
Control Delay (s/veh)		9.7		8.7												
Level of Service, LOS		A		A												
Approach Delay (s/veh)	9.6															
Approach LOS	A															

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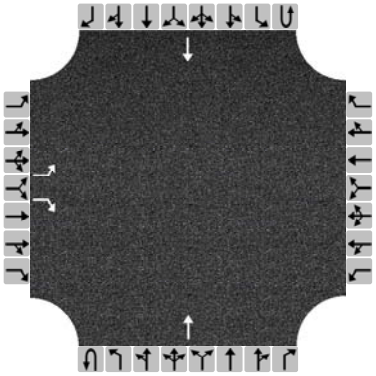
HCS7 Two-Way Stop-Control Report

General Information

Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2042	North/South Street	South H St
Time Analyzed	AM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		77		4							99				72	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		88		5												
Capacity, c (veh/h)		792		974												
v/c Ratio		0.11		0.01												
95% Queue Length, Q_{95} (veh)		0.4		0.0												
Control Delay (s/veh)		10.1		8.7												
Level of Service, LOS		B		A												
Approach Delay (s/veh)	10.0															
Approach LOS	B															

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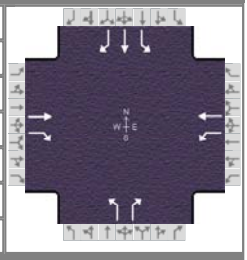
HCS7 Signalized Intersection Results Summary

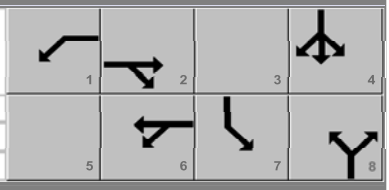
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2020 AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		366	19	38	129		24		80	181	46	196

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		79.3	8.6	87.9		13.7	18.4	32.1
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (MAH), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (v), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (s), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (g/C)		0.62	0.62	0.65	0.69		0.07		0.07	0.20	0.23	0.23
Capacity (c), veh/h		1140	966	637	1272		157		113	357	415	352
Volume-to-Capacity Ratio (X)		0.321	0.020	0.060	0.101		0.153		0.706	0.508	0.111	0.557
Back of Queue (Q), ft/ln (50 th percentile)		116	4.9	11.8	26.2		17.6		59.6	122.2	27.5	131.4
Back of Queue (Q), veh/ln (50 th percentile)		4.5	0.2	0.5	1.0		0.7		2.3	4.7	1.1	5.1
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		10.9	8.8	12.4	6.2		52.5		2.1	42.8	36.9	41.1
Incremental Delay (d_2), s/veh		0.7	0.0	0.0	0.2		0.2		3.0	0.4	0.0	0.5
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh		11.6	8.8	12.4	6.3		52.7		5.2	43.2	36.9	41.7
Level of Service (LOS)		B	A	B	A		D		A	D	D	D
Approach Delay, s/veh / LOS	11.5	B		7.7	A		16.1	B		41.8	D	
Intersection Delay, s/veh / LOS	23.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.1	A	0.8	A		F	1.2	A

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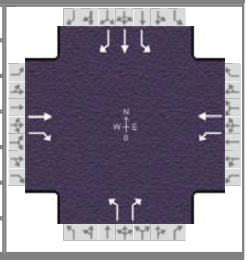
HCS7 Signalized Intersection Results Summary

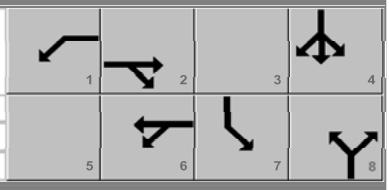
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2020 + Project AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		386	19	98	129		33		166	181	93	135

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0					
Yellow	0.0	0.0	0.0	0.0	0.0	0.0					
Red	0.0	0.0	0.0	0.0	0.0	0.0					



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		72.2	9.8	82.0		20.3	17.7	38.0
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (*g/C*)		0.56	0.56	0.60	0.64		0.13		0.13	0.25	0.28	0.28
Capacity (*c*), veh/h		1031	873	565	1181		223		199	423	506	429
Volume-to-Capacity Ratio (*X*)		0.375	0.022	0.173	0.109		0.148		0.834	0.428	0.184	0.315
Back of Queue (*Q*), ft/ln (50 th percentile)		150.7	5.9	39.3	32.4		22.7		116.6	113.4	52.8	79.9
Back of Queue (*Q*), veh/ln (50 th percentile)		5.8	0.2	1.5	1.3		0.9		4.5	4.4	2.0	3.1
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		14.7	11.8	17.8	8.3		46.9		2.3	37.7	33.2	34.5
Incremental Delay (d_2), s/veh		1.0	0.0	0.1	0.2		0.1		3.6	0.3	0.1	0.2
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		15.8	11.8	17.9	8.5		47.0		5.8	37.9	33.3	34.7
Level of Service (LOS)		B	B	B	A		D		A	D	C	C
Approach Delay, s/veh / LOS	15.6	B		12.5	B		12.7	B		35.8	D	
Intersection Delay, s/veh / LOS	21.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.2	A	0.9	A		F	1.2	A

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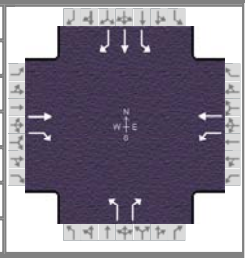
HCS7 Signalized Intersection Results Summary

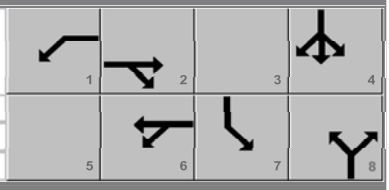
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2023 AM (Opening Day).xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		377	20	39	133		25		82	186	47	139

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		78.9	8.6	87.6		13.8	18.7	32.4
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (*g/C*)		0.62	0.62	0.65	0.69		0.07		0.07	0.20	0.23	0.23
Capacity (*c*), veh/h		1134	961	625	1267		158		114	362	421	357
Volume-to-Capacity Ratio (*X*)		0.332	0.021	0.062	0.105		0.159		0.720	0.514	0.112	0.390
Back of Queue (*Q*), ft/ln (50 th percentile)		122.1	5.2	12.4	27.5		18.3		61.2	125.6	28	88.6
Back of Queue (*Q*), veh/ln (50 th percentile)		4.7	0.2	0.5	1.1		0.7		2.4	4.9	1.1	3.4
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		11.1	9.0	12.8	6.3		52.5		1.9	42.6	36.6	39.2
Incremental Delay (d_2), s/veh		0.8	0.0	0.0	0.2		0.2		3.2	0.4	0.0	0.3
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		11.9	9.0	12.8	6.5		52.7		5.2	43.0	36.7	39.5
Level of Service (LOS)		B	A	B	A		D		A	D	D	D
Approach Delay, s/veh / LOS	11.8	B		7.9	A		16.3	B		40.9	D	
Intersection Delay, s/veh / LOS	21.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.1	A	0.8	A		F	1.1	A

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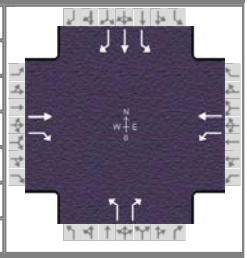
HCS7 Signalized Intersection Results Summary

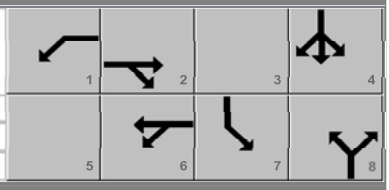
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2023 + Project AM (Openin…		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h		397	20	96	133		34		168	186	94	139

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		71.8	9.8	81.6		20.5	18.0	38.4
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (MAH), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (v), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (s), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (g/C)		0.56	0.56	0.60	0.64		0.13		0.13	0.25	0.28	0.28
Capacity (c), veh/h		1024	868	552	1174		225		201	429	513	435
Volume-to-Capacity Ratio (X)		0.388	0.023	0.174	0.113		0.151		0.835	0.434	0.183	0.320
Back of Queue (Q), ft/ln (50 th percentile)		157.8	6.3	39.2	33.9		23.3		117.7	116.2	53.1	81.9
Back of Queue (Q), veh/ln (50 th percentile)		6.1	0.2	1.5	1.3		0.9		4.6	4.5	2.1	3.2
Queue Storage Ratio (RQ) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		15.1	12.0	18.4	8.5		46.8		2.1	37.4	32.9	34.3
Incremental Delay (d_2), s/veh		1.1	0.0	0.1	0.2		0.1		3.6	0.3	0.1	0.2
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (d), s/veh		16.2	12.0	18.4	8.7		46.9		5.6	37.7	33.0	34.4
Level of Service (LOS)		B	B	B	A		D		A	D	C	C
Approach Delay, s/veh / LOS	16.0	B		12.8	B		12.6	B		35.5	D	
Intersection Delay, s/veh / LOS	21.3						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.2	A	0.9	A		F	1.2	A

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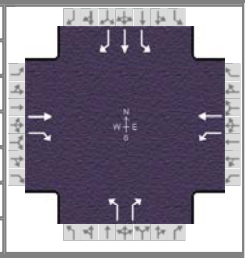
HCS7 Signalized Intersection Results Summary

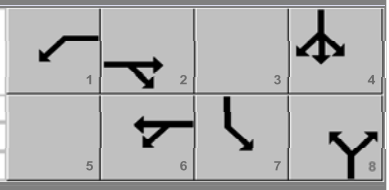
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Jun 26, 2017	Area Type	Other
Jurisdiction	KERN	Time Period	AM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2042 AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		454	24	47	160		30		99	224	57	167

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		75.0	9.0	84.0		15.2	20.9	36.0
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (*g/C*)		0.58	0.58	0.62	0.66		0.08		0.08	0.23	0.26	0.26
Capacity (*c*), veh/h		1074	910	530	1211		172		132	410	476	403
Volume-to-Capacity Ratio (*X*)		0.423	0.026	0.089	0.132		0.174		0.750	0.546	0.120	0.414
Back of Queue (*Q*), ft/ln (50 th percentile)		173.4	7	18	38.3		21.7		73	148.3	32.5	103.8
Back of Queue (*Q*), veh/ln (50 th percentile)		6.7	0.3	0.7	1.5		0.8		2.8	5.7	1.3	4.0
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		13.8	10.6	17.1	7.7		51.4		2.6	40.4	34.0	36.9
Incremental Delay (d_2), s/veh		1.2	0.1	0.0	0.2		0.2		3.3	0.4	0.0	0.3
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		15.0	10.6	17.1	7.9		51.6		5.8	40.9	34.1	37.2
Level of Service (LOS)		B	B	B	A		D		A	D	C	D
Approach Delay, s/veh / LOS	14.8	B		10.0	B		16.5	B		38.6	D	
Intersection Delay, s/veh / LOS	22.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	0.8	A		F	1.2	A

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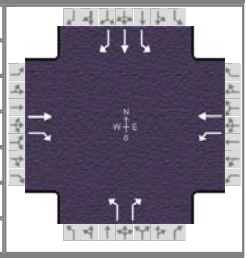
HCS7 Signalized Intersection Results Summary

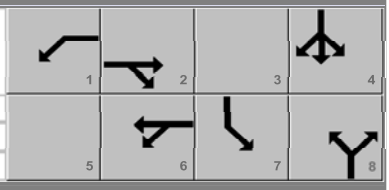
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Jun 26, 2017	Area Type	Other
Jurisdiction	KERN	Time Period	AM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2042+Project AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		474	24	104	160		39		185	224	104	167

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		68.3	9.8	78.1		21.9	20.0	41.9
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (*g/C*)		0.53	0.53	0.57	0.61		0.14		0.14	0.28	0.31	0.31
Capacity (*c*), veh/h		970	822	460	1121		238		219	475	566	480
Volume-to-Capacity Ratio (*X*)		0.488	0.029	0.226	0.143		0.164		0.843	0.471	0.184	0.348
Back of Queue (*Q*), ft/ln (50 th percentile)		217.1	8.2	50.4	45.8		26.4		128.1	137.1	56.4	95.8
Back of Queue (*Q*), veh/ln (50 th percentile)		8.4	0.3	2.0	1.8		1.0		5.0	5.3	2.2	3.7
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		18.1	13.6	24.1	10.0		45.7		2.5	35.4	30.5	32.2
Incremental Delay (d_2), s/veh		1.8	0.1	0.1	0.3		0.1		3.5	0.3	0.1	0.2
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		19.8	13.7	24.2	10.3		45.9		6.0	35.7	30.6	32.4
Level of Service (LOS)		B	B	C	B		D		A	D	C	C
Approach Delay, s/veh / LOS	19.5	B		15.8	B		12.9	B		33.5	C	
Intersection Delay, s/veh / LOS	22.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	0.9	A		F	1.3	A

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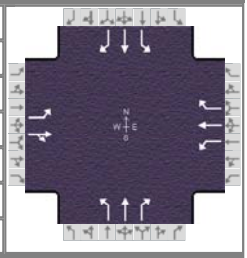
HCS7 Signalized Intersection Results Summary

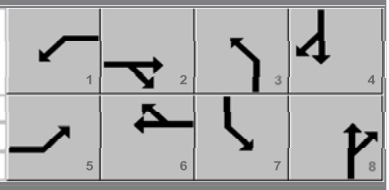
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Jul 17, 2017	Area Type	Other
Jurisdiction	KERN	Time Period	AM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and S. H S…	File Name	Taft and S. H Street 2042 AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	7	211	53	1	498	11	124	2	5	17	14	119

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	5.0	84.2	5.2	84.3	14.5	20.7	10.0	16.2
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.01	0.66		0.00	0.66	0.66	0.09	0.13	0.13	0.04	0.09	0.09
Capacity (*c*), veh/h	15	1172		2	1216	1031	154	240	204	73	171	145
Volume-to-Capacity Ratio (*X*)	0.460	0.225		0.416	0.409	0.011	0.807	0.008	0.025	0.233	0.082	0.821
Back of Queue (*Q*), ft/ln (50 th percentile)	6.3	67.9		1.5	149.2	2.4	97.4	1.3	3.3	13	9.9	94
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	2.6		0.1	5.8	0.1	3.8	0.1	0.1	0.5	0.4	3.6
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	59.2	8.2		59.9	9.5	7.0	53.7	45.4	2.6	55.6	49.7	53.4
Incremental Delay (d_2), s/veh	8.0	0.4		41.2	1.0	0.0	3.9	0.0	0.0	0.6	0.1	4.5
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	67.2	8.6		101.1	10.5	7.0	57.6	45.4	2.6	56.2	49.8	57.9
Level of Service (LOS)	E	A		F	B	A	E	D	A	E	D	E
Approach Delay, s/veh / LOS	10.1	B		10.6	B		55.3	E		57.0	E	
Intersection Delay, s/veh / LOS	22.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	0.9	A	1.3	A	0.7	A	0.7	A

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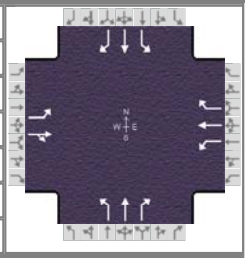
HCS7 Signalized Intersection Results Summary

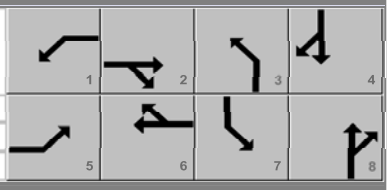
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Jul 17, 2017	Area Type	Other
Jurisdiction	KERN	Time Period	AM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and S. H S…	File Name	Taft and S. H Street 2042+Project AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	7	223	53	1	507	11	172	2	5	17	14	69

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	4.0	2.0	3.0	2.0	3.0	2.0	3.0
Phase Duration, s	5.0	84.9	5.2	85.0	17.8	20.0	10.0	12.1
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.01	0.67		0.00	0.67	0.67	0.12	0.12	0.12	0.04	0.06	0.06
Capacity (*c*), veh/h	15	1184		2	1227	1040	202	229	194	73	110	93
Volume-to-Capacity Ratio (*X*)	0.460	0.233		0.416	0.413	0.011	0.852	0.009	0.026	0.233	0.128	0.743
Back of Queue (*Q*), ft/ln (50 th percentile)	6.3	69.8		1.5	149.3	2.3	134.6	1.3	3.4	13	10.3	55.1
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	2.7		0.1	5.8	0.1	5.2	0.1	0.1	0.5	0.4	2.1
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	59.2	7.9		59.9	9.2	6.7	52.1	46.0	2.4	55.6	53.5	55.5
Incremental Delay (d_2), s/veh	8.0	0.5		41.2	1.0	0.0	4.1	0.0	0.0	0.6	0.2	4.5
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	67.2	8.4		101.1	10.2	6.7	56.2	46.0	2.4	56.2	53.7	60.0
Level of Service (LOS)	E	A		F	B	A	E	D	A	E	D	E
Approach Delay, s/veh / LOS	9.9	A		10.3	B		54.5	D		58.5	E	
Intersection Delay, s/veh / LOS	22.0						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.5	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	1.3	A	0.8	A	0.7	A

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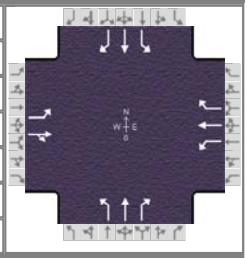
HCS7 Signalized Intersection Results Summary

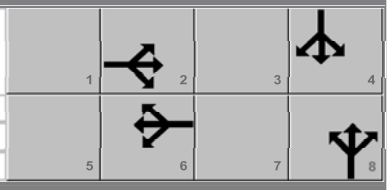
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	Kern	Time Period	AM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2020 AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	6	170	43	1	402	9	100	2	4	14	11	56

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		95.4		95.4		14.3		10.3
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.75	0.75		0.75	0.75	0.75	0.08	0.08	0.08	0.05	0.05	0.05
Capacity (*c*), veh/h	636	1185		787	1228	1074	124	126	110	85	86	75
Volume-to-Capacity Ratio (*X*)	0.009	0.180		0.001	0.327	0.008	0.807	0.016	0.036	0.165	0.128	0.742
Back of Queue (*Q*), ft/ln (50 th percentile)	1.3	34.5		0.2	74.5	1.2	78.4	1.5	2.8	10.3	8.3	44.7
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	1.3		0.0	2.8	0.0	3.1	0.1	0.1	0.4	0.3	1.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	6.5	4.2		4.9	4.9	3.7	54.5	51.1	51.2	54.3	54.2	56.0
Incremental Delay (d_2), s/veh	0.0	0.3		0.0	0.7	0.0	4.8	0.0	0.0	0.3	0.2	5.5
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	6.5	4.6		4.9	5.6	3.7	59.3	51.2	51.3	54.6	54.4	61.5
Level of Service (LOS)	A	A		A	A	A	E	D	D	D	D	E
Approach Delay, s/veh / LOS	4.6	A		5.5	A		58.8	E		59.3	E	
Intersection Delay, s/veh / LOS	17.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	0.8	A	1.2	A	0.7	A	0.6	A

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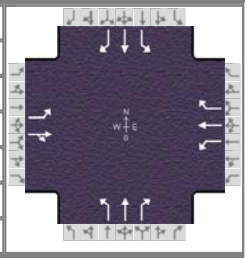
HCS7 Signalized Intersection Results Summary

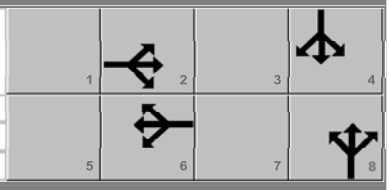
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	Kern	Time Period	AM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2020 + Project AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (v), veh/h	6	182	43	1	411	9	148	2	4	14	11	56

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		91.6		91.6		18.1		10.3
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (MAH), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (v), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (s), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (g/C)	0.72	0.72		0.72	0.72	0.72	0.11	0.11	0.11	0.05	0.05	0.05
Capacity (c), veh/h	593	1137		740	1176	1029	175	178	155	85	86	75
Volume-to-Capacity Ratio (X)	0.010	0.198		0.001	0.349	0.009	0.848	0.011	0.026	0.165	0.128	0.742
Back of Queue (Q), ft/ln (50 th percentile)	1.6	44.2		0.2	92.9	1.5	114.8	1.4	2.7	10.3	8.3	44.7
Back of Queue (Q), veh/ln (50 th percentile)	0.1	1.7		0.0	3.5	0.1	4.5	0.1	0.1	0.4	0.3	1.8
Queue Storage Ratio (RQ) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	8.4	5.4		6.3	6.2	4.7	52.5	47.7	47.8	54.3	54.2	56.0
Incremental Delay (d_2), s/veh	0.0	0.4		0.0	0.8	0.0	4.5	0.0	0.0	0.3	0.2	5.5
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (d), s/veh	8.4	5.8		6.4	7.0	4.7	57.0	47.7	47.8	54.6	54.4	61.5
Level of Service (LOS)	A	A		A	A	A	E	D	D	D	D	E
Approach Delay, s/veh / LOS	5.9	A		7.0	A		56.7	E		59.3	E	
Intersection Delay, s/veh / LOS	20.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	0.9	A	1.2	A	0.7	A	0.6	A

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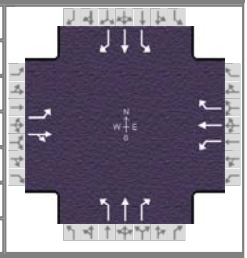
HCS7 Signalized Intersection Results Summary

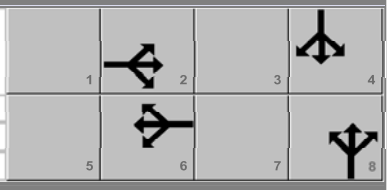
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	Kern	Time Period	AM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2023 AM (Opening Day).xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	6	175	44	1	414	9	103	2	4	14	11	58

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		95.0		95.0		14.5		10.5
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.75	0.75		0.75	0.75	0.75	0.08	0.08	0.08	0.05	0.05	0.05
Capacity (*c*), veh/h	622	1179		778	1222	1069	127	129	113	87	89	78
Volume-to-Capacity Ratio (*X*)	0.010	0.186		0.001	0.339	0.008	0.810	0.015	0.035	0.160	0.124	0.747
Back of Queue (*Q*), ft/ln (50 th percentile)	1.4	36.5		0.2	79.3	1.3	80.7	1.5	2.8	10.3	8.3	46.2
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	1.4		0.0	3.0	0.0	3.2	0.1	0.1	0.4	0.3	1.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	6.8	4.4		5.1	5.0	3.8	54.4	50.9	51.0	54.1	54.0	55.9
Incremental Delay (d_2), s/veh	0.0	0.3		0.0	0.8	0.0	4.8	0.0	0.0	0.3	0.2	5.4
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	6.9	4.7		5.1	5.8	3.8	59.1	50.9	51.1	54.4	54.2	61.3
Level of Service (LOS)	A	A		A	A	A	E	D	D	D	D	E
Approach Delay, s/veh / LOS	4.8	A		5.8	A		58.7	E		59.2	E	
Intersection Delay, s/veh / LOS	17.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	0.9	A	1.2	A	0.7	A	0.6	A

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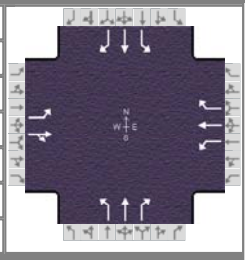
HCS7 Signalized Intersection Results Summary

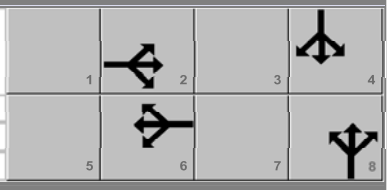
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	Kern	Time Period	AM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2023 + Project AM (Opening…		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	6	187	44	1	423	9	151	2	4	14	11	58

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		91.2		91.2		18.3		10.5
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.72	0.72		0.72	0.72	0.72	0.11	0.11	0.11	0.05	0.05	0.05
Capacity (*c*), veh/h	580	1132		731	1170	1024	178	181	158	87	89	78
Volume-to-Capacity Ratio (*X*)	0.010	0.204		0.001	0.361	0.009	0.850	0.011	0.025	0.160	0.124	0.747
Back of Queue (*Q*), ft/ln (50 th percentile)	1.6	46.4		0.2	97.9	1.5	117.1	1.4	2.7	10.3	8.3	46.2
Back of Queue (*Q*), veh/ln (50 th percentile)	0.1	1.8		0.0	3.7	0.1	4.6	0.1	0.1	0.4	0.3	1.8
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	8.8	5.6		6.6	6.4	4.8	52.4	47.5	47.6	54.1	54.0	55.9
Incremental Delay (d_2), s/veh	0.0	0.4		0.0	0.9	0.0	4.5	0.0	0.0	0.3	0.2	5.4
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	8.8	6.0		6.6	7.3	4.8	56.9	47.5	47.6	54.4	54.2	61.3
Level of Service (LOS)	A	A		A	A	A	E	D	D	D	D	E
Approach Delay, s/veh / LOS	6.1	A		7.3	A		56.5	E		59.2	E	
Intersection Delay, s/veh / LOS	20.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	0.9	A	1.2	A	0.7	A	0.6	A

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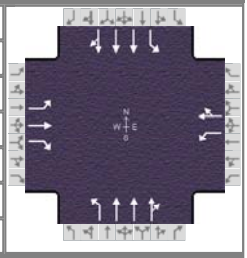
HCS7 Signalized Intersection Results Summary

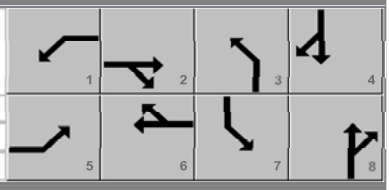
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2020 AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	40	199	63	15	187	16	20	55	7	32	165	69

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	7.7	90.8	7.0	90.1	9.0	12.3	10.0	13.3
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.03	0.71	0.71	0.02	0.71		0.04	0.06	0.06	0.04	0.07	0.07
Capacity (*c*), veh/h	53	1305	1106	29	1276		72	221	104	72	252	108
Volume-to-Capacity Ratio (*X*)	0.750	0.152	0.057	0.525	0.159		0.276	0.187	0.198	0.442	0.630	0.699
Back of Queue (*Q*), ft/ln (50 th percentile)	33.9	38.3	11	12.7	40.4		15.4	15.3	15.4	25.1	60.6	59.6
Back of Queue (*Q*), veh/ln (50 th percentile)	1.3	1.5	0.4	0.5	1.6		0.6	0.6	0.6	1.0	2.3	2.3
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	57.7	5.5	1.7	58.5	5.7		55.7	53.6	53.6	56.1	54.4	54.7
Incremental Delay (d_2), s/veh	8.0	0.2	0.1	5.5	0.3		0.8	0.2	0.3	1.6	1.0	3.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	65.7	5.7	1.8	64.1	6.0		56.5	53.7	53.9	57.7	55.4	57.7
Level of Service (LOS)	E	A	A	E	A		E	D	D	E	E	E
Approach Delay, s/veh / LOS	12.9	B		10.0	A		54.4	D		56.3	E	
Intersection Delay, s/veh / LOS	29.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.0	A	0.8	A	0.5	A	0.6	A

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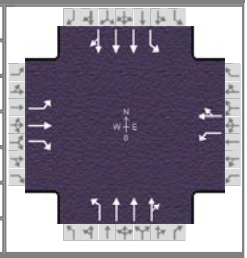
HCS7 Signalized Intersection Results Summary

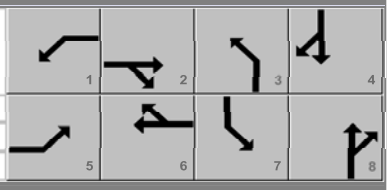
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2020 + Project AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	42	206	65	15	193	16	21	55	7	32	165	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	7.8	92.2	7.0	91.4	9.0	10.9	10.0	11.9
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.03	0.73	0.73	0.02	0.72		0.04	0.05	0.05	0.04	0.06	0.06
Capacity (*c*), veh/h	55	1326	1124	29	1297		72	178	84	72	208	97
Volume-to-Capacity Ratio (*X*)	0.769	0.155	0.058	0.525	0.161		0.290	0.233	0.246	0.442	0.614	0.648
Back of Queue (*Q*), ft/ln (50 th percentile)	35.8	37.4	10.7	12.7	39.5		16.2	15.6	15.7	25.1	49.3	49.6
Back of Queue (*Q*), veh/ln (50 th percentile)	1.4	1.4	0.4	0.5	1.5		0.6	0.6	0.6	1.0	1.9	1.9
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	57.7	5.1	1.7	58.5	5.3		55.8	54.9	55.0	56.1	55.3	55.4
Incremental Delay (d_2), s/veh	8.6	0.2	0.1	5.5	0.3		0.8	0.2	0.6	1.6	1.1	2.7
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	66.3	5.3	1.8	64.1	5.6		56.6	55.2	55.5	57.7	56.4	58.1
Level of Service (LOS)	E	A	A	E	A		E	E	E	E	E	E
Approach Delay, s/veh / LOS	12.8	B		9.5	A		55.6	E		57.1	E	
Intersection Delay, s/veh / LOS	27.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.0	A	0.9	A	0.5	A	0.6	A

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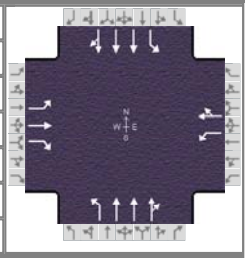
HCS7 Signalized Intersection Results Summary

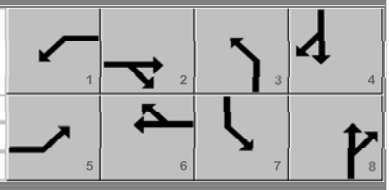
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2023 AM (Opening Day).xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	41	205	65	15	193	16	21	57	7	33	170	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	7.7	92.1	7.0	91.3	9.0	11.0	10.0	12.0
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.03	0.73	0.73	0.02	0.72		0.04	0.05	0.05	0.04	0.06	0.06
Capacity (*c*), veh/h	54	1325	1123	29	1295		72	182	86	72	212	99
Volume-to-Capacity Ratio (*X*)	0.759	0.155	0.058	0.525	0.161		0.290	0.235	0.248	0.455	0.620	0.653
Back of Queue (*Q*), ft/ln (50 th percentile)	34.8	37.2	10.8	12.7	39.5		16.2	16.1	16.2	25.9	50.6	50.9
Back of Queue (*Q*), veh/ln (50 th percentile)	1.3	1.4	0.4	0.5	1.5		0.6	0.6	0.6	1.0	1.9	2.0
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	57.7	5.1	1.7	58.5	5.4		55.8	54.8	54.9	56.2	55.2	55.3
Incremental Delay (d_2), s/veh	8.3	0.2	0.1	5.5	0.3		0.8	0.2	0.6	1.7	1.1	2.7
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	66.0	5.3	1.8	64.1	5.6		56.6	55.1	55.4	57.8	56.3	58.1
Level of Service (LOS)	E	A	A	E	A		E	E	E	E	E	E
Approach Delay, s/veh / LOS	12.6	B		9.5	A		55.5	E		57.0	E	
Intersection Delay, s/veh / LOS	28.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.0	A	0.9	A	0.5	A	0.6	A

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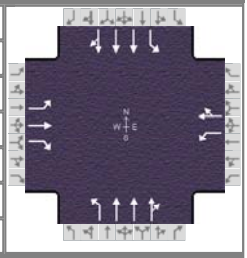
HCS7 Signalized Intersection Results Summary

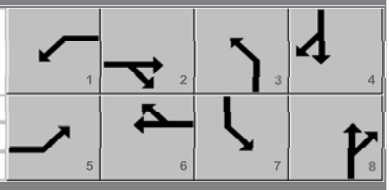
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2023 + Project AM (Opening Day)....		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	41	212	67	15	199	16	22	57	7	33	170	27

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	7.7	92.0	7.0	91.3	9.0	11.0	10.0	12.0
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.03	0.73	0.73	0.02	0.72		0.04	0.05	0.05	0.04	0.06	0.06
Capacity (*c*), veh/h	54	1324	1122	29	1295		72	183	86	72	213	99
Volume-to-Capacity Ratio (*X*)	0.759	0.160	0.060	0.525	0.166		0.304	0.234	0.247	0.455	0.620	0.654
Back of Queue (*Q*), ft/ln (50 th percentile)	34.8	38.8	11.1	12.7	40.9		17	16.1	16.2	25.9	50.8	51.1
Back of Queue (*Q*), veh/ln (50 th percentile)	1.3	1.5	0.4	0.5	1.6		0.7	0.6	0.6	1.0	2.0	2.0
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	57.7	5.1	1.7	58.5	5.4		55.8	54.8	54.8	56.2	55.2	55.3
Incremental Delay (d_2), s/veh	8.3	0.3	0.1	5.5	0.3		0.9	0.2	0.5	1.7	1.1	2.7
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	66.0	5.4	1.8	64.1	5.7		56.7	55.0	55.4	57.8	56.3	58.1
Level of Service (LOS)	E	A	A	E	A		E	E	E	E	E	E
Approach Delay, s/veh / LOS	12.4	B		9.5	A		55.5	E		57.0	E	
Intersection Delay, s/veh / LOS	27.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.0	A	0.9	A	0.5	A	0.6	A

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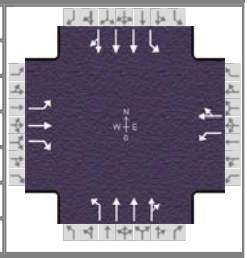
HCS7 Signalized Intersection Results Summary

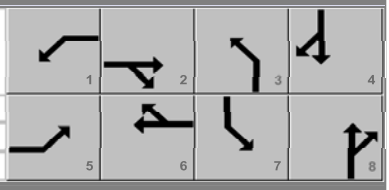
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	City	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2040	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2042 AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	50	247	78	19	232	20	25	68	9	40	205	94

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	8.5	88.6	7.3	87.5	9.0	15.3	8.7	15.0
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.04	0.70	0.70	0.02	0.69		0.04	0.09	0.09	0.03	0.08	0.08
Capacity (*c*), veh/h	65	1273	1079	34	1238		72	314	148	53	304	129
Volume-to-Capacity Ratio (*X*)	0.773	0.194	0.072	0.558	0.204		0.345	0.164	0.173	0.750	0.668	0.739
Back of Queue (*Q*), ft/ln (50 th percentile)	41.9	53.4	15.2	16	57.2		19.4	18.5	18.5	33.9	77.2	75
Back of Queue (*Q*), veh/ln (50 th percentile)	1.6	2.1	0.6	0.6	2.2		0.7	0.7	0.7	1.3	3.0	2.9
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	57.3	6.4	3.9	58.3	6.8		55.9	50.8	50.9	57.7	53.4	53.7
Incremental Delay (d_2), s/veh	7.5	0.3	0.1	5.3	0.4		1.0	0.1	0.2	8.0	1.0	3.1
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	64.7	6.7	4.1	63.6	7.2		57.0	50.9	51.1	65.7	54.3	56.9
Level of Service (LOS)	E	A	A	E	A		E	D	D	E	D	E
Approach Delay, s/veh / LOS	13.9	B		11.1	B		52.4	D		56.4	E	
Intersection Delay, s/veh / LOS	30.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.1	A	0.9	A	0.5	A	0.7	A

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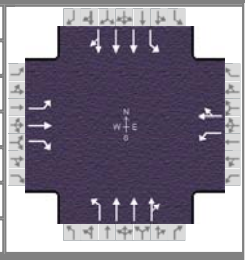
HCS7 Signalized Intersection Results Summary

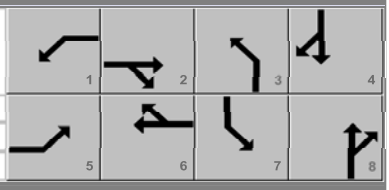
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	City	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2040	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2042 + Project AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	52	254	80	19	238	20	26	28	9	40	205	94

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	8.6	88.7	7.3	87.4	9.0	15.2	8.7	14.9
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.04	0.70	0.70	0.02	0.69		0.04	0.09	0.09	0.03	0.08	0.08
Capacity (*c*), veh/h	67	1274	1080	34	1237		72	312	138	53	302	128
Volume-to-Capacity Ratio (*X*)	0.772	0.199	0.074	0.558	0.209		0.359	0.079	0.089	0.750	0.673	0.744
Back of Queue (*Q*), ft/ln (50 th percentile)	43.4	54.8	15.3	16	59		20.2	8.8	8.8	33.9	77.3	75.1
Back of Queue (*Q*), veh/ln (50 th percentile)	1.7	2.1	0.6	0.6	2.3		0.8	0.3	0.3	1.3	3.0	2.9
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	57.2	6.4	1.8	58.3	6.9		55.9	50.5	50.6	57.7	53.5	53.8
Incremental Delay (d_2), s/veh	7.2	0.4	0.1	5.3	0.4		1.1	0.0	0.1	8.0	1.0	3.2
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	64.3	6.7	1.9	63.6	7.3		57.1	50.6	50.7	65.7	54.4	57.0
Level of Service (LOS)	E	A	A	E	A		E	D	D	E	D	E
Approach Delay, s/veh / LOS	13.5	B		11.1	B		53.3	D		56.5	E	
Intersection Delay, s/veh / LOS	28.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.1	A	0.9	A	0.5	A	0.7	A

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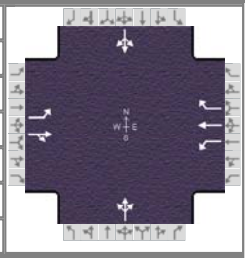
HCS7 Signalized Intersection Results Summary

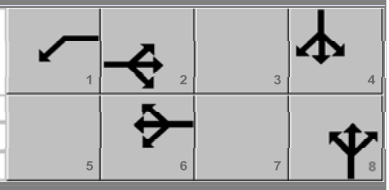
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2020 AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	21	257	23	6	236	33	9	25	8	63	23	21

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		91.2	5.9	97.1		8.9		14.0
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.72	0.72		0.71	0.77	0.77		0.03			0.08	
Capacity (*c*), veh/h	755	1182		704	1282	1086		52			130	
Volume-to-Capacity Ratio (*X*)	0.028	0.237		0.009	0.184	0.030		0.805			0.822	
Back of Queue (*Q*), ft/ln (50 th percentile)	4.4	56.1		1.3	33.9	4.2		36			84.7	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	2.2		0.1	1.3	0.2		1.4			3.3	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	6.3	5.7		7.3	3.8	3.3		57.7			54.2	
Incremental Delay (d_2), s/veh	0.1	0.5		0.0	0.3	0.1		11.1			5.1	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	6.3	6.2		7.3	4.1	3.4		68.7			59.2	
Level of Service (LOS)	A	A		A	A	A		E			E	
Approach Delay, s/veh / LOS	6.2	A		4.1	A		68.7	E		59.2	E	
Intersection Delay, s/veh / LOS	16.8						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.0	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	0.9	A	0.6	A	0.7	A

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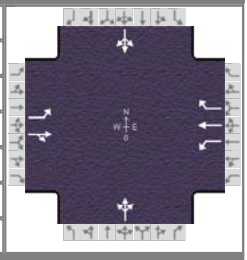
HCS7 Signalized Intersection Results Summary

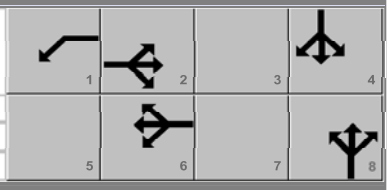
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2020 + Project AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	21	266	23	6	243	34	9	25	8	65	23	21

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		91.1	5.9	97.0		8.9		14.1
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.72	0.72		0.71	0.77	0.77		0.03			0.08	
Capacity (*c*), veh/h	747	1181		695	1280	1085		52			132	
Volume-to-Capacity Ratio (*X*)	0.028	0.245		0.009	0.190	0.031		0.805			0.824	
Back of Queue (*Q*), ft/ln (50 th percentile)	4.4	58.8		1.3	35.5	4.4		36			86.3	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	2.3		0.1	1.4	0.2		1.4			3.4	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	6.4	5.8		7.5	3.8	3.4		57.7			54.1	
Incremental Delay (d_2), s/veh	0.1	0.5		0.0	0.3	0.1		11.1			5.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	6.5	6.3		7.5	4.2	3.4		68.7			59.1	
Level of Service (LOS)	A	A		A	A	A		E			E	
Approach Delay, s/veh / LOS	6.3	A		4.1	A		68.7	E		59.1	E	
Intersection Delay, s/veh / LOS	16.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.0	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	1.0	A	0.6	A	0.7	A

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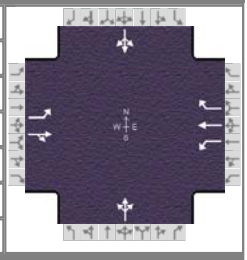
HCS7 Signalized Intersection Results Summary

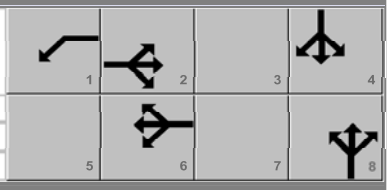
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2023 AM (Opening Day).xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	22	265	24	6	243	34	9	26	8	65	24	22

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		90.8	5.9	96.7		9.0		14.3
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.71	0.71		0.71	0.76	0.76		0.03			0.09	
Capacity (*c*), veh/h	745	1176		692	1276	1081		54			134	
Volume-to-Capacity Ratio (*X*)	0.030	0.246		0.009	0.190	0.031		0.803			0.825	
Back of Queue (*Q*), ft/ln (50 th percentile)	4.7	59.7		1.3	36	4.5		36.7			87.8	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	2.3		0.1	1.4	0.2		1.4			3.4	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	6.5	5.9		7.6	3.9	3.4		57.6			54.0	
Incremental Delay (d_2), s/veh	0.1	0.5		0.0	0.3	0.1		10.7			5.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	6.6	6.4		7.6	4.2	3.5		68.3			59.0	
Level of Service (LOS)	A	A		A	A	A		E			E	
Approach Delay, s/veh / LOS	6.4	A		4.2	A		68.3	E		59.0	E	
Intersection Delay, s/veh / LOS	16.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.0	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	1.0	A	0.6	A	0.7	A

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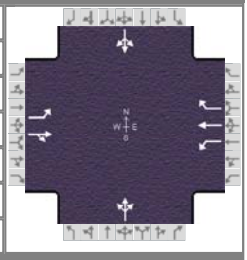
HCS7 Signalized Intersection Results Summary

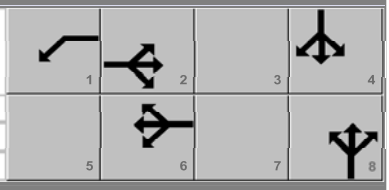
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	KERN	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2023 + Project AM (Opening Day)....		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	22	274	24	6	250	35	9	26	8	67	24	22

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		90.6	5.9	96.5		9.0		14.5
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.71	0.71		0.70	0.76	0.76		0.03			0.09	
Capacity (*c*), veh/h	737	1174		683	1274	1079		54			137	
Volume-to-Capacity Ratio (*X*)	0.030	0.254		0.009	0.196	0.032		0.803			0.827	
Back of Queue (*Q*), ft/ln (50 th percentile)	4.8	62.2		1.3	37.6	4.6		36.7			89.3	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	2.4		0.1	1.5	0.2		1.4			3.5	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	6.6	6.0		7.8	4.0	3.5		57.6			53.9	
Incremental Delay (d_2), s/veh	0.1	0.5		0.0	0.3	0.1		10.7			5.0	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	6.7	6.5		7.8	4.3	3.5		68.3			58.8	
Level of Service (LOS)	A	A		A	A	A		E			E	
Approach Delay, s/veh / LOS	6.5	A		4.3	A		68.3	E		58.8	E	
Intersection Delay, s/veh / LOS	16.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.0	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.0	A	1.0	A	0.6	A	0.7	A

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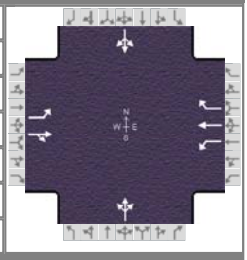
HCS7 Signalized Intersection Results Summary

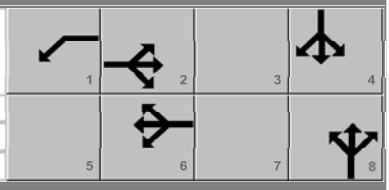
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042+proj	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2042 AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	26	319	29	7	293	41	11	31	10	78	29	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		89.3	6.0	95.3		9.6		15.1
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.70	0.70		0.69	0.75	0.75		0.04			0.09	
Capacity (*c*), veh/h	766	1284		706	1397	1184		68			161	
Volume-to-Capacity Ratio (*X*)	0.034	0.271		0.010	0.210	0.035		0.767			0.825	
Back of Queue (*Q*), ft/ln (50 th percentile)	6	77.3		1.7	46.9	5.7		42.7			104.1	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	3.0		0.1	1.8	0.2		1.7			4.1	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	7.3	6.6		8.5	4.4	3.8		57.2			53.5	
Incremental Delay (d_2), s/veh	0.1	0.5		0.0	0.3	0.1		6.9			4.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	7.4	7.1		8.5	4.7	3.8		64.1			57.7	
Level of Service (LOS)	A	A		A	A	A		E			E	
Approach Delay, s/veh / LOS	7.1	A		4.7	A		64.1	E		57.7	E	
Intersection Delay, s/veh / LOS	16.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.0	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.1	A	1.1	A	0.6	A	0.7	A

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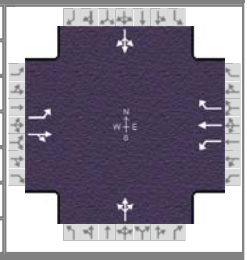
HCS7 Signalized Intersection Results Summary

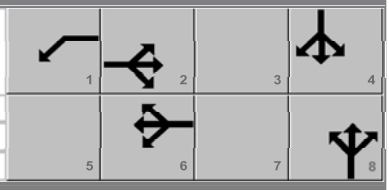
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	AM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042+proj	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2042 + Project AM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	26	328	29	7	300	42	11	31	10	80	29	26

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		89.1	6.0	95.2		9.6		15.2
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.70	0.70		0.69	0.75	0.75		0.04			0.09	
Capacity (*c*), veh/h	759	1282		697	1394	1182		68			163	
Volume-to-Capacity Ratio (*X*)	0.034	0.278		0.010	0.215	0.036		0.767			0.827	
Back of Queue (*Q*), ft/ln (50 th percentile)	6.1	80.1		1.7	48.9	5.9		42.7			105.5	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.2	3.1		0.1	1.9	0.2		1.7			4.1	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	7.4	6.7		8.7	4.4	3.8		57.2			53.4	
Incremental Delay (d_2), s/veh	0.1	0.5		0.0	0.4	0.1		6.9			4.2	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	7.5	7.2		8.7	4.8	3.9		64.1			57.6	
Level of Service (LOS)	A	A		A	A	A		E			E	
Approach Delay, s/veh / LOS	7.2	A		4.7	A		64.1	E		57.6	E	
Intersection Delay, s/veh / LOS	16.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.0	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.1	A	1.1	A	0.6	A	0.7	A

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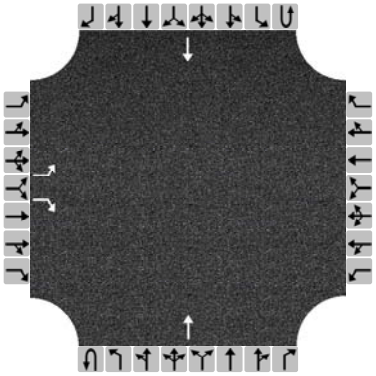
HCS7 Two-Way Stop-Control Report

General Information / Site Information

General Information		Site Information	
Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2020	North/South Street	South H St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		114		1							95				109	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)																
Critical Headway (sec)																
Base Follow-Up Headway (sec)																
Follow-Up Headway (sec)																

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		130		1												
Capacity, c (veh/h)		754		923												
v/c Ratio		0.17		0.00												
95% Queue Length, Q_{95} (veh)		0.6		0.0												
Control Delay (s/veh)		10.8		8.9												
Level of Service, LOS		B		A												
Approach Delay (s/veh)	10.8															
Approach LOS	B															

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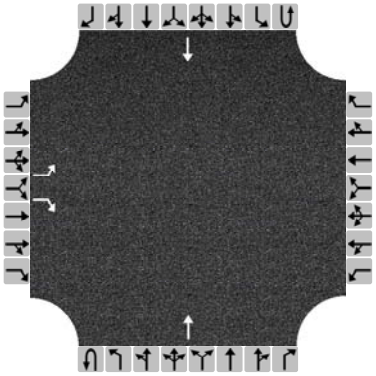
HCS7 Two-Way Stop-Control Report

General Information / Site Information

Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2023	North/South Street	South H St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		160		1							98				112	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		182		1												
Capacity, c (veh/h)		748		920												
v/c Ratio		0.24		0.00												
95% Queue Length, Q_{95} (veh)		1.0		0.0												
Control Delay (s/veh)		11.4		8.9												
Level of Service, LOS		B		A												
Approach Delay (s/veh)	11.3															
Approach LOS	B															

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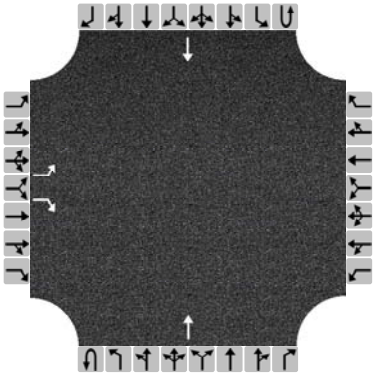
HCS7 Two-Way Stop-Control Report

General Information / Site Information

Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2023	North/South Street	South H St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		117		1							98				112	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		133		1												
Capacity, c (veh/h)		748		920												
v/c Ratio		0.18		0.00												
95% Queue Length, Q_{95} (veh)		0.6		0.0												
Control Delay (s/veh)		10.9		8.9												
Level of Service, LOS		B		A												
Approach Delay (s/veh)	10.8															
Approach LOS	B															

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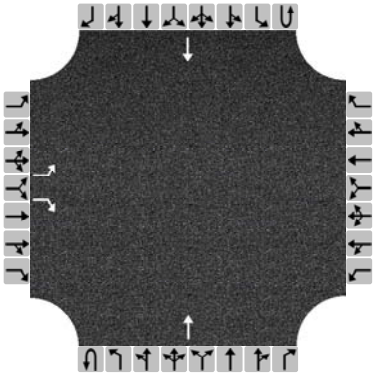
HCS7 Two-Way Stop-Control Report

General Information

Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2020	North/South Street	South H St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		157		1							95				109	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		178		1												
Capacity, c (veh/h)		754		923												
v/c Ratio		0.24		0.00												
95% Queue Length, Q_{95} (veh)		0.9		0.0												
Control Delay (s/veh)		11.3		8.9												
Level of Service, LOS		B		A												
Approach Delay (s/veh)	11.2															
Approach LOS	B															

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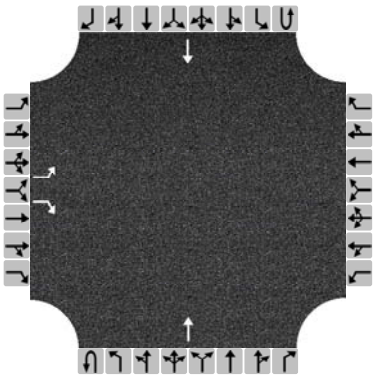
HCS7 Two-Way Stop-Control Report

General Information

Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2042	North/South Street	South H St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		141		1							135				118	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		160		1												
Capacity, c (veh/h)		701		912												
v/c Ratio		0.23		0.00												
95% Queue Length, Q_{95} (veh)		0.9		0.0												
Control Delay (s/veh)		11.7		9.0												
Level of Service, LOS		B		A												
Approach Delay (s/veh)	11.6															
Approach LOS	B															

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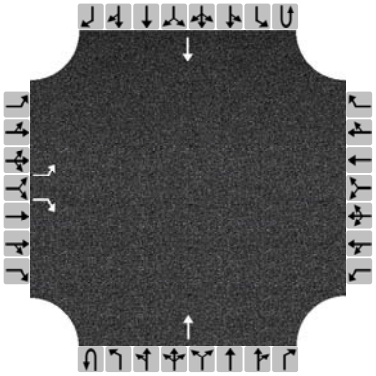
HCS7 Two-Way Stop-Control Report

General Information

Analyst	DMBR	Intersection	NB Offramp & South H St
Agency/Co.	LAVPinnacle	Jurisdiction	KERN
Date Performed	4/2/2021	East/West Street	99 NB Offramp
Analysis Year	2042	North/South Street	South H St
Time Analyzed	PM Peak Hour	Peak Hour Factor	0.88
Intersection Orientation	North-South	Analysis Time Period (hrs)	1.00
Project Description	TIS 99 NB Offramp & South H St		

Lanes



Major Street: North-South

Vehicle Volumes and Adjustments

Approach	Eastbound				Westbound				Northbound				Southbound			
Movement	U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Priority		10	11	12		7	8	9	1U	1	2	3	4U	4	5	6
Number of Lanes		1	0	1		0	0	0	0	0	1	0	0	0	1	0
Configuration		L		R							T				T	
Volume, V (veh/h)		184		1							118				135	
Percent Heavy Vehicles (%)		3		3												
Proportion Time Blocked																
Percent Grade (%)	0															
Right Turn Channelized	No				No				No				No			
Median Type/Storage	Undivided															

Critical and Follow-up Headways

Base Critical Headway (sec)		7.1		6.2												
Critical Headway (sec)		6.43		6.23												
Base Follow-Up Headway (sec)		3.5		3.3												
Follow-Up Headway (sec)		3.53		3.33												

Delay, Queue Length, and Level of Service

Flow Rate, v (veh/h)		209		1												
Capacity, c (veh/h)		701		890												
v/c Ratio		0.30		0.00												
95% Queue Length, Q_{95} (veh)		1.3		0.0												
Control Delay (s/veh)		12.3		9.1												
Level of Service, LOS		B		A												
Approach Delay (s/veh)	12.3															
Approach LOS	B															

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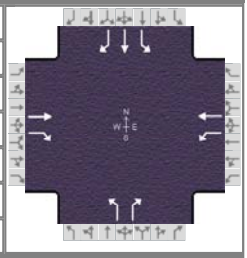
HCS7 Signalized Intersection Results Summary

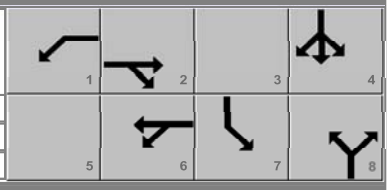
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2020 PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		433	23	68	315		30		109	336	46	174

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	62.0	4.5	22.6	10.9	0.0	0.0
Yellow	4.0	4.0	4.0	4.0	0.0	0.0
Red	1.0	1.0	1.0	1.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		67.0	9.5	76.4		15.9	27.6	43.6
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	3.1	0.0		3.3	3.1	3.3
Queue Clearance Time (g_s), s			2.0			10.2	22.0	12.2
Green Extension Time (g_e), s		0.0	0.3	0.0		0.7	0.6	0.7
Phase Call Probability			0.90			1.00	1.00	1.00
Max Out Probability			0.51			0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		433	23	68	315		30		109	336	46	174
Adjusted Saturation Flow Rate (*s*), veh/h/ln		1841	1560	1753	1841		1338		1560	1753	1841	1560
Queue Service Time (g_s), s		17.9	0.9	0.0	10.0		2.5		8.2	20.0	2.1	10.2
Cycle Queue Clearance Time (g_c), s		17.9	0.9	0.0	10.0		2.5		8.2	20.0	2.1	10.2
Green Ratio (*g/C*)		0.52	0.52	0.55	0.60		0.09		0.09	0.30	0.32	0.32
Capacity (*c*), veh/h		950	805	471	1096		182		142	518	592	501
Volume-to-Capacity Ratio (*X*)		0.456	0.029	0.144	0.287		0.165		0.768	0.649	0.078	0.347
Back of Queue (*Q*), ft/ln (50 th percentile)		197.6	8.1	31.4	104.5		21.6		79.7	217.2	23.5	97.9
Back of Queue (*Q*), veh/ln (50 th percentile)		7.7	0.3	1.2	4.1		0.8		3.1	8.4	0.9	3.8
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		18.4	14.3	22.9	11.9		50.7		2.2	36.8	28.3	31.1
Incremental Delay (d_2), s/veh		1.6	0.1	0.1	0.7		0.2		3.3	0.5	0.0	0.2
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		19.9	14.3	23.0	12.5		50.9		5.5	37.3	28.4	31.3
Level of Service (LOS)		B	B	C	B		D		A	D	C	C
Approach Delay, s/veh / LOS	19.7	B		14.4	B		15.3	B		34.7	C	
Intersection Delay, s/veh / LOS	23.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.2	A	1.1	A		F	1.4	A

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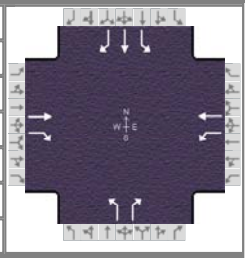
HCS7 Signalized Intersection Results Summary

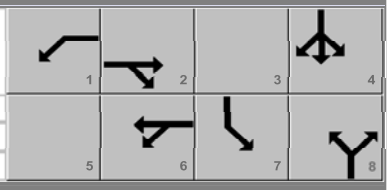
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2020 + Project PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		453	23	119	315		38		186	336	88	174

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		61.7	9.9	71.6		21.9	26.5	48.4
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (*g/C*)		0.47	0.47	0.51	0.55		0.14		0.14	0.34	0.36	0.36
Capacity (*c*), veh/h		869	737	409	1021		241		220	570	666	565
Volume-to-Capacity Ratio (*X*)		0.521	0.031	0.291	0.309		0.158		0.845	0.589	0.132	0.308
Back of Queue (*Q*), ft/ln (50 th percentile)		235.1	9	66	118.4		25.8		128.5	202.1	42.9	91
Back of Queue (*Q*), veh/ln (50 th percentile)		9.1	0.3	2.6	4.6		1.0		5.0	7.8	1.7	3.5
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		22.2	17.0	29.9	14.4		45.7		2.1	32.7	25.7	27.5
Incremental Delay (d_2), s/veh		2.2	0.1	0.1	0.8		0.1		3.5	0.4	0.0	0.1
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		24.4	17.0	30.1	15.1		45.8		5.6	33.0	25.7	27.6
Level of Service (LOS)		C	B	C	B		D		A	C	C	C
Approach Delay, s/veh / LOS	24.1	C		19.2	B		12.4	B		30.4	C	
Intersection Delay, s/veh / LOS	23.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	1.2	A		F	1.5	A

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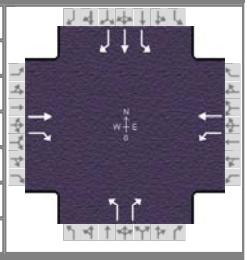
HCS7 Signalized Intersection Results Summary

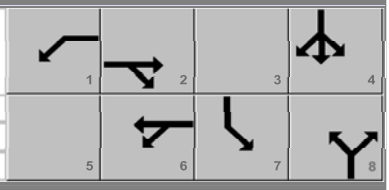
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2023 PM (Opening Day).xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		446	24	70	325		31		112	346	47	179

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		66.1	9.5	75.6		16.2	28.2	44.4
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (*g/C*)		0.51	0.51	0.55	0.59		0.09		0.09	0.30	0.33	0.33
Capacity (*c*), veh/h		937	794	453	1083		184		145	529	604	512
Volume-to-Capacity Ratio (*X*)		0.476	0.030	0.154	0.300		0.168		0.772	0.654	0.078	0.350
Back of Queue (*Q*), ft/ln (50 th percentile)		209.2	8.6	33.4	111.3		22.2		81.6	222.6	23.8	100.1
Back of Queue (*Q*), veh/ln (50 th percentile)		8.1	0.3	1.3	4.3		0.9		3.2	8.6	0.9	3.9
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		19.1	14.7	24.2	12.3		50.5		2.0	36.3	27.8	30.6
Incremental Delay (d_2), s/veh		1.7	0.1	0.1	0.7		0.2		3.3	0.5	0.0	0.2
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		20.8	14.7	24.2	13.0		50.7		5.3	36.8	27.8	30.7
Level of Service (LOS)		C	B	C	B		D		A	D	C	C
Approach Delay, s/veh / LOS	20.5	C		15.0	B		15.1	B		34.2	C	
Intersection Delay, s/veh / LOS	23.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	1.1	A		F	1.4	A

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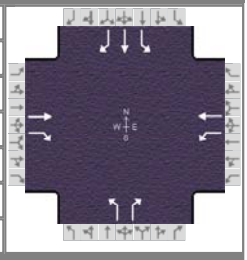
HCS7 Signalized Intersection Results Summary

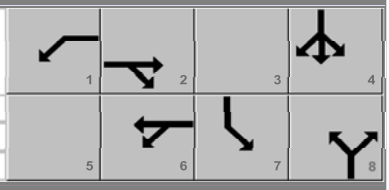
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2023 + Project PM (Openin…		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		466	24	121	325		39		189	346	89	179

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		60.9	9.9	70.8		22.2	27.0	49.2
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (*g/C*)		0.47	0.47	0.51	0.55		0.14		0.14	0.34	0.37	0.37
Capacity (*c*), veh/h		857	726	392	1009		243		223	581	678	575
Volume-to-Capacity Ratio (*X*)		0.544	0.033	0.309	0.322		0.160		0.846	0.596	0.131	0.311
Back of Queue (*Q*), ft/ln (50 th percentile)		248.4	9.6	69.3	125.6		26.4		130.2	207.6	42.9	92.8
Back of Queue (*Q*), veh/ln (50 th percentile)		9.6	0.4	2.7	4.9		1.0		5.0	8.0	1.7	3.6
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		22.9	17.4	31.4	14.9		45.5		2.1	32.2	25.1	27.0
Incremental Delay (d_2), s/veh		2.5	0.1	0.2	0.8		0.1		3.5	0.4	0.0	0.1
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		25.4	17.5	31.6	15.7		45.6		5.6	32.6	25.2	27.1
Level of Service (LOS)		C	B	C	B		D		A	C	C	C
Approach Delay, s/veh / LOS	25.0	C		20.0	C		12.5	B		29.9	C	
Intersection Delay, s/veh / LOS	23.9						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	1.2	A		F	1.5	B

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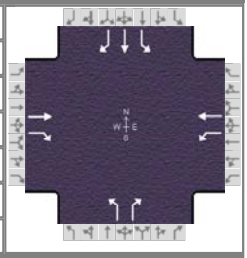
HCS7 Signalized Intersection Results Summary

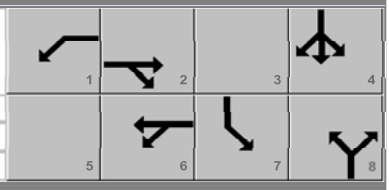
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	KERN	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2042 PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		537	29	84	391		37		135	417	57	174

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		60.3	9.7	70.0		17.9	32.1	50.0
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (*g/C*)		0.46	0.46	0.50	0.54		0.11		0.11	0.35	0.38	0.38
Capacity (*c*), veh/h		848	719	332	997		202		168	606	691	585
Volume-to-Capacity Ratio (*X*)		0.633	0.040	0.253	0.392		0.183		0.804	0.688	0.083	0.297
Back of Queue (*Q*), ft/ln (50 th percentile)		308.5	11.7	50.2	161.6		26.2		96.9	260.2	26.6	88.7
Back of Queue (*Q*), veh/ln (50 th percentile)		12.0	0.5	1.9	6.3		1.0		3.8	10.1	1.0	3.4
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		24.6	17.8	34.7	16.0		49.2		2.0	33.3	24.2	26.4
Incremental Delay (d_2), s/veh		3.6	0.1	0.1	1.2		0.2		3.5	0.5	0.0	0.1
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		28.3	17.9	34.9	17.2		49.3		5.5	33.8	24.2	26.5
Level of Service (LOS)		C	B	C	B		D		A	C	C	C
Approach Delay, s/veh / LOS	27.8	C		20.3	C		14.9	B		31.0	C	
Intersection Delay, s/veh / LOS	25.8						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.4	A	1.3	A		F	1.6	B

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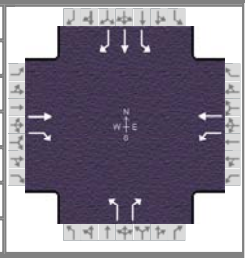
HCS7 Signalized Intersection Results Summary

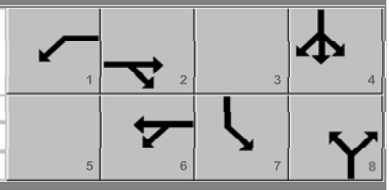
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	KERN	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and Comp…	File Name	Taft and Compagnoni 2042 + Project PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h		557	29	135	391		45		212	417	99	174

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8	7	4
Case Number		7.3	1.0	4.0		5.3	1.0	3.0
Phase Duration, s		55.4	9.9	65.4		23.9	30.7	54.6
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0	5.0	5.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0	0.0	0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0	0.0	0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0	0.0	0.0
Phase Call Probability		0.00	0.00	0.00		0.00	0.00	0.00
Max Out Probability		0.00	0.00	0.00		0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement		2	12	1	6		3		18	7	4	14
Adjusted Flow Rate (*v*), veh/h		0	0	0	0		0		0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln		0	0	0	0		0		0	0	0	0
Queue Service Time (g_s), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Green Ratio (*g/C*)		0.42	0.42	0.46	0.50		0.16		0.16	0.39	0.41	0.41
Capacity (*c*), veh/h		773	655	274	926		259		246	654	762	645
Volume-to-Capacity Ratio (*X*)		0.720	0.044	0.492	0.422		0.173		0.862	0.638	0.130	0.270
Back of Queue (*Q*), ft/ln (50 th percentile)		361.8	12.8	96.4	179		30		143.7	241.8	43.9	82.2
Back of Queue (*Q*), veh/ln (50 th percentile)		14.0	0.5	3.7	6.9		1.2		5.6	9.4	1.7	3.2
Queue Storage Ratio (*RQ*) (50 th percentile)		0.00	0.00	0.00	0.00		0.00		0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh		28.9	20.6	44.6	18.8		44.3		2.1	29.4	21.8	23.2
Incremental Delay (d_2), s/veh		5.9	0.1	0.5	1.4		0.1		3.6	0.4	0.0	0.1
Initial Queue Delay (d_3), s/veh		0.0	0.0	0.0	0.0		0.0		0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh		34.9	20.7	45.1	20.2		44.4		5.7	29.8	21.8	23.3
Level of Service (LOS)		C	C	D	C		D		A	C	C	C
Approach Delay, s/veh / LOS	34.2	C		26.6	C		12.5	B		27.0	C	
Intersection Delay, s/veh / LOS	27.1						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.3	B	1.9	B	2.3	B	2.3	B
Bicycle LOS Score / LOS	1.5	A	1.4	A		F	1.6	B

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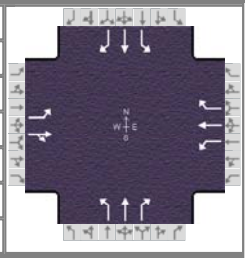
HCS7 Signalized Intersection Results Summary

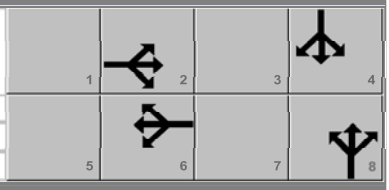
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	PM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2020 PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	101	501	127	3	380	45	132	46	26	50	22	70

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		92.8		92.8		16.0		11.2
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.73	0.73		0.73	0.73	0.73	0.09	0.09	0.09	0.06	0.06	0.06
Capacity (*c*), veh/h	701	1279		509	1325	1160	163	166	145	107	109	95
Volume-to-Capacity Ratio (*X*)	0.144	0.491		0.006	0.287	0.039	0.811	0.278	0.179	0.466	0.202	0.734
Back of Queue (*Q*), ft/ln (50 th percentile)	25.8	156.6		0.9	75.5	7.1	101.9	33.7	18.3	37.4	16.6	54.8
Back of Queue (*Q*), veh/ln (50 th percentile)	1.0	6.0		0.0	2.9	0.3	4.0	1.3	0.7	1.5	0.6	2.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	7.7	6.7		10.6	5.5	4.4	53.5	50.8	50.4	54.5	53.6	55.4
Incremental Delay (d_2), s/veh	0.4	1.4		0.0	0.5	0.1	3.8	0.3	0.2	1.2	0.3	4.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	8.2	8.1		10.6	6.0	4.5	57.3	51.2	50.6	55.7	54.0	59.6
Level of Service (LOS)	A	A		B	A	A	E	D	D	E	D	E
Approach Delay, s/veh / LOS	8.1	A		5.9	A		55.0	E		57.3	E	
Intersection Delay, s/veh / LOS	18.5						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.7	B	1.2	A	0.8	A	0.7	A

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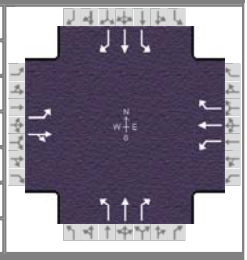
HCS7 Signalized Intersection Results Summary

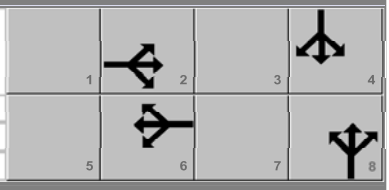
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	PM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2020 + Project PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	101	512	127	3	388	45	175	46	26	50	22	70

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		89.8		89.8		19.0		11.2
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.71	0.71		0.71	0.71	0.71	0.12	0.12	0.12	0.06	0.06	0.06
Capacity (*c*), veh/h	664	1236		471	1280	1120	207	211	185	107	109	95
Volume-to-Capacity Ratio (*X*)	0.152	0.517		0.006	0.303	0.040	0.844	0.218	0.141	0.466	0.202	0.734
Back of Queue (*Q*), ft/ln (50 th percentile)	29.3	183.7		1	88.7	8.1	134.2	32.6	17.7	37.4	16.6	54.8
Back of Queue (*Q*), veh/ln (50 th percentile)	1.1	7.0		0.0	3.4	0.3	5.3	1.2	0.7	1.5	0.6	2.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	9.3	8.1		12.9	6.6	5.3	51.9	48.1	47.6	54.5	53.6	55.4
Incremental Delay (d_2), s/veh	0.5	1.6		0.0	0.6	0.1	3.7	0.2	0.1	1.2	0.3	4.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	9.8	9.7		12.9	7.2	5.4	55.6	48.3	47.7	55.7	54.0	59.6
Level of Service (LOS)	A	A		B	A	A	E	D	D	E	D	E
Approach Delay, s/veh / LOS	9.7	A		7.0	A		53.4	D		57.3	E	
Intersection Delay, s/veh / LOS	20.2						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.7	B	1.2	A	0.9	A	0.7	A

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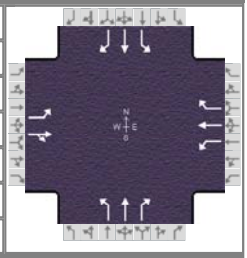
HCS7 Signalized Intersection Results Summary

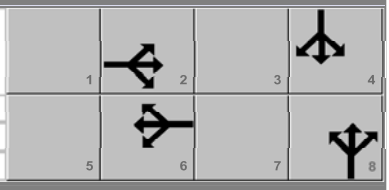
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	PM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2023 PM (Opening Day).xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	104	516	131	3	391	46	136	47	27	52	23	72

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		92.4		92.4		16.2		11.4
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.73	0.73		0.73	0.73	0.73	0.09	0.09	0.09	0.06	0.06	0.06
Capacity (*c*), veh/h	688	1272		491	1319	1154	167	170	148	110	111	98
Volume-to-Capacity Ratio (*X*)	0.151	0.509		0.006	0.297	0.040	0.815	0.277	0.182	0.474	0.206	0.738
Back of Queue (*Q*), ft/ln (50 th percentile)	27.5	168		1	80.4	7.4	104.9	34.3	19	38.9	17.3	56.3
Back of Queue (*Q*), veh/ln (50 th percentile)	1.0	6.4		0.0	3.1	0.3	4.1	1.3	0.7	1.5	0.7	2.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	8.1	7.0		11.2	5.7	4.6	53.4	50.6	50.1	54.4	53.5	55.4
Incremental Delay (d_2), s/veh	0.5	1.5		0.0	0.6	0.1	3.8	0.3	0.2	1.2	0.3	4.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	8.6	8.5		11.3	6.2	4.6	57.1	50.9	50.4	55.6	53.9	59.5
Level of Service (LOS)	A	A		B	A	A	E	D	D	E	D	E
Approach Delay, s/veh / LOS	8.5	A		6.1	A		54.9	D		57.2	E	
Intersection Delay, s/veh / LOS	18.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.7	B	1.2	A	0.8	A	0.7	A

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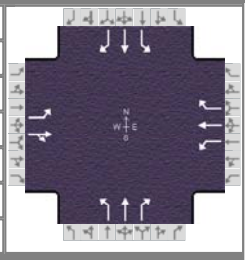
HCS7 Signalized Intersection Results Summary

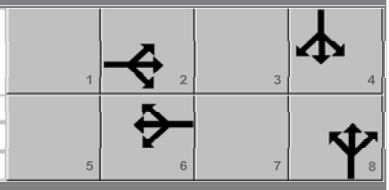
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	PM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2023 + Project PM (Opening…		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	104	527	131	3	399	46	179	47	27	52	23	72

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		89.4		89.4		19.2		11.4
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.70	0.70		0.70	0.70	0.70	0.12	0.12	0.12	0.06	0.06	0.06
Capacity (*c*), veh/h	651	1229		454	1273	1114	211	215	188	110	112	98
Volume-to-Capacity Ratio (*X*)	0.160	0.535		0.007	0.313	0.041	0.847	0.219	0.144	0.473	0.206	0.737
Back of Queue (*Q*), ft/ln (50 th percentile)	31.1	197		1.1	94	8.4	137.2	33.2	18.3	38.9	17.3	56.3
Back of Queue (*Q*), veh/ln (50 th percentile)	1.2	7.5		0.0	3.6	0.3	5.4	1.3	0.7	1.5	0.7	2.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	9.8	8.5		13.7	6.8	5.4	51.8	47.9	47.4	54.4	53.5	55.3
Incremental Delay (d_2), s/veh	0.5	1.7		0.0	0.6	0.1	3.7	0.2	0.1	1.2	0.3	4.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	10.3	10.2		13.7	7.4	5.5	55.6	48.0	47.5	55.6	53.8	59.4
Level of Service (LOS)	B	B		B	A	A	E	D	D	E	D	E
Approach Delay, s/veh / LOS	10.2	B		7.3	A		53.3	D		57.2	E	
Intersection Delay, s/veh / LOS	20.4						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.7	B	1.2	A	0.9	A	0.7	A

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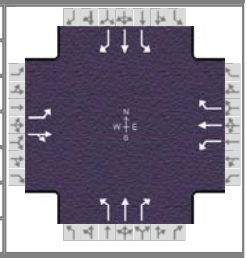
HCS7 Signalized Intersection Results Summary

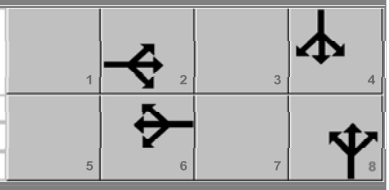
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	PM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2042 PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	125	621	157	4	471	56	164	57	32	62	27	70

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		90.5		90.5		18.2		11.3
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.71	0.71		0.71	0.71	0.71	0.11	0.11	0.11	0.06	0.06	0.06
Capacity (*c*), veh/h	606	1245		383	1290	1129	197	200	175	108	110	96
Volume-to-Capacity Ratio (*X*)	0.206	0.625		0.010	0.365	0.050	0.834	0.285	0.183	0.574	0.246	0.728
Back of Queue (*Q*), ft/ln (50 th percentile)	40.1	252.2		1.6	112.1	9.9	125.8	40.9	22.1	47	20.4	54.8
Back of Queue (*Q*), veh/ln (50 th percentile)	1.5	9.6		0.1	4.3	0.4	5.0	1.6	0.9	1.9	0.8	2.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	10.6	9.0		16.2	6.7	5.1	52.3	49.0	48.5	54.8	53.7	55.4
Incremental Delay (d_2), s/veh	0.8	2.4		0.0	0.8	0.1	3.7	0.3	0.2	1.8	0.4	4.0
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	11.3	11.4		16.3	7.5	5.2	56.0	49.3	48.7	56.6	54.2	59.4
Level of Service (LOS)	B	B		B	A	A	E	D	D	E	D	E
Approach Delay, s/veh / LOS	11.3	B		7.3	A		53.5	D		57.4	E	
Intersection Delay, s/veh / LOS	19.9						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	2.0	B	1.4	A	0.9	A	0.7	A

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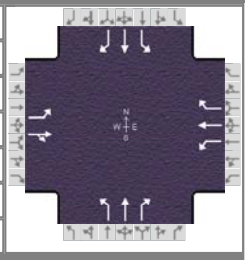
HCS7 Signalized Intersection Results Summary

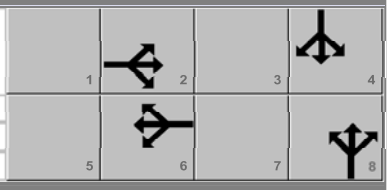
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	Other
Jurisdiction	KERN	Time Period	PM PEAK HOUR	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and South…	File Name	Taft and South H. St 2042 + Project PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	125	632	157	4	479	56	207	57	32	62	27	87

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2		6		8		4
Case Number		6.0		5.0		9.0		9.0
Phase Duration, s		86.2		86.2		21.2		12.6
Change Period, ($Y+R_c$), s		5.0		5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0		0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0		0.0		0.0		0.0
Green Extension Time (g_e), s		0.0		0.0		0.0		0.0
Phase Call Probability		0.00		0.00		0.00		0.00
Max Out Probability		0.00		0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.68	0.68		0.68	0.68	0.68	0.13	0.13	0.13	0.07	0.07	0.07
Capacity (*c*), veh/h	557	1183		333	1226	1073	240	244	214	128	130	114
Volume-to-Capacity Ratio (*X*)	0.224	0.667		0.012	0.391	0.052	0.862	0.233	0.150	0.485	0.208	0.765
Back of Queue (*Q*), ft/ln (50 th percentile)	46.9	306.3		1.9	135.3	11.6	157.9	39.6	21.3	45.9	20.1	67.7
Back of Queue (*Q*), veh/ln (50 th percentile)	1.8	11.7		0.1	5.2	0.5	6.2	1.5	0.8	1.8	0.8	2.7
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	13.5	11.4		21.0	8.5	6.5	50.8	46.4	45.8	53.6	52.5	54.7
Incremental Delay (d_2), s/veh	0.9	3.0		0.1	0.9	0.1	3.7	0.2	0.1	1.1	0.3	4.1
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	14.4	14.4		21.0	9.5	6.6	54.5	46.6	46.0	54.6	52.8	58.8
Level of Service (LOS)	B	B		C	A	A	D	D	D	D	D	E
Approach Delay, s/veh / LOS	14.4	B		9.2	A		52.1	D		56.4	E	
Intersection Delay, s/veh / LOS	22.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.4	B	2.4	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	2.0	B	1.4	A	1.0	A	0.8	A

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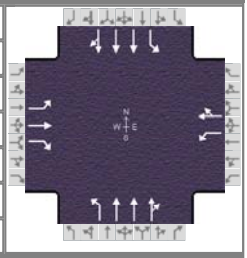
HCS7 Signalized Intersection Results Summary

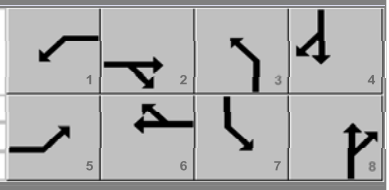
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2020 PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	104	293	36	7	271	56	87	374	29	79	168	71

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	13.0	84.3	6.0	77.4	12.0	17.1	12.5	17.6
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.07	0.66	0.66	0.01	0.60		0.07	0.10	0.10	0.06	0.10	0.10
Capacity (*c*), veh/h	130	1207	1023	15	1069		117	369	178	109	383	164
Volume-to-Capacity Ratio (*X*)	0.801	0.243	0.035	0.462	0.306		0.746	0.732	0.747	0.728	0.423	0.470
Back of Queue (*Q*), ft/ln (50 th percentile)	83.3	76.1	7.9	6.3	108.7		69.1	102.5	102.4	62.8	58.8	56.8
Back of Queue (*Q*), veh/ln (50 th percentile)	3.2	2.9	0.3	0.2	4.2		2.7	3.9	3.9	2.4	2.3	2.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	54.6	8.2	1.7	59.2	11.6		55.0	52.4	52.4	55.3	50.3	50.6
Incremental Delay (d_2), s/veh	4.4	0.5	0.1	8.1	0.7		3.6	1.1	2.4	3.5	0.3	0.8
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	59.1	8.7	1.8	67.3	12.3		58.6	53.4	54.8	58.8	50.6	51.3
Level of Service (LOS)	E	A	A	E	B		E	D	D	E	D	D
Approach Delay, s/veh / LOS	20.2	C		13.5	B		54.7	D		52.8	D	
Intersection Delay, s/veh / LOS	36.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.2	A	1.0	A	0.8	A	0.7	A

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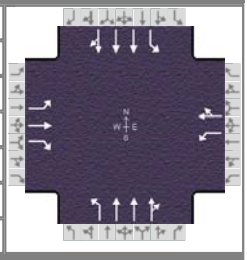
HCS7 Signalized Intersection Results Summary

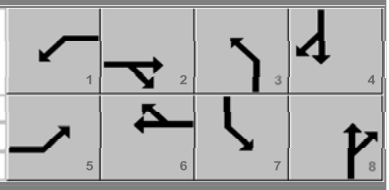
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2020 + Project PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	107	300	37	7	276	56	89	371	29	79	168	71

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	13.2	84.4	6.0	77.3	12.2	17.1	12.5	17.4
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.08	0.66	0.66	0.01	0.60		0.07	0.10	0.10	0.06	0.10	0.10
Capacity (*c*), veh/h	133	1208	1024	15	1067		119	367	177	109	376	161
Volume-to-Capacity Ratio (*X*)	0.804	0.248	0.036	0.462	0.311		0.750	0.731	0.746	0.728	0.430	0.477
Back of Queue (*Q*), ft/ln (50 th percentile)	85.5	78.6	8.2	6.3	111.4		70.7	101.8	101.7	62.8	58.9	57
Back of Queue (*Q*), veh/ln (50 th percentile)	3.3	3.0	0.3	0.2	4.3		2.7	3.9	3.9	2.4	2.3	2.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	54.5	8.2	1.7	59.2	11.7		54.9	52.4	52.5	55.3	50.5	50.8
Incremental Delay (d_2), s/veh	4.4	0.5	0.1	8.1	0.8		3.6	1.1	2.4	3.5	0.3	0.8
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	58.9	8.7	1.8	67.3	12.4		58.5	53.5	54.9	58.8	50.8	51.6
Level of Service (LOS)	E	A	A	E	B		E	D	D	E	D	D
Approach Delay, s/veh / LOS	20.2	C		13.6	B		54.8	D		53.0	D	
Intersection Delay, s/veh / LOS	36.0						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.2	A	1.0	A	0.8	A	0.7	A

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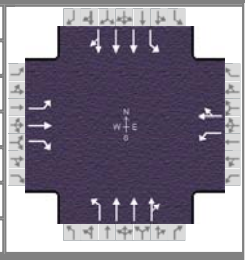
HCS7 Signalized Intersection Results Summary

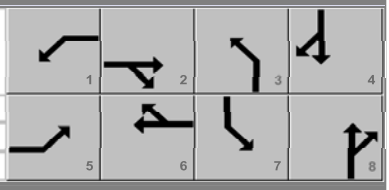
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2023 PM (Opening Day).xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	107	302	34	7	279	58	90	385	30	81	173	73

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	13.2	83.9	6.0	76.8	12.3	17.4	12.6	17.8
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.08	0.66	0.66	0.01	0.60		0.07	0.10	0.10	0.06	0.11	0.11
Capacity (*c*), veh/h	133	1200	1017	15	1059		120	378	182	111	390	167
Volume-to-Capacity Ratio (*X*)	0.804	0.252	0.033	0.462	0.318		0.752	0.736	0.750	0.733	0.428	0.474
Back of Queue (*Q*), ft/ln (50 th percentile)	85.5	80.5	7.6	6.3	115.1		71.5	105.4	105.3	64.4	60.4	58.3
Back of Queue (*Q*), veh/ln (50 th percentile)	3.3	3.1	0.3	0.2	4.4		2.7	4.1	4.1	2.5	2.3	2.2
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	54.5	8.4	1.7	59.2	12.0		54.9	52.2	52.3	55.2	50.2	50.4
Incremental Delay (d_2), s/veh	4.4	0.5	0.1	8.1	0.8		3.6	1.1	2.4	3.6	0.3	0.8
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	58.9	8.9	1.8	67.3	12.8		58.5	53.2	54.6	58.7	50.4	51.2
Level of Service (LOS)	E	A	A	E	B		E	D	D	E	D	D
Approach Delay, s/veh / LOS	20.5	C		13.9	B		54.6	D		52.7	D	
Intersection Delay, s/veh / LOS	36.2						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.2	A	1.1	A	0.8	A	0.7	A

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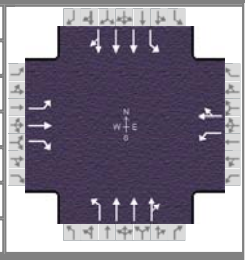
HCS7 Signalized Intersection Results Summary

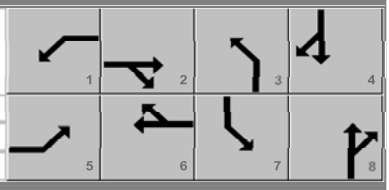
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2023 + Project PM (Opening Day)....		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	110	309	38	7	284	58	92	385	30	81	173	74

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	13.4	83.9	6.0	76.5	12.4	17.4	12.6	17.7
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.08	0.66	0.66	0.01	0.60		0.07	0.10	0.10	0.06	0.11	0.11
Capacity (*c*), veh/h	136	1200	1017	15	1056		122	378	182	111	386	165
Volume-to-Capacity Ratio (*X*)	0.807	0.257	0.037	0.462	0.324		0.756	0.736	0.750	0.733	0.434	0.482
Back of Queue (*Q*), ft/ln (50 th percentile)	87.9	82.8	8.5	6.3	117.9		73	105.4	105.3	64.4	60.8	58.7
Back of Queue (*Q*), veh/ln (50 th percentile)	3.4	3.2	0.3	0.2	4.5		2.8	4.1	4.1	2.5	2.3	2.3
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	54.4	8.5	1.7	59.2	12.1		54.8	52.2	52.3	55.2	50.3	50.6
Incremental Delay (d_2), s/veh	4.4	0.5	0.1	8.1	0.8		3.7	1.1	2.4	3.6	0.3	0.8
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	58.8	9.0	1.8	67.3	12.9		58.5	53.2	54.6	58.7	50.6	51.4
Level of Service (LOS)	E	A	A	E	B		E	D	D	E	D	D
Approach Delay, s/veh / LOS	20.4	C		14.0	B		54.6	D		52.8	D	
Intersection Delay, s/veh / LOS	36.1						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.2	A	1.1	A	0.8	A	0.7	A

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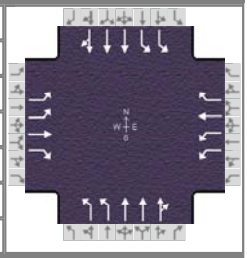
HCS7 Signalized Intersection Results Summary

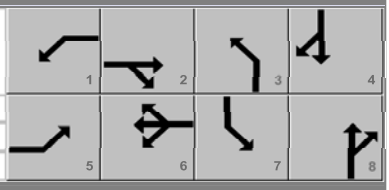
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	kern	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2042 + Project PM Mitigated.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	132	370	46	9	341	69	110	464	36	98	208	71

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	1.3	3.0	2.0	4.0	2.0	4.0
Phase Duration, s	10.8	83.6	6.3	79.0	10.1	19.5	10.6	20.1
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0	0	0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.06	0.65	0.65	0.67	0.62	0.62	0.05	0.12	0.12	0.05	0.13	0.13
Capacity (*c*), veh/h	192	1195	1013	1277	1127	994	171	441	212	159	458	201
Volume-to-Capacity Ratio (*X*)	0.688	0.310	0.045	0.007	0.303	0.069	0.643	0.761	0.773	0.618	0.412	0.449
Back of Queue (*Q*), ft/ln (50 th percentile)	51.3	104.4	10.5	1.3	108.3	17.9	42.8	126.4	125.8	38.1	67.2	64.9
Back of Queue (*Q*), veh/ln (50 th percentile)	2.0	4.0	0.4	0.0	4.2	0.7	1.6	4.9	4.8	1.5	2.6	2.5
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	55.6	9.0	1.7	10.8	10.8	9.2	55.9	51.1	51.2	56.1	48.4	48.6
Incremental Delay (d_2), s/veh	1.7	0.7	0.1	0.0	0.7	0.1	1.5	1.0	2.3	1.5	0.2	0.6
Initial Queue Delay (d_3), 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
Control Delay (*d*), s/veh	57.2	9.6	1.8	10.8	11.5	9.3	57.4	52.1	53.5	57.6	48.6	49.2
Level of Service (LOS)	E	A	A	B	B	A	E	D	D	E	D	D
Approach Delay, s/veh / LOS	20.4	C		11.1	B		53.4	D		51.1	D	
Intersection Delay, s/veh / LOS	34.7						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.4	C	3.3	C	3.0	C	3.0	C
Bicycle LOS Score / LOS	1.4	A	1.2	A	0.8	A	0.7	A

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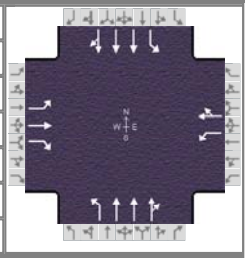
HCS7 Signalized Intersection Results Summary

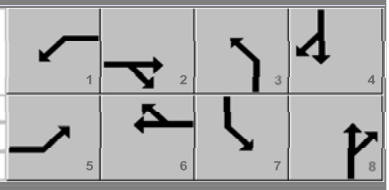
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	kern	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2042 PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	129	363	45	9	336	69	108	464	36	98	208	71

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	14.8	80.4	6.3	71.9	13.5	19.5	13.8	19.8
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.09	0.63	0.63	0.01	0.56		0.08	0.12	0.12	0.07	0.12	0.12
Capacity (*c*), veh/h	157	1147	972	19	987		138	441	212	128	451	197
Volume-to-Capacity Ratio (*X*)	0.823	0.316	0.046	0.477	0.410		0.784	0.761	0.773	0.768	0.419	0.456
Back of Queue (*Q*), ft/ln (50 th percentile)	102.4	113	11.3	7.9	165.2		85.7	126.4	125.8	77.8	67.3	65.1
Back of Queue (*Q*), veh/ln (50 th percentile)	3.9	4.3	0.4	0.3	6.4		3.3	4.9	4.8	3.0	2.6	2.5
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	53.6	10.4	1.7	59.0	15.3		54.2	51.1	51.2	54.6	48.6	48.9
Incremental Delay (d_2), s/veh	4.2	0.7	0.1	6.9	1.3		3.8	1.0	2.3	3.7	0.2	0.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	57.9	11.1	1.8	66.0	16.5		58.0	52.1	53.5	58.3	48.9	49.5
Level of Service (LOS)	E	B	A	E	B		E	D	D	E	D	D
Approach Delay, s/veh / LOS	21.5	C		17.6	B		53.5	D		51.5	D	
Intersection Delay, s/veh / LOS	36.6						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.4	A	1.2	A	0.8	A	0.7	A

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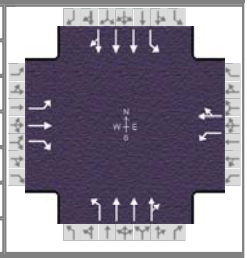
HCS7 Signalized Intersection Results Summary

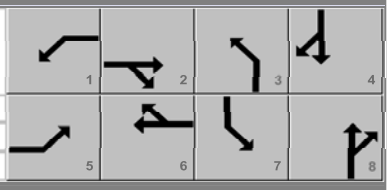
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	6/6/2017	Area Type	Other
Jurisdiction	kern	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and Union	File Name	Taft and Union 2042 + Project PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	132	370	46	9	341	69	110	464	36	98	208	71

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	0.0	0.0	0.0	0.0	0.0	0.0
Red	0.0	0.0	0.0	0.0	0.0	0.0



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	5	2	1	6	3	8	7	4
Case Number	2.0	3.0	2.0	4.0	2.0	4.0	2.0	4.0
Phase Duration, s	15.0	80.4	6.3	71.6	13.6	19.5	13.8	19.7
Change Period, ($Y+R_c$), s	4.0	5.0	5.0	5.0	4.0	5.0	5.0	5.0
Max Allow Headway (*MAH*), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Clearance Time (g_s), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green Extension Time (g_e), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Phase Call Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0	0	0	0		0	0	0	0	0	0
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0	0	0	0		0	0	0	0	0	0
Queue Service Time (g_s), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Cycle Queue Clearance Time (g_c), s	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Green Ratio (*g/C*)	0.09	0.63	0.63	0.01	0.56		0.08	0.12	0.12	0.07	0.12	0.12
Capacity (*c*), veh/h	160	1147	972	19	984		140	441	212	128	446	195
Volume-to-Capacity Ratio (*X*)	0.825	0.323	0.047	0.477	0.417		0.787	0.761	0.773	0.768	0.423	0.461
Back of Queue (*Q*), ft/ln (50 th percentile)	104.9	115.7	11.5	7.9	168.6		87.2	126.4	125.8	77.8	67.5	65.2
Back of Queue (*Q*), veh/ln (50 th percentile)	4.0	4.5	0.4	0.3	6.5		3.4	4.9	4.8	3.0	2.6	2.5
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00
Uniform Delay (d_1), s/veh	53.5	10.4	1.7	59.0	15.4		54.2	51.1	51.2	54.6	48.7	49.0
Incremental Delay (d_2), s/veh	4.2	0.7	0.1	6.9	1.3		3.8	1.0	2.3	3.7	0.2	0.6
Initial Queue Delay (d_3), s/veh	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Control Delay (*d*), s/veh	57.7	11.1	1.8	66.0	16.7		58.0	52.1	53.5	58.3	49.0	49.6
Level of Service (LOS)	E	B	A	E	B		E	D	D	E	D	D
Approach Delay, s/veh / LOS	21.6	C		17.8	B		53.5	D		51.6	D	
Intersection Delay, s/veh / LOS	36.5						D					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	3.3	C	3.2	C	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.4	A	1.2	A	0.8	A	0.7	A

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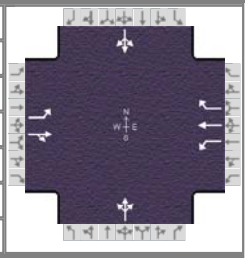
HCS7 Signalized Intersection Results Summary

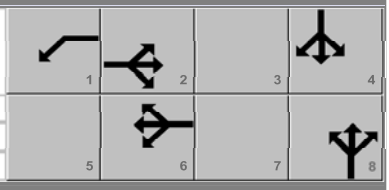
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	KERN	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2020 PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	34	436	20	9	383	149	35	50	19	83	34	20

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		82.8	6.3	89.1		14.6		16.3
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.65	0.65		0.64	0.70	0.70		0.08			0.10	
Capacity (*c*), veh/h	560	1074		493	1170	992		127			162	
Volume-to-Capacity Ratio (*X*)	0.061	0.425		0.018	0.327	0.150		0.818			0.844	
Back of Queue (*Q*), ft/ln (50 th percentile)	11.1	145		3.1	90.9	30.7		82.4			107.5	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.4	5.7		0.1	3.6	1.2		3.2			4.2	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	12.1	10.2		14.6	7.0	6.0		54.3			52.9	
Incremental Delay (d_2), s/veh	0.2	1.2		0.0	0.7	0.3		5.0			4.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	12.3	11.5		14.6	7.7	6.3		59.4			57.6	
Level of Service (LOS)	B	B		B	A	A		E			E	
Approach Delay, s/veh / LOS	11.5	B		7.5	A		59.4	E		57.6	E	
Intersection Delay, s/veh / LOS	18.7						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.1	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	1.4	A	0.7	A	0.7	A

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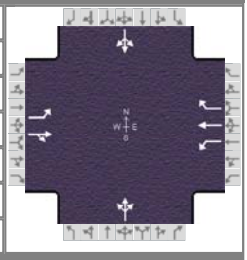
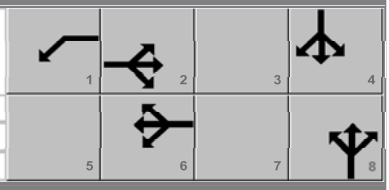
HCS7 Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	KERN	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2020	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2020 + Project PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	34	445	20	9	389	151	35	50	19	83	34	20

Signal Information												
Cycle, s	120.0	Reference Phase	2									
Offset, s	0	Reference Point	Begin	Green	0.0	0.0	0.0	0.0	0.0	0.0		
Uncoordinated	No	Simult. Gap E/W	On	Yellow	0.0	0.0	0.0	0.0	0.0	0.0		
Force Mode	Fixed	Simult. Gap N/S	On	Red	0.0	0.0	0.0	0.0	0.0	0.0		



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		82.8	6.3	89.1		14.6		16.3
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.65	0.65		0.64	0.70	0.70		0.08			0.10	
Capacity (*c*), veh/h	555	1074		487	1170	992		127			162	
Volume-to-Capacity Ratio (*X*)	0.061	0.433		0.018	0.332	0.152		0.818			0.844	
Back of Queue (*Q*), ft/ln (50 th percentile)	11.1	149		3.1	92.4	31.1		82.4			107.5	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.4	5.8		0.1	3.6	1.2		3.2			4.2	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	12.2	10.3		14.8	7.0	6.0		54.3			52.9	
Incremental Delay (d_2), s/veh	0.2	1.3		0.0	0.8	0.3		5.0			4.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	12.4	11.6		14.8	7.8	6.3		59.4			57.6	
Level of Service (LOS)	B	B		B	A	A		E			E	
Approach Delay, s/veh / LOS	11.7	B		7.5	A		59.4	E		57.6	E	
Intersection Delay, s/veh / LOS	18.6						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.1	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	1.4	A	0.7	A	0.7	A

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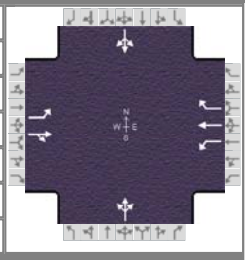
HCS7 Signalized Intersection Results Summary

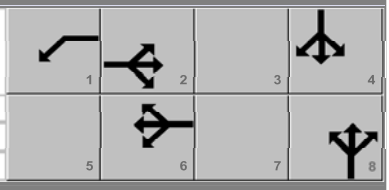
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	KERN	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2023 PM (Opening Day).xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	35	449	21	9	395	154	36	52	20	86	35	21

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		82.1	6.3	88.4		14.9		16.7
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.64	0.64		0.64	0.69	0.69		0.08			0.11	
Capacity (*c*), veh/h	544	1064		476	1160	983		132			168	
Volume-to-Capacity Ratio (*X*)	0.064	0.442		0.019	0.341	0.157		0.821			0.848	
Back of Queue (*Q*), ft/ln (50 th percentile)	11.8	154.5		3.2	97.1	32.6		85.4			111.3	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.5	6.0		0.1	3.8	1.3		3.3			4.3	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	12.8	10.7		15.5	7.3	6.3		54.2			52.7	
Incremental Delay (d_2), s/veh	0.2	1.3		0.0	0.8	0.3		5.0			4.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	13.0	12.1		15.5	8.1	6.6		59.1			57.4	
Level of Service (LOS)	B	B		B	A	A		E			E	
Approach Delay, s/veh / LOS	12.1	B		7.8	A		59.1	E		57.4	E	
Intersection Delay, s/veh / LOS	19.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.1	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	1.4	A	0.7	A	0.7	A

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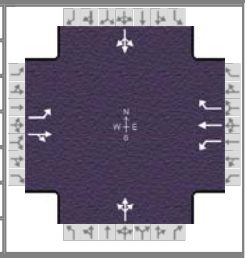
HCS7 Signalized Intersection Results Summary

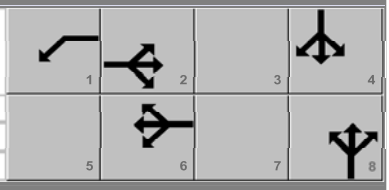
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	KERN	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2023	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2023 + Project PM (Opening Day)....		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	35	458	21	9	401	156	36	52	20	88	35	21

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		81.9	6.3	88.2		14.9		16.9
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.64	0.64		0.63	0.69	0.69		0.08			0.11	
Capacity (*c*), veh/h	538	1062		468	1158	981		132			170	
Volume-to-Capacity Ratio (*X*)	0.065	0.451		0.019	0.346	0.159		0.821			0.849	
Back of Queue (*Q*), ft/ln (50 th percentile)	11.9	159.7		3.2	99.7	33.3		85.4			112.9	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.5	6.2		0.1	3.9	1.3		3.3			4.4	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	13.0	10.9		15.8	7.4	6.3		54.2			52.6	
Incremental Delay (d_2), s/veh	0.2	1.4		0.0	0.8	0.3		5.0			4.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	13.2	12.3		15.8	8.2	6.7		59.1			57.3	
Level of Service (LOS)	B	B		B	A	A		E			E	
Approach Delay, s/veh / LOS	12.3	B		7.9	A		59.1	E		57.3	E	
Intersection Delay, s/veh / LOS	19.1						B					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.1	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.3	A	1.4	A	0.7	A	0.7	A

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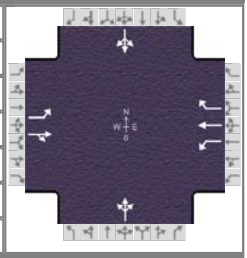
HCS7 Signalized Intersection Results Summary

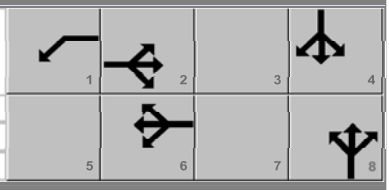
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2042 PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	42	541	25	11	475	185	43	62	24	103	42	25

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		77.9	6.5	84.5		16.6		18.9
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.61	0.61		0.60	0.66	0.66		0.10			0.12	
Capacity (*c*), veh/h	450	1007		374	1106	937		154			196	
Volume-to-Capacity Ratio (*X*)	0.093	0.562		0.029	0.429	0.197		0.837			0.866	
Back of Queue (*Q*), ft/ln (50 th percentile)	17.4	230.9		4.8	144.1	46.4		101.4			132.6	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.7	9.0		0.2	5.6	1.8		4.0			5.2	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	17.4	14.0		21.8	9.6	7.9		53.3			51.6	
Incremental Delay (d_2), s/veh	0.4	2.3		0.0	1.2	0.5		4.8			4.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	17.8	16.3		21.8	10.8	8.3		58.0			56.2	
Level of Service (LOS)	B	B		C	B	A		E			E	
Approach Delay, s/veh / LOS	16.4	B		10.3	B		58.0	E		56.2	E	
Intersection Delay, s/veh / LOS	21.5						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.1	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.5	A	1.6	B	0.7	A	0.8	A

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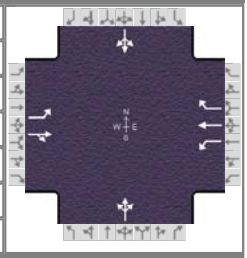
HCS7 Signalized Intersection Results Summary

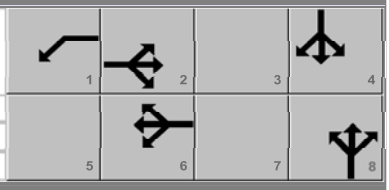
General Information				Intersection Information	
Agency	LAV Consulting			Duration, h	1.00
Analyst	DMBR	Analysis Date	Apr 2, 2021	Area Type	CBD
Jurisdiction	City	Time Period	PM Peak Hour	PHF	1.00
Urban Street	Taft Highway	Analysis Year	2042	Analysis Period	1> 4:00
Intersection	Taft Highway and Wible	File Name	Taft and Wible 2042 + Project PM.xus		
Project Description	TIS for Industrial Site				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	42	550	25	11	481	187	43	62	24	105	42	25

Signal Information			
Cycle, s	120.0	Reference Phase	2
Offset, s	0	Reference Point	Begin
Uncoordinated	No	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

Green	0.0	0.0	0.0	0.0	0.0	0.0	
Yellow	0.0	0.0	0.0	0.0	0.0	0.0	
Red	0.0	0.0	0.0	0.0	0.0	0.0	



Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase		2	1	6		8		4
Case Number		6.3	1.0	3.0		12.0		12.0
Phase Duration, s		77.8	6.5	84.3		16.6		19.1
Change Period, ($Y+R_c$), s		5.0	5.0	5.0		5.0		4.0
Max Allow Headway (*MAH*), s		0.0	0.0	0.0		0.0		0.0
Queue Clearance Time (g_s), s		0.0	0.0	0.0		0.0		0.0
Green Extension Time (g_e), s		0.0	0.0	0.0		0.0		0.0
Phase Call Probability		0.00	0.00	0.00		0.00		0.00
Max Out Probability		0.00	0.00	0.00		0.00		0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate (*v*), veh/h	0	0		0	0	0		0			0	
Adjusted Saturation Flow Rate (*s*), veh/h/ln	0	0		0	0	0		0			0	
Queue Service Time (g_s), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Cycle Queue Clearance Time (g_c), s	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Green Ratio (*g/C*)	0.61	0.61		0.60	0.66	0.66		0.10			0.13	
Capacity (*c*), veh/h	445	1005		367	1104	936		154			198	
Volume-to-Capacity Ratio (*X*)	0.094	0.572		0.030	0.436	0.200		0.838			0.868	
Back of Queue (*Q*), ft/ln (50 th percentile)	17.5	237.9		4.8	147.7	46.9		101.4			134.2	
Back of Queue (*Q*), veh/ln (50 th percentile)	0.7	9.3		0.2	5.8	1.8		4.0			5.2	
Queue Storage Ratio (*RQ*) (50 th percentile)	0.00	0.00		0.00	0.00	0.00		0.00			0.00	
Uniform Delay (d_1), s/veh	17.7	14.2		22.3	9.7	7.9		53.3			51.5	
Incremental Delay (d_2), s/veh	0.4	2.4		0.0	1.3	0.5		4.8			4.7	
Initial Queue Delay (d_3), s/veh	0.0	0.0		0.0	0.0	0.0		0.0			0.0	
Control Delay (*d*), s/veh	18.1	16.6		22.3	10.9	8.4		58.0			56.2	
Level of Service (LOS)	B	B		C	B	A		E			E	
Approach Delay, s/veh / LOS	16.7	B		10.4	B		58.0	E		56.2	E	
Intersection Delay, s/veh / LOS	21.6						C					

Multimodal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.1	B	2.5	B	2.3	B
Bicycle LOS Score / LOS	1.5	B	1.6	B	0.7	A	0.8	A

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Street Segments

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 106 veh/h
Opposing direction volume, Vo 58 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.8		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.954		0.949	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	126	pc/h	69	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	55.9	mi/h
Percent Free Flow Speed, PFFS	96.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	121 pc/h	66 pc/h

Base percent time-spent-following,(note-4) BPTSFd	13.8	%
Adjustment for no-passing zones, fnp	29.4	
Percent time-spent-following, PTSFd	32.8	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	55.9	mi/h
Percent time-spent-following, PTSFd (from above)	32.8	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	120.5
Effective width of outside lane, We	32.46
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.52
Bicycle LOS	A

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 154 veh/h
Opposing direction volume, Vo 58 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.6		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.965		0.949	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	181	pc/h	69	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	55.4	mi/h
Percent Free Flow Speed, PFFS	95.6	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	176 pc/h	66 pc/h

Base percent time-spent-following,(note-4) BPTSFd	19.3	%
Adjustment for no-passing zones, fnp	28.1	
Percent time-spent-following, PTSFd	39.7	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	55.4	mi/h
Percent time-spent-following, PTSFd (from above)	39.7	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	175.0
Effective width of outside lane, We	28.14
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.02
Bicycle LOS	B

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 109 veh/h
Opposing direction volume, Vo 60 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.8		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.954		0.949	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	130	pc/h	72	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	55.8	mi/h
Percent Free Flow Speed, PFFS	96.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	125 pc/h	69 pc/h

Base percent time-spent-following,(note-4) BPTSFd	14.2	%
Adjustment for no-passing zones, fnp	29.5	
Percent time-spent-following, PTSFd	33.2	%

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	55.8	mi/h
Percent time-spent-following, PTSFd (from above)	33.2	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	123.9
Effective width of outside lane, We	32.19
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	0.63
Bicycle LOS	A

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 157 veh/h
Opposing direction volume, Vo 60 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.6		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.965		0.949	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	185	pc/h	72	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	55.4	mi/h
Percent Free Flow Speed, PFFS	95.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	179 pc/h	69 pc/h

Base percent time-spent-following,(note-4) BPTSFd	19.6	%
Adjustment for no-passing zones, fnp	28.2	
Percent time-spent-following, PTSFd	40.0	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	55.4	mi/h
Percent time-spent-following, PTSFd (from above)	40.0	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	178.4
Effective width of outside lane, We	27.87
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	2.11
Bicycle LOS	B

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 131 veh/h
Opposing direction volume, Vo 72 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.960		0.949	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	155	pc/h	86	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	55.5	mi/h
Percent Free Flow Speed, PFFS	95.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	150 pc/h	82 pc/h

Base percent time-spent-following,(note-4) BPTSFd	16.8	%
Adjustment for no-passing zones, fnp	30.1	
Percent time-spent-following, PTSFd	36.3	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	55.5	mi/h
Percent time-spent-following, PTSFd (from above)	36.3	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	148.9
Effective width of outside lane, We	30.21
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	1.34
Bicycle LOS	A

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 179 veh/h
Opposing direction volume, Vo 72 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.971		0.949	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	209	pc/h	86	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	55.1	mi/h
Percent Free Flow Speed, PFFS	95.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	205 pc/h	82 pc/h

Base percent time-spent-following,(note-4) BPTSFd	22.0	%
Adjustment for no-passing zones, fnp	28.7	
Percent time-spent-following, PTSFd	42.5	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	55.1	mi/h
Percent time-spent-following, PTSFd (from above)	42.5	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	203.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.18
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 NB on SB off/SB On
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 205 veh/h
Opposing direction volume, Vo 543 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.971		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	240	pc/h	621	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	50.3	mi/h
Percent Free Flow Speed, PFFS	86.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	234 pc/h	617 pc/h

Base percent time-spent-following,(note-4) BPTSFd	32.0	%
Adjustment for no-passing zones, fnp	21.5	
Percent time-spent-following, PTSFd	37.9	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.3	mi/h
Percent time-spent-following, PTSFd (from above)	37.9	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	233.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.25
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 NB Onramp/SB Onramp
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 261 veh/h
Opposing direction volume, Vo 602 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	304	pc/h	688	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	49.5	mi/h
Percent Free Flow Speed, PFFS	85.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	298 pc/h	684 pc/h

Base percent time-spent-following,(note-4) BPTSFd	38.9	%
Adjustment for no-passing zones, fnp	21.0	
Percent time-spent-following, PTSFd	45.3	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.5	mi/h
Percent time-spent-following, PTSFd (from above)	45.3	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	296.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.37
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB onramp
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 212 veh/h
Opposing direction volume, Vo 559 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.971		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	248	pc/h	639	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	50.2	mi/h
Percent Free Flow Speed, PFFS	86.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	242 pc/h	635 pc/h

Base percent time-spent-following,(note-4) BPTSFd	33.1	%
Adjustment for no-passing zones, fnp	21.2	
Percent time-spent-following, PTSFd	38.9	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.2	mi/h
Percent time-spent-following, PTSFd (from above)	38.9	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	240.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.27
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB onramp
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 269 veh/h
Opposing direction volume, Vo 618 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	313	pc/h	707	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	49.3	mi/h
Percent Free Flow Speed, PFFS	85.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	308 pc/h	702 pc/h

Base percent time-spent-following,(note-4) BPTSFd	40.0	%
Adjustment for no-passing zones, fnp	20.6	
Percent time-spent-following, PTSFd	46.3	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.3	mi/h
Percent time-spent-following, PTSFd (from above)	46.3	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	305.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.39
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB Onramp
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 254 veh/h
Opposing direction volume, Vo 674 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	295	pc/h	771	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	49.1	mi/h
Percent Free Flow Speed, PFFS	84.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	290 pc/h	766 pc/h

Base percent time-spent-following,(note-4) BPTSFd	39.4	%
Adjustment for no-passing zones, fnp	18.5	
Percent time-spent-following, PTSFd	44.5	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.1	mi/h
Percent time-spent-following, PTSFd (from above)	44.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	288.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.36
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB Onramp
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 311 veh/h
Opposing direction volume, Vo 733 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.982		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	360	pc/h	838	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	48.1	mi/h
Percent Free Flow Speed, PFFS	83.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	356 pc/h	833 pc/h

Base percent time-spent-following,(note-4) BPTSFd	45.7	%
Adjustment for no-passing zones, fnp	17.7	
Percent time-spent-following, PTSFd	51.0	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.1	mi/h
Percent time-spent-following, PTSFd (from above)	51.0	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	353.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.46
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 188 veh/h
Opposing direction volume, Vo 627 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.971		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	220	pc/h	717	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	50.0	mi/h
Percent Free Flow Speed, PFFS	86.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	215 pc/h	713 pc/h

Base percent time-spent-following,(note-4) BPTSFd	31.8	%
Adjustment for no-passing zones, fnp	18.3	
Percent time-spent-following, PTSFd	36.0	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.0	mi/h
Percent time-spent-following, PTSFd (from above)	36.0	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	213.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.21
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 227 veh/h
Opposing direction volume, Vo 733 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	264	pc/h	838	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	48.9	mi/h
Percent Free Flow Speed, PFFS	84.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	260 pc/h	833 pc/h

Base percent time-spent-following,(note-4) BPTSFd	37.5	%
Adjustment for no-passing zones, fnp	16.2	
Percent time-spent-following, PTSFd	41.4	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.9	mi/h
Percent time-spent-following, PTSFd (from above)	41.4	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	258.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.30
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 194 veh/h
Opposing direction volume, Vo 645 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.971		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	227	pc/h	737	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.7	mi/h
Average travel speed, ATSd	49.8	mi/h
Percent Free Flow Speed, PFFS	85.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	222 pc/h	733 pc/h

Base percent time-spent-following,(note-4) BPTSFd	32.6	%
Adjustment for no-passing zones, fnp	17.9	
Percent time-spent-following, PTSFd	36.8	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.8	mi/h
Percent time-spent-following, PTSFd (from above)	36.8	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	220.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.22
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 251 veh/h
Opposing direction volume, Vo 751 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	292	pc/h	853	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	48.6	mi/h
Percent Free Flow Speed, PFFS	83.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	287 pc/h	853 pc/h

Base percent time-spent-following,(note-4) BPTSFd	40.0	%
Adjustment for no-passing zones, fnp	16.2	
Percent time-spent-following, PTSFd	44.1	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.6	mi/h
Percent time-spent-following, PTSFd (from above)	44.1	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	285.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.35
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 233 veh/h
Opposing direction volume, Vo 777 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	271	pc/h	883	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	48.5	mi/h
Percent Free Flow Speed, PFFS	83.6	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	266 pc/h	883 pc/h

Base percent time-spent-following,(note-4) BPTSFd	38.5	%
Adjustment for no-passing zones, fnp	15.2	
Percent time-spent-following, PTSFd	42.0	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.5	mi/h
Percent time-spent-following, PTSFd (from above)	42.0	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	264.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.31
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 290 veh/h
Opposing direction volume, Vo 883 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	337	pc/h	1003	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	47.0	mi/h
Percent Free Flow Speed, PFFS	81.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	332 pc/h	1003 pc/h

Base percent time-spent-following,(note-4) BPTSFd	45.3	%
Adjustment for no-passing zones, fnp	13.3	
Percent time-spent-following, PTSFd	48.6	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.0	mi/h
Percent time-spent-following, PTSFd (from above)	48.6	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	329.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.42
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB on & 99 SB off
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 558 veh/h
Opposing direction volume, Vo 395 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	638	pc/h	457	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	48.2	mi/h
Percent Free Flow Speed, PFFS	83.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	634 pc/h	449 pc/h

Base percent time-spent-following,(note-4) BPTSFd	58.8	%
Adjustment for no-passing zones, fnp	24.3	
Percent time-spent-following, PTSFd	73.0	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.2	mi/h
Percent time-spent-following, PTSFd (from above)	73.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	634.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.76
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB on & 99 SB off
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 615 veh/h
Opposing direction volume, Vo 407 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.988	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	703	pc/h	468	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	47.7	mi/h
Percent Free Flow Speed, PFFS	82.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	699 pc/h	463 pc/h

Base percent time-spent-following,(note-4) BPTSFd	61.1	%
Adjustment for no-passing zones, fnp	22.5	
Percent time-spent-following, PTSFd	74.6	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.7	mi/h
Percent time-spent-following, PTSFd (from above)	74.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	698.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.81
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB on & 99 SB off
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 632 veh/h
Opposing direction volume, Vo 419 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.988	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	723	pc/h	482	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	47.4	mi/h
Percent Free Flow Speed, PFFS	81.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	718 pc/h	476 pc/h

Base percent time-spent-following,(note-4) BPTSFd	62.7	%
Adjustment for no-passing zones, fnp	22.0	
Percent time-spent-following, PTSFd	75.9	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.4	mi/h
Percent time-spent-following, PTSFd (from above)	75.9	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	718.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.82
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2023
Jurisdiction	Kern	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	632	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	239
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.10

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	3.7
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
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Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB on & 99 SB off
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 575 veh/h
Opposing direction volume, Vo 407 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.2	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.988	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	657	pc/h	468	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	48.0	mi/h
Percent Free Flow Speed, PFFS	82.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	653 pc/h	463 pc/h

Base percent time-spent-following,(note-4) BPTSFd	58.8	%
Adjustment for no-passing zones, fnp	23.8	
Percent time-spent-following, PTSFd	72.7	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.0	mi/h
Percent time-spent-following, PTSFd (from above)	72.7	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	653.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.77
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2042+Project
Jurisdiction	Kern	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	748	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	283
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.12

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	4.4
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB onramp
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 691 veh/h
Opposing direction volume, Vo 490 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	790	pc/h	560	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATSd	46.4	mi/h
Percent Free Flow Speed, PFFS	80.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	785 pc/h	557 pc/h

Base percent time-spent-following,(note-4) BPTSFd	66.7	%
Adjustment for no-passing zones, fnp	20.0	
Percent time-spent-following, PTSFd	78.4	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.4	mi/h
Percent time-spent-following, PTSFd (from above)	78.4	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	785.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.86
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB onramp
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 748 veh/h
Opposing direction volume, Vo 502 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	855	pc/h	574	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATSd	45.8	mi/h
Percent Free Flow Speed, PFFS	79.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	850 pc/h	570 pc/h

Base percent time-spent-following,(note-4) BPTSFd	68.6	%
Adjustment for no-passing zones, fnp	18.7	
Percent time-spent-following, PTSFd	79.8	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.8	mi/h
Percent time-spent-following, PTSFd (from above)	79.8	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	850.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.90
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 412 veh/h
Opposing direction volume, Vo 302 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.977	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	474	pc/h	351	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	50.1	mi/h
Percent Free Flow Speed, PFFS	86.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	468 pc/h	345 pc/h

Base percent time-spent-following,(note-4) BPTSFd	47.0	%
Adjustment for no-passing zones, fnp	29.3	
Percent time-spent-following, PTSFd	63.9	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.1	mi/h
Percent time-spent-following, PTSFd (from above)	63.9	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	468.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.60
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 421 veh/h
Opposing direction volume, Vo 313 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	484	pc/h	362	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	50.0	mi/h
Percent Free Flow Speed, PFFS	86.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	478 pc/h	358 pc/h

Base percent time-spent-following,(note-4) BPTSFd	46.9	%
Adjustment for no-passing zones, fnp	29.1	
Percent time-spent-following, PTSFd	63.5	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.0	mi/h
Percent time-spent-following, PTSFd (from above)	63.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	478.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.61
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade		% Recreational vehicles	4	%
Grade: Length	0.25	mi	% No-passing zones	20	%
Up/down	3.0	%	Access point density	8	/mi

Analysis direction volume, Vd 424 veh/h
Opposing direction volume, Vo 311 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.950		0.982	
Grade adj. factor,(note-1) fg	0.98		1.00	
Directional flow rate,(note-2) vi	518	pc/h	360	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	49.8	mi/h
Percent Free Flow Speed, PFFS	85.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.994
Grade adjustment factor,(note-1) fg	0.93	1.00
Directional flow rate,(note-2) vi	520 pc/h	356 pc/h

Base percent time-spent-following,(note-4) BPTSFd	49.8	%
Adjustment for no-passing zones, fnp	28.2	
Percent time-spent-following, PTSFd	66.5	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1564	veh/h
Directional Capacity	1564	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.8	mi/h
Percent time-spent-following, PTSFd (from above)	66.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	481.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.62
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade		% Recreational vehicles	4	%
Grade: Length	0.25	mi	% No-passing zones	20	%
Up/down	3.0	%	Access point density	8	/mi

Analysis direction volume, Vd 433 veh/h
Opposing direction volume, Vo 322 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.8		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.952		0.982	
Grade adj. factor,(note-1) fg	0.99		1.00	
Directional flow rate,(note-2) vi	522	pc/h	372	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	49.6	mi/h
Percent Free Flow Speed, PFFS	85.6	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.994
Grade adjustment factor,(note-1) fg	0.92	1.00
Directional flow rate,(note-2) vi	533 pc/h	368 pc/h

Base percent time-spent-following,(note-4) BPTSFd	51.6	%
Adjustment for no-passing zones, fnp	27.9	
Percent time-spent-following, PTSFd	68.1	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1690	veh/h
Capacity from PTSF, CdPTSF	1564	veh/h
Directional Capacity	1564	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.6	mi/h
Percent time-spent-following, PTSFd (from above)	68.1	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	492.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.63
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 510 veh/h
Opposing direction volume, Vo 375 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	583	pc/h	434	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	48.8	mi/h
Percent Free Flow Speed, PFFS	84.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	580 pc/h	426 pc/h

Base percent time-spent-following,(note-4) BPTSFd	54.2	%
Adjustment for no-passing zones, fnp	26.0	
Percent time-spent-following, PTSFd	69.2	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.8	mi/h
Percent time-spent-following, PTSFd (from above)	69.2	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	579.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.71
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 519 veh/h
Opposing direction volume, Vo 386 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	593	pc/h	447	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	48.6	mi/h
Percent Free Flow Speed, PFFS	83.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	590 pc/h	439 pc/h

Base percent time-spent-following,(note-4) BPTSFd	55.6	%
Adjustment for no-passing zones, fnp	25.7	
Percent time-spent-following, PTSFd	70.3	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.6	mi/h
Percent time-spent-following, PTSFd (from above)	70.3	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	589.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.72
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2042+Project
Jurisdiction	Kern	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	519	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	197
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.09

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	3.0
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 385 veh/h
Opposing direction volume, Vo 288 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.982		0.977	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	446	pc/h	335	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	50.5	mi/h
Percent Free Flow Speed, PFFS	87.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	438 pc/h	329 pc/h

Base percent time-spent-following,(note-4) BPTSFd	44.1	%
Adjustment for no-passing zones, fnp	31.0	
Percent time-spent-following, PTSFd	61.8	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.5	mi/h
Percent time-spent-following, PTSFd (from above)	61.8	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	437.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.57
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 405 veh/h
Opposing direction volume, Vo 297 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.977	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	466	pc/h	345	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	50.2	mi/h
Percent Free Flow Speed, PFFS	86.6	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	460 pc/h	340 pc/h

Base percent time-spent-following,(note-4) BPTSFd	46.7	%
Adjustment for no-passing zones, fnp	29.5	
Percent time-spent-following, PTSFd	63.7	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.2	mi/h
Percent time-spent-following, PTSFd (from above)	63.7	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	460.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.59
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 397 veh/h
Opposing direction volume, Vo 297 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.977	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	457	pc/h	345	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	50.3	mi/h
Percent Free Flow Speed, PFFS	86.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	451 pc/h	340 pc/h

Base percent time-spent-following,(note-4) BPTSFd	46.1	%
Adjustment for no-passing zones, fnp	30.1	
Percent time-spent-following, PTSFd	63.3	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.3	mi/h
Percent time-spent-following, PTSFd (from above)	63.3	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	451.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.58
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 417 veh/h
Opposing direction volume, Vo 306 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.977	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	480	pc/h	356	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	50.1	mi/h
Percent Free Flow Speed, PFFS	86.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	474 pc/h	350 pc/h

Base percent time-spent-following,(note-4) BPTSFd	47.0	%
Adjustment for no-passing zones, fnp	29.1	
Percent time-spent-following, PTSFd	63.7	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.1	mi/h
Percent time-spent-following, PTSFd (from above)	63.7	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	473.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.61
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 478 veh/h
Opposing direction volume, Vo 357 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	550	pc/h	413	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	49.2	mi/h
Percent Free Flow Speed, PFFS	84.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	543 pc/h	406 pc/h

Base percent time-spent-following,(note-4) BPTSFd	51.6	%
Adjustment for no-passing zones, fnp	27.1	
Percent time-spent-following, PTSFd	67.1	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.2	mi/h
Percent time-spent-following, PTSFd (from above)	67.1	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	543.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.68
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	AM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 498 veh/h
Opposing direction volume, Vo 366 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.982	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	569	pc/h	424	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	49.0	mi/h
Percent Free Flow Speed, PFFS	84.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	566 pc/h	416 pc/h

Base percent time-spent-following,(note-4) BPTSFd	54.1	%
Adjustment for no-passing zones, fnp	26.4	
Percent time-spent-following, PTSFd	69.3	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.0	mi/h
Percent time-spent-following, PTSFd (from above)	69.3	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	565.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.70
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2042+Project
Jurisdiction	Kern	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	498	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	189
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.08

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	2.9
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 209 veh/h
Opposing direction volume, Vo 152 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.971		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	245	pc/h	179	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	53.2	mi/h
Percent Free Flow Speed, PFFS	91.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	239 pc/h	174 pc/h

Base percent time-spent-following,(note-4) BPTSFd	25.1	%
Adjustment for no-passing zones, fnp	37.1	
Percent time-spent-following, PTSFd	46.6	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	53.2	mi/h
Percent time-spent-following, PTSFd (from above)	46.6	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	237.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.26
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 252 veh/h
Opposing direction volume, Vo 152 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	293	pc/h	179	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	52.8	mi/h
Percent Free Flow Speed, PFFS	91.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	288 pc/h	174 pc/h

Base percent time-spent-following,(note-4) BPTSFd	29.3	%
Adjustment for no-passing zones, fnp	35.0	
Percent time-spent-following, PTSFd	51.1	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	52.8	mi/h
Percent time-spent-following, PTSFd (from above)	51.1	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	286.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.35
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 215 veh/h
Opposing direction volume, Vo 157 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.971		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	252	pc/h	185	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.6	mi/h
Average travel speed, ATSd	53.0	mi/h
Percent Free Flow Speed, PFFS	91.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	246 pc/h	179 pc/h

Base percent time-spent-following,(note-4) BPTSFd	25.7	%
Adjustment for no-passing zones, fnp	37.2	
Percent time-spent-following, PTSFd	47.2	%

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	53.0	mi/h
Percent time-spent-following, PTSFd (from above)	47.2	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	244.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.27
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 258 veh/h
Opposing direction volume, Vo 157 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	300	pc/h	185	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.6	mi/h
Average travel speed, ATSd	52.7	mi/h
Percent Free Flow Speed, PFFS	90.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	295 pc/h	179 pc/h

Base percent time-spent-following,(note-4) BPTSFd	29.8	%
Adjustment for no-passing zones, fnp	35.1	
Percent time-spent-following, PTSFd	51.6	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	52.7	mi/h
Percent time-spent-following, PTSFd (from above)	51.6	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	293.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.36
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 259 veh/h
Opposing direction volume, Vo 188 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		0.971	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	301	pc/h	220	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.7	mi/h
Average travel speed, ATSd	52.3	mi/h
Percent Free Flow Speed, PFFS	90.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	296 pc/h	215 pc/h

Base percent time-spent-following,(note-4) BPTSFd	31.1	%
Adjustment for no-passing zones, fnp	37.1	
Percent time-spent-following, PTSFd	52.6	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	52.3	mi/h
Percent time-spent-following, PTSFd (from above)	52.6	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	294.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.37
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB Offramp/South H St.
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 302 veh/h
Opposing direction volume, Vo 188 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.977		0.971	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	351	pc/h	220	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.7	mi/h
Average travel speed, ATSd	51.9	mi/h
Percent Free Flow Speed, PFFS	89.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.994
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	345 pc/h	215 pc/h

Base percent time-spent-following,(note-4) BPTSFd	35.1	%
Adjustment for no-passing zones, fnp	35.8	
Percent time-spent-following, PTSFd	57.2	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	51.9	mi/h
Percent time-spent-following, PTSFd (from above)	57.2	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	343.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.44
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB Onramp
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 400 veh/h
Opposing direction volume, Vo 944 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	460	pc/h	1073	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	45.6	mi/h
Percent Free Flow Speed, PFFS	78.6	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	455 pc/h	1073 pc/h

Base percent time-spent-following,(note-4) BPTSFd	55.5	%
Adjustment for no-passing zones, fnp	13.5	
Percent time-spent-following, PTSFd	59.5	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.6	mi/h
Percent time-spent-following, PTSFd (from above)	59.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	454.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.59
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB Onramp
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 451 veh/h
Opposing direction volume, Vo 998 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	519	pc/h	1134	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	44.7	mi/h
Percent Free Flow Speed, PFFS	77.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	513 pc/h	1134 pc/h

Base percent time-spent-following,(note-4) BPTSFd	59.4	%
Adjustment for no-passing zones, fnp	13.0	
Percent time-spent-following, PTSFd	63.4	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.7	mi/h
Percent time-spent-following, PTSFd (from above)	63.4	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	512.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.65
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2023 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	412	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	156
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.07

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	2.4
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB Onramp
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 412 veh/h
Opposing direction volume, Vo 972 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	474	pc/h	1105	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	45.2	mi/h
Percent Free Flow Speed, PFFS	78.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	468 pc/h	1105 pc/h

Base percent time-spent-following,(note-4) BPTSFd	56.8	%
Adjustment for no-passing zones, fnp	13.1	
Percent time-spent-following, PTSFd	60.7	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.2	mi/h
Percent time-spent-following, PTSFd (from above)	60.7	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	468.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.60
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB Onramp
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 463 veh/h
Opposing direction volume, Vo 1026 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	533	pc/h	1166	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	44.3	mi/h
Percent Free Flow Speed, PFFS	76.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	526 pc/h	1166 pc/h

Base percent time-spent-following,(note-4) BPTSFd	60.8	%
Adjustment for no-passing zones, fnp	12.7	
Percent time-spent-following, PTSFd	64.7	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.3	mi/h
Percent time-spent-following, PTSFd (from above)	64.7	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	526.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.66
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB Onramp
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 496 veh/h
Opposing direction volume, Vo 1171 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	567	pc/h	1331	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	42.8	mi/h
Percent Free Flow Speed, PFFS	73.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	564 pc/h	1331 pc/h

Base percent time-spent-following,(note-4) BPTSFd	64.7	%
Adjustment for no-passing zones, fnp	10.5	
Percent time-spent-following, PTSFd	67.8	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	42.8	mi/h
Percent time-spent-following, PTSFd (from above)	67.8	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	563.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.70
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 NB onramp/SB Onramp
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 547 veh/h
Opposing direction volume, Vo 1225 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	625	pc/h	1392	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	41.8	mi/h
Percent Free Flow Speed, PFFS	72.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	622 pc/h	1392 pc/h

Base percent time-spent-following,(note-4) BPTSFd	68.0	%
Adjustment for no-passing zones, fnp	10.0	
Percent time-spent-following, PTSFd	71.1	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.8	mi/h
Percent time-spent-following, PTSFd (from above)	71.1	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	621.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.75
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2042 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	547	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	207
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.09

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	3.2
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 385 veh/h
Opposing direction volume, Vo 992 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.982	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	446 pc/h	1127 pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	45.3	mi/h
Percent Free Flow Speed, PFFS	78.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	438 pc/h	1127 pc/h

Base percent time-spent-following,(note-4) BPTSFd	54.6	%
Adjustment for no-passing zones, fnp	12.5	
Percent time-spent-following, PTSFd	58.1	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.3	mi/h
Percent time-spent-following, PTSFd (from above)	58.1	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	437.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.57
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 436 veh/h
Opposing direction volume, Vo 1089 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	501	pc/h	1238	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	44.0	mi/h
Percent Free Flow Speed, PFFS	75.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	495 pc/h	1238 pc/h

Base percent time-spent-following,(note-4) BPTSFd	59.9	%
Adjustment for no-passing zones, fnp	11.4	
Percent time-spent-following, PTSFd	63.2	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.0	mi/h
Percent time-spent-following, PTSFd (from above)	63.2	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	495.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.63
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2023 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	448	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	170
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.07

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	2.6
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 397 veh/h
Opposing direction volume, Vo 1021 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	457	pc/h	1160	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	44.9	mi/h
Percent Free Flow Speed, PFFS	77.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	451 pc/h	1160 pc/h

Base percent time-spent-following,(note-4) BPTSFd	56.2	%
Adjustment for no-passing zones, fnp	12.1	
Percent time-spent-following, PTSFd	59.6	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.9	mi/h
Percent time-spent-following, PTSFd (from above)	59.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	451.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.58
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 448 veh/h
Opposing direction volume, Vo 1118 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	515	pc/h	1270	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	43.6	mi/h
Percent Free Flow Speed, PFFS	75.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	509 pc/h	1270 pc/h

Base percent time-spent-following,(note-4) BPTSFd	60.7	%
Adjustment for no-passing zones, fnp	11.0	
Percent time-spent-following, PTSFd	63.8	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	43.6	mi/h
Percent time-spent-following, PTSFd (from above)	63.8	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	509.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.64
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 477 veh/h
Opposing direction volume, Vo 1231 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	549	pc/h	1399	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	42.4	mi/h
Percent Free Flow Speed, PFFS	73.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	542 pc/h	1399 pc/h

Base percent time-spent-following,(note-4) BPTSFd	63.9	%
Adjustment for no-passing zones, fnp	9.6	
Percent time-spent-following, PTSFd	66.6	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	42.4	mi/h
Percent time-spent-following, PTSFd (from above)	66.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	542.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.68
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	99 SB Onramp/Compagnoni St
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 528 veh/h
Opposing direction volume, Vo 1328 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	604	pc/h	1509	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	41.1	mi/h
Percent Free Flow Speed, PFFS	70.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	600 pc/h	1509 pc/h

Base percent time-spent-following,(note-4) BPTSFd	67.7	%
Adjustment for no-passing zones, fnp	9.3	
Percent time-spent-following, PTSFd	70.3	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.1	mi/h
Percent time-spent-following, PTSFd (from above)	70.3	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	600.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.73
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2042 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	528	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	200
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.09

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	3.1
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
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Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB Onramp
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 667 veh/h
Opposing direction volume, Vo 729 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	763	pc/h	833	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	45.1	mi/h
Percent Free Flow Speed, PFFS	77.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	758 pc/h	828 pc/h

Base percent time-spent-following,(note-4) BPTSFd	68.2	%
Adjustment for no-passing zones, fnp	17.8	
Percent time-spent-following, PTSFd	76.7	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.1	mi/h
Percent time-spent-following, PTSFd (from above)	76.7	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	758.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.85
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB Onramp
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 718 veh/h
Opposing direction volume, Vo 740 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	821	pc/h	846	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	44.5	mi/h
Percent Free Flow Speed, PFFS	76.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	816 pc/h	841 pc/h

Base percent time-spent-following,(note-4) BPTSFd	70.4	%
Adjustment for no-passing zones, fnp	17.2	
Percent time-spent-following, PTSFd	78.9	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.5	mi/h
Percent time-spent-following, PTSFd (from above)	78.9	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	815.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.88
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2023 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	738	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	280
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.12

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	4.3
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB Onramp
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 687 veh/h
Opposing direction volume, Vo 751 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	785	pc/h	853	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	44.7	mi/h
Percent Free Flow Speed, PFFS	77.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	781 pc/h	853 pc/h

Base percent time-spent-following,(note-4) BPTSFd	69.1	%
Adjustment for no-passing zones, fnp	17.3	
Percent time-spent-following, PTSFd	77.4	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.7	mi/h
Percent time-spent-following, PTSFd (from above)	77.4	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	780.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.86
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB Onramp
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 738 veh/h
Opposing direction volume, Vo 762 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	844	pc/h	866	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	44.2	mi/h
Percent Free Flow Speed, PFFS	76.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	839 pc/h	866 pc/h

Base percent time-spent-following,(note-4) BPTSFd	71.2	%
Adjustment for no-passing zones, fnp	16.7	
Percent time-spent-following, PTSFd	79.4	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.2	mi/h
Percent time-spent-following, PTSFd (from above)	79.4	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	838.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.90
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB Onramp
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 827 veh/h
Opposing direction volume, Vo 903 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	940	pc/h	1026	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	42.2	mi/h
Percent Free Flow Speed, PFFS	72.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	940 pc/h	1026 pc/h

Base percent time-spent-following,(note-4) BPTSFd	76.5	%
Adjustment for no-passing zones, fnp	13.9	
Percent time-spent-following, PTSFd	83.1	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.55	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	42.2	mi/h
Percent time-spent-following, PTSFd (from above)	83.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	939.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.96
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	South H/99 NB Onramp
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 878 veh/h
Opposing direction volume, Vo 914 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.0	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		1.000	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	998	pc/h	1039	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.5	mi/h
Average travel speed, ATSd	41.6	mi/h
Percent Free Flow Speed, PFFS	71.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	998 pc/h	1039 pc/h

Base percent time-spent-following,(note-4) BPTSFd	78.2	%
Adjustment for no-passing zones, fnp	13.2	
Percent time-spent-following, PTSFd	84.7	%

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.59	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	41.6	mi/h
Percent time-spent-following, PTSFd (from above)	84.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	997.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.99
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2042 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	878	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	333
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.14

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	5.1
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 429 veh/h
Opposing direction volume, Vo 577 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	493	pc/h	660	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	48.2	mi/h
Percent Free Flow Speed, PFFS	83.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	488 pc/h	656 pc/h

Base percent time-spent-following,(note-4) BPTSFd	52.2	%
Adjustment for no-passing zones, fnp	23.7	
Percent time-spent-following, PTSFd	62.3	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.2	mi/h
Percent time-spent-following, PTSFd (from above)	62.3	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	487.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.62
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 437 veh/h
Opposing direction volume, Vo 588 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	503	pc/h	672	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	48.0	mi/h
Percent Free Flow Speed, PFFS	82.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	497 pc/h	668 pc/h

Base percent time-spent-following,(note-4) BPTSFd	53.1	%
Adjustment for no-passing zones, fnp	23.3	
Percent time-spent-following, PTSFd	63.0	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.0	mi/h
Percent time-spent-following, PTSFd (from above)	63.0	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	496.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.63
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 442 veh/h
Opposing direction volume, Vo 595 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	508	pc/h	680	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	47.9	mi/h
Percent Free Flow Speed, PFFS	82.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	502 pc/h	676 pc/h

Base percent time-spent-following,(note-4) BPTSFd	54.1	%
Adjustment for no-passing zones, fnp	23.1	
Percent time-spent-following, PTSFd	63.9	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.9	mi/h
Percent time-spent-following, PTSFd (from above)	63.9	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	502.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.64
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 450 veh/h
Opposing direction volume, Vo 606 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	518	pc/h	693	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.8	mi/h
Average travel speed, ATSd	47.8	mi/h
Percent Free Flow Speed, PFFS	82.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	511 pc/h	689 pc/h

Base percent time-spent-following,(note-4) BPTSFd	54.2	%
Adjustment for no-passing zones, fnp	22.7	
Percent time-spent-following, PTSFd	63.9	%

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.8	mi/h
Percent time-spent-following, PTSFd (from above)	63.9	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	511.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.65
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2023 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	450	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	170
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.07

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	2.6
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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HCS7: Two-Lane Highways Release 7.1

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 715 veh/h
Opposing direction volume, Vo 532 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	817	pc/h	608	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	45.9	mi/h
Percent Free Flow Speed, PFFS	79.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	813 pc/h	605 pc/h

Base percent time-spent-following,(note-4) BPTSFd	67.2	%
Adjustment for no-passing zones, fnp	19.0	
Percent time-spent-following, PTSFd	78.1	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.9	mi/h
Percent time-spent-following, PTSFd (from above)	78.1	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	812.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.88
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Union Ave/South H St
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 540 veh/h
Opposing direction volume, Vo 726 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	617	pc/h	830	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	46.2	mi/h
Percent Free Flow Speed, PFFS	79.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	614 pc/h	825 pc/h

Base percent time-spent-following,(note-4) BPTSFd	60.9	%
Adjustment for no-passing zones, fnp	18.8	
Percent time-spent-following, PTSFd	68.9	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.2	mi/h
Percent time-spent-following, PTSFd (from above)	68.9	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	613.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.74
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2042 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	540	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	205
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.09

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	3.2
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 538 veh/h
Opposing direction volume, Vo 541 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	615	pc/h	618	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	47.5	mi/h
Percent Free Flow Speed, PFFS	81.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	611 pc/h	615 pc/h

Base percent time-spent-following,(note-4) BPTSFd	58.7	%
Adjustment for no-passing zones, fnp	24.0	
Percent time-spent-following, PTSFd	70.7	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.5	mi/h
Percent time-spent-following, PTSFd (from above)	70.7	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	611.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.74
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2020
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 549 veh/h
Opposing direction volume, Vo 549 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	628	pc/h	628	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.0	mi/h
Average travel speed, ATSd	47.3	mi/h
Percent Free Flow Speed, PFFS	81.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	624 pc/h	624 pc/h

Base percent time-spent-following,(note-4) BPTSFd	59.2	%
Adjustment for no-passing zones, fnp	23.5	
Percent time-spent-following, PTSFd	70.9	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.3	mi/h
Percent time-spent-following, PTSFd (from above)	70.9	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	623.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.75
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 555 veh/h
Opposing direction volume, Vo 558 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	634	pc/h	638	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	47.2	mi/h
Percent Free Flow Speed, PFFS	81.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	631 pc/h	634 pc/h

Base percent time-spent-following,(note-4) BPTSFd	60.1	%
Adjustment for no-passing zones, fnp	23.1	
Percent time-spent-following, PTSFd	71.6	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.2	mi/h
Percent time-spent-following, PTSFd (from above)	71.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	630.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.75
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2023
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 566 veh/h
Opposing direction volume, Vo 566 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	647	pc/h	647	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.9	mi/h
Average travel speed, ATSd	47.0	mi/h
Percent Free Flow Speed, PFFS	81.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	643 pc/h	643 pc/h

Base percent time-spent-following,(note-4) BPTSFd	61.3	%
Adjustment for no-passing zones, fnp	22.6	
Percent time-spent-following, PTSFd	72.6	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.0	mi/h
Percent time-spent-following, PTSFd (from above)	72.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	643.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.76
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2023 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	566	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	214
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.09

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	3.3
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 668 veh/h
Opposing direction volume, Vo 671 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	764	pc/h	767	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	45.5	mi/h
Percent Free Flow Speed, PFFS	78.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	759 pc/h	763 pc/h

Base percent time-spent-following,(note-4) BPTSFd	67.7	%
Adjustment for no-passing zones, fnp	18.7	
Percent time-spent-following, PTSFd	77.0	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.5	mi/h
Percent time-spent-following, PTSFd (from above)	77.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	759.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.85
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	DMBR
Agency/Co.	LAVPinnacle
Date Performed	4/6/2021
Analysis Time Period	PM Peak Hours
Highway	Taft Hwy
From/To	Wible Rd/Compagnoni st
Jurisdiction	Kern
Analysis Year	2042
Description	TIS Taft Hwy

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.88	
Shoulder width	6.0	ft	% Trucks and buses	6	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	4	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 679 veh/h
Opposing direction volume, Vo 679 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.994		0.994	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	776	pc/h	776	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	45.3	mi/h
Percent Free Flow Speed, PFFS	78.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	772 pc/h	772 pc/h

Base percent time-spent-following,(note-4) BPTSFd	67.7	%
Adjustment for no-passing zones, fnp	18.5	
Percent time-spent-following, PTSFd	76.9	%

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	0	veh-mi
Peak-hour vehicle-miles of travel, VMT60	0	veh-mi
Peak 15-min total travel time, TT15	0.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.3	mi/h
Percent time-spent-following, PTSFd (from above)	76.9	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	
Percent free flow speed including passing lane, PFFSpl	0.0	%

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	E	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	55
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	771.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.79
Bicycle LOS Score, BLOS	3.86
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific dewngrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

HCS7 Multilane Highway Report

Project Information

Analyst	DMBR	Date	4/19/2021
Agency	LAV Pinnacle	Analysis Year	2042 + Project
Jurisdiction	Kern	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Direction 1 Geometric Data

Direction 1 Description	West		
Number of Lanes (N), ln	3	Terrain Type	Level
Segment Length (L), ft	5280	Percent Grade, %	-
Measured or Base Free-Flow Speed	Base	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Right-Side Lateral Clearance (LC_R), ft	6
Lane Width, ft	12	Left-Side Lateral Clearance (LC_L), ft	6
Median Type	Divided	Total Lateral Clearance (TLC), ft	12.00
Access Point Density, pts/mi	0.0	Free-Flow Speed (FFS), mi/h	65.0

Direction 1 Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Driver Population SAF	1.000	Final Capacity Adjustment Factor (CAF)	1.000
Driver Population CAF	1.000		

Direction 1 Demand and Capacity

Volume (V), veh/h	679	Heavy Vehicle Adjustment Factor (f_{HV})	1.000
Peak Hour Factor (PHF)	0.88	Flow Rate (v_p), pc/h/ln	257
Total Trucks, %	0.00	Capacity (c), pc/h/ln	2300
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (c_{adj}), pc/h/ln	2300
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.11

Direction 1 Speed and Density

Lane Width Adjustment (f_{LW})	0.0	Average Speed (S), mi/h	65.0
Total Lateral Clearance Adj. (f_{TLC})	0.0	Density (D), pc/mi/ln	4.0
Median Type Adjustment (f_M)	0.0	Level of Service (LOS)	A
Access Point Density Adjustment (f_A)	0.0		

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Ramps

HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	26
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	30
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.02

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.431
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1025
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.678	Off-Ramp Influence Area Speed (S_R), mi/h	61.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	2189	Outer Lanes Freeway Speed (S_O), mi/h	82.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.6
Density in Ramp Influence Area (D_R), pc/mi/ln	19.5	Average Density (D), pc/mi/ln	16.1

Level of Service (LOS)	B		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	74
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	84
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.04

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.436
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1014
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.676	Off-Ramp Influence Area Speed (S_R), mi/h	60.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	2200	Outer Lanes Freeway Speed (S_O), mi/h	82.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.3
Density in Ramp Influence Area (D_R), pc/mi/ln	19.6	Average Density (D), pc/mi/ln	16.2

Level of Service (LOS)	B		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	27
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	31
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.02

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.431
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1048
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.677	Off-Ramp Influence Area Speed (S_R), mi/h	61.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	2229	Outer Lanes Freeway Speed (S_O), mi/h	82.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.5
Density in Ramp Influence Area (D_R), pc/mi/ln	19.8	Average Density (D), pc/mi/ln	16.4

Level of Service (LOS)	B		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	75
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	85
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.04

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.436
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1041
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.674	Off-Ramp Influence Area Speed (S_R), mi/h	60.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	2236	Outer Lanes Freeway Speed (S_O), mi/h	82.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.4
Density in Ramp Influence Area (D_R), pc/mi/ln	19.9	Average Density (D), pc/mi/ln	16.5

Level of Service (LOS)	B		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	33
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	38
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.55	0.02

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.431
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1328
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.660	Off-Ramp Influence Area Speed (S_R), mi/h	61.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	2617	Outer Lanes Freeway Speed (S_O), mi/h	81.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.6
Density in Ramp Influence Area (D_R), pc/mi/ln	23.2	Average Density (D), pc/mi/ln	19.7

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	81
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	92
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.55	0.05

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.436
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1322
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.657	Off-Ramp Influence Area Speed (S_R), mi/h	60.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	2623	Outer Lanes Freeway Speed (S_O), mi/h	81.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.5
Density in Ramp Influence Area (D_R), pc/mi/ln	23.2	Average Density (D), pc/mi/ln	19.8

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	362
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	411
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.21

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.465
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1023
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.656	Off-Ramp Influence Area Speed (S_R), mi/h	59.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	2363	Outer Lanes Freeway Speed (S_O), mi/h	82.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.3
Density in Ramp Influence Area (D_R), pc/mi/ln	21.0	Average Density (D), pc/mi/ln	17.3

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	409
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	465
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.23

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.470
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1011
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.654	Off-Ramp Influence Area Speed (S_R), mi/h	59.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	2375	Outer Lanes Freeway Speed (S_O), mi/h	82.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.1
Density in Ramp Influence Area (D_R), pc/mi/ln	21.1	Average Density (D), pc/mi/ln	17.3

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	372
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	423
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.48	0.21

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.466
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1048
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.654	Off-Ramp Influence Area Speed (S_R), mi/h	59.8
Flow in Lanes 1 and 2 (v_{12}), pc/h	2405	Outer Lanes Freeway Speed (S_O), mi/h	82.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.2
Density in Ramp Influence Area (D_R), pc/mi/ln	21.3	Average Density (D), pc/mi/ln	17.7

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	419
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	476
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.48	0.24

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.471
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1036
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.652	Off-Ramp Influence Area Speed (S_R), mi/h	59.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	2417	Outer Lanes Freeway Speed (S_O), mi/h	82.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.1
Density in Ramp Influence Area (D_R), pc/mi/ln	21.4	Average Density (D), pc/mi/ln	17.7

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	448
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	509
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.58	0.25

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.474
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1339
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.633	Off-Ramp Influence Area Speed (S_R), mi/h	59.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2818	Outer Lanes Freeway Speed (S_O), mi/h	81.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.2
Density in Ramp Influence Area (D_R), pc/mi/ln	24.9	Average Density (D), pc/mi/ln	21.3

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	495
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	562
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.58	0.28

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.479
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1330
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.630	Off-Ramp Influence Area Speed (S_R), mi/h	59.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2827	Outer Lanes Freeway Speed (S_O), mi/h	81.4
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	65.0
Density in Ramp Influence Area (D_R), pc/mi/ln	25.0	Average Density (D), pc/mi/ln	21.3

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	115
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	131
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.07

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.440
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1005
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.674	Off-Ramp Influence Area Speed (S_R), mi/h	60.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	2209	Outer Lanes Freeway Speed (S_O), mi/h	82.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.2
Density in Ramp Influence Area (D_R), pc/mi/ln	19.6	Average Density (D), pc/mi/ln	16.2

Level of Service (LOS)	B		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	158
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	180
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.09

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.444
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	998
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.671	Off-Ramp Influence Area Speed (S_R), mi/h	60.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2216	Outer Lanes Freeway Speed (S_O), mi/h	82.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.1
Density in Ramp Influence Area (D_R), pc/mi/ln	19.7	Average Density (D), pc/mi/ln	16.2

Level of Service (LOS)	B		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	118
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	134
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.07

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.440
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1031
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.672	Off-Ramp Influence Area Speed (S_R), mi/h	60.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	2246	Outer Lanes Freeway Speed (S_O), mi/h	82.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.2
Density in Ramp Influence Area (D_R), pc/mi/ln	20.0	Average Density (D), pc/mi/ln	16.5

Level of Service (LOS)	B		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	161
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	183
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.09

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.444
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1021
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.670	Off-Ramp Influence Area Speed (S_R), mi/h	60.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2256	Outer Lanes Freeway Speed (S_O), mi/h	82.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.1
Density in Ramp Influence Area (D_R), pc/mi/ln	20.1	Average Density (D), pc/mi/ln	16.5

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	142
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	161
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.55	0.08

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.442
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1309
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.654	Off-Ramp Influence Area Speed (S_R), mi/h	60.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2636	Outer Lanes Freeway Speed (S_O), mi/h	81.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.2
Density in Ramp Influence Area (D_R), pc/mi/ln	23.3	Average Density (D), pc/mi/ln	19.9

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	185
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	210
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.55	0.10

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.447
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1300
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.652	Off-Ramp Influence Area Speed (S_R), mi/h	60.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	2645	Outer Lanes Freeway Speed (S_O), mi/h	81.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	66.1
Density in Ramp Influence Area (D_R), pc/mi/ln	23.4	Average Density (D), pc/mi/ln	19.9

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	556
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	632
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.32

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.485
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	975
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.646	Off-Ramp Influence Area Speed (S_R), mi/h	59.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2411	Outer Lanes Freeway Speed (S_O), mi/h	82.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	64.5
Density in Ramp Influence Area (D_R), pc/mi/ln	21.4	Average Density (D), pc/mi/ln	17.5

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	598
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	680
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.34

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.489
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	963
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.644	Off-Ramp Influence Area Speed (S_R), mi/h	59.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2423	Outer Lanes Freeway Speed (S_O), mi/h	82.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	64.3
Density in Ramp Influence Area (D_R), pc/mi/ln	21.5	Average Density (D), pc/mi/ln	17.6

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	572
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	650
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.48	0.32

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.487
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	998
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.644	Off-Ramp Influence Area Speed (S_R), mi/h	59.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2455	Outer Lanes Freeway Speed (S_O), mi/h	82.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	64.4
Density in Ramp Influence Area (D_R), pc/mi/ln	21.8	Average Density (D), pc/mi/ln	17.9

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	614
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	698
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.48	0.35

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.491
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	986
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.642	Off-Ramp Influence Area Speed (S_R), mi/h	59.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	2467	Outer Lanes Freeway Speed (S_O), mi/h	82.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	64.3
Density in Ramp Influence Area (D_R), pc/mi/ln	21.9	Average Density (D), pc/mi/ln	17.9

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	690
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	784
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.58	0.39

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.499
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1282
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.620	Off-Ramp Influence Area Speed (S_R), mi/h	58.7
Flow in Lanes 1 and 2 (v_{12}), pc/h	2875	Outer Lanes Freeway Speed (S_O), mi/h	81.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	64.3
Density in Ramp Influence Area (D_R), pc/mi/ln	25.4	Average Density (D), pc/mi/ln	21.6

Level of Service (LOS)	C		

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HCS7 Freeway Diverge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Deceleration Length (L_D), ft	1500	400
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	732
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	832
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.58	0.42

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (D_S)	0.503
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1270
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FD})	0.618	Off-Ramp Influence Area Speed (S_R), mi/h	58.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2887	Outer Lanes Freeway Speed (S_O), mi/h	81.7
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	-	Ramp Junction Speed (S), mi/h	64.1
Density in Ramp Influence Area (D_R), pc/mi/ln	25.5	Average Density (D), pc/mi/ln	21.6

Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	207
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	235
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.50	0.12

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.303
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1354
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2032	Outer Lanes Freeway Speed (S_O), mi/h	72.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2267	Ramp Junction Speed (S), mi/h	67.8
Density in Ramp Influence Area (D_R), pc/mi/ln	18.1	Average Density (D), pc/mi/ln	17.8

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	207
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	235
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.50	0.12

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.303
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1354
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2032	Outer Lanes Freeway Speed (S_O), mi/h	72.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2267	Ramp Junction Speed (S), mi/h	67.8
Density in Ramp Influence Area (D_R), pc/mi/ln	18.1	Average Density (D), pc/mi/ln	17.8

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	213
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	242
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.51	0.12

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.304
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1381
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2072	Outer Lanes Freeway Speed (S_O), mi/h	72.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2314	Ramp Junction Speed (S), mi/h	67.7
Density in Ramp Influence Area (D_R), pc/mi/ln	18.5	Average Density (D), pc/mi/ln	18.2

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	213
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	242
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.51	0.12

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.304
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1381
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2072	Outer Lanes Freeway Speed (S_O), mi/h	72.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2314	Ramp Junction Speed (S), mi/h	67.7
Density in Ramp Influence Area (D_R), pc/mi/ln	18.5	Average Density (D), pc/mi/ln	18.2

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	257
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	292
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.62	0.15

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.328
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1663
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	64.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2494	Outer Lanes Freeway Speed (S_O), mi/h	71.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2786	Ramp Junction Speed (S), mi/h	66.8
Density in Ramp Influence Area (D_R), pc/mi/ln	22.1	Average Density (D), pc/mi/ln	22.2

Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	257
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	292
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.62	0.15

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.328
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1663
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	64.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2494	Outer Lanes Freeway Speed (S_O), mi/h	71.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2786	Ramp Junction Speed (S), mi/h	66.8
Density in Ramp Influence Area (D_R), pc/mi/ln	22.1	Average Density (D), pc/mi/ln	22.2

Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	148
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	168
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.49	0.08

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.300
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1354
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2032	Outer Lanes Freeway Speed (S_O), mi/h	72.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2200	Ramp Junction Speed (S), mi/h	67.9
Density in Ramp Influence Area (D_R), pc/mi/ln	17.6	Average Density (D), pc/mi/ln	17.4

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	195
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	222
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.50	0.11

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.302
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1354
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2032	Outer Lanes Freeway Speed (S_O), mi/h	72.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2254	Ramp Junction Speed (S), mi/h	67.8
Density in Ramp Influence Area (D_R), pc/mi/ln	18.0	Average Density (D), pc/mi/ln	17.7

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	152
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	173
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.50	0.09

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.302
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1381
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2072	Outer Lanes Freeway Speed (S_O), mi/h	72.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2245	Ramp Junction Speed (S), mi/h	67.8
Density in Ramp Influence Area (D_R), pc/mi/ln	18.0	Average Density (D), pc/mi/ln	17.8

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	199
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	226
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.51	0.11

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.304
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1381
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2072	Outer Lanes Freeway Speed (S_O), mi/h	72.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2298	Ramp Junction Speed (S), mi/h	67.7
Density in Ramp Influence Area (D_R), pc/mi/ln	18.4	Average Density (D), pc/mi/ln	18.1

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	184
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	209
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.61	0.10

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.323
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1663
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	64.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	2494	Outer Lanes Freeway Speed (S_O), mi/h	71.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2703	Ramp Junction Speed (S), mi/h	67.0
Density in Ramp Influence Area (D_R), pc/mi/ln	21.5	Average Density (D), pc/mi/ln	21.7

Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	231
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	262
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.61	0.13

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.326
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1663
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	64.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	2494	Outer Lanes Freeway Speed (S_O), mi/h	71.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2756	Ramp Junction Speed (S), mi/h	66.9
Density in Ramp Influence Area (D_R), pc/mi/ln	21.9	Average Density (D), pc/mi/ln	22.0

Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	17
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	19
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.292
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1286
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1928	Outer Lanes Freeway Speed (S_O), mi/h	72.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1947	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	15.7	Average Density (D), pc/mi/ln	15.8

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	17
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	19
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.292
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1286
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1928	Outer Lanes Freeway Speed (S_O), mi/h	72.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1947	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	15.7	Average Density (D), pc/mi/ln	15.8

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	18
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	20
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.293
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1966	Outer Lanes Freeway Speed (S_O), mi/h	72.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1986	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	16.0	Average Density (D), pc/mi/ln	16.1

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	18
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	20
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.293
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1966	Outer Lanes Freeway Speed (S_O), mi/h	72.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1986	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	16.0	Average Density (D), pc/mi/ln	16.1

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	21
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	24
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.55	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.308
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1578
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2367	Outer Lanes Freeway Speed (S_O), mi/h	71.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2391	Ramp Junction Speed (S), mi/h	67.5
Density in Ramp Influence Area (D_R), pc/mi/ln	19.2	Average Density (D), pc/mi/ln	19.6

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	21
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	24
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.55	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.308
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1578
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2367	Outer Lanes Freeway Speed (S_O), mi/h	71.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2391	Ramp Junction Speed (S), mi/h	67.5
Density in Ramp Influence Area (D_R), pc/mi/ln	19.2	Average Density (D), pc/mi/ln	19.6

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	64
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	73
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.04

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.295
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	1966	Outer Lanes Freeway Speed (S_O), mi/h	72.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2039	Ramp Junction Speed (S), mi/h	68.1
Density in Ramp Influence Area (D_R), pc/mi/ln	16.4	Average Density (D), pc/mi/ln	16.4

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	111
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	126
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.06

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.297
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	1966	Outer Lanes Freeway Speed (S_O), mi/h	72.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2092	Ramp Junction Speed (S), mi/h	68.0
Density in Ramp Influence Area (D_R), pc/mi/ln	16.8	Average Density (D), pc/mi/ln	16.7

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	77
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	88
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.56	0.04

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.310
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1578
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	2367	Outer Lanes Freeway Speed (S_O), mi/h	71.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2455	Ramp Junction Speed (S), mi/h	67.4
Density in Ramp Influence Area (D_R), pc/mi/ln	19.6	Average Density (D), pc/mi/ln	19.9

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	124
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	141
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.57	0.07

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.313
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1578
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	64.9
Flow in Lanes 1 and 2 (v_{12}), pc/h	2367	Outer Lanes Freeway Speed (S_O), mi/h	71.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2508	Ramp Junction Speed (S), mi/h	67.3
Density in Ramp Influence Area (D_R), pc/mi/ln	20.0	Average Density (D), pc/mi/ln	20.2

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	62
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	70
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.04

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.294
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1286
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1928	Outer Lanes Freeway Speed (S_O), mi/h	72.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1998	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	16.1	Average Density (D), pc/mi/ln	16.1

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	AM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	109
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	124
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.06

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.295
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1286
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	1928	Outer Lanes Freeway Speed (S_O), mi/h	72.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2052	Ramp Junction Speed (S), mi/h	68.1
Density in Ramp Influence Area (D_R), pc/mi/ln	16.5	Average Density (D), pc/mi/ln	16.3

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	267
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	303
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.51	0.15

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.305
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1354
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2032	Outer Lanes Freeway Speed (S_O), mi/h	72.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2335	Ramp Junction Speed (S), mi/h	67.6
Density in Ramp Influence Area (D_R), pc/mi/ln	18.6	Average Density (D), pc/mi/ln	18.2

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	267
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	303
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.51	0.15

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.305
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1354
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2032	Outer Lanes Freeway Speed (S_O), mi/h	72.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2335	Ramp Junction Speed (S), mi/h	67.6
Density in Ramp Influence Area (D_R), pc/mi/ln	18.6	Average Density (D), pc/mi/ln	18.2

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	275
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	312
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.52	0.16

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.307
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1381
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2072	Outer Lanes Freeway Speed (S_O), mi/h	72.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2384	Ramp Junction Speed (S), mi/h	67.5
Density in Ramp Influence Area (D_R), pc/mi/ln	19.0	Average Density (D), pc/mi/ln	18.6

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	275
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	312
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.52	0.16

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.307
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1381
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2072	Outer Lanes Freeway Speed (S_O), mi/h	72.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2384	Ramp Junction Speed (S), mi/h	67.5
Density in Ramp Influence Area (D_R), pc/mi/ln	19.0	Average Density (D), pc/mi/ln	18.6

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	331
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	376
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.63	0.19

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.334
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1663
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	64.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2494	Outer Lanes Freeway Speed (S_O), mi/h	71.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2870	Ramp Junction Speed (S), mi/h	66.6
Density in Ramp Influence Area (D_R), pc/mi/ln	22.7	Average Density (D), pc/mi/ln	22.7

Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	331
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	376
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.63	0.19

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.334
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1663
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	64.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2494	Outer Lanes Freeway Speed (S_O), mi/h	71.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2870	Ramp Junction Speed (S), mi/h	66.6
Density in Ramp Influence Area (D_R), pc/mi/ln	22.7	Average Density (D), pc/mi/ln	22.7

Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	223
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	253
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.51	0.13

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.303
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1354
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2032	Outer Lanes Freeway Speed (S_O), mi/h	72.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2285	Ramp Junction Speed (S), mi/h	67.7
Density in Ramp Influence Area (D_R), pc/mi/ln	18.2	Average Density (D), pc/mi/ln	17.9

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2980	266
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3386	302
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.51	0.15

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.305
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1354
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2032	Outer Lanes Freeway Speed (S_O), mi/h	72.3
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2334	Ramp Junction Speed (S), mi/h	67.6
Density in Ramp Influence Area (D_R), pc/mi/ln	18.6	Average Density (D), pc/mi/ln	18.2

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	230
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	261
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.52	0.13

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.305
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1381
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.2
Flow in Lanes 1 and 2 (v_{12}), pc/h	2072	Outer Lanes Freeway Speed (S_O), mi/h	72.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2333	Ramp Junction Speed (S), mi/h	67.6
Density in Ramp Influence Area (D_R), pc/mi/ln	18.6	Average Density (D), pc/mi/ln	18.3

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3039	273
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3453	310
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.52	0.16

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.307
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1381
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2072	Outer Lanes Freeway Speed (S_O), mi/h	72.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2382	Ramp Junction Speed (S), mi/h	67.5
Density in Ramp Influence Area (D_R), pc/mi/ln	19.0	Average Density (D), pc/mi/ln	18.6

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	277
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	315
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.62	0.16

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.330
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1663
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	64.4
Flow in Lanes 1 and 2 (v_{12}), pc/h	2494	Outer Lanes Freeway Speed (S_O), mi/h	71.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2809	Ramp Junction Speed (S), mi/h	66.8
Density in Ramp Influence Area (D_R), pc/mi/ln	22.3	Average Density (D), pc/mi/ln	22.3

Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3658	320
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	4157	364
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.63	0.18

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.333
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1663
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	64.3
Flow in Lanes 1 and 2 (v_{12}), pc/h	2494	Outer Lanes Freeway Speed (S_O), mi/h	71.2
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2858	Ramp Junction Speed (S), mi/h	66.7
Density in Ramp Influence Area (D_R), pc/mi/ln	22.7	Average Density (D), pc/mi/ln	22.6

Level of Service (LOS)	C		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	12
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	14
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.292
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1286
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1928	Outer Lanes Freeway Speed (S_O), mi/h	72.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1942	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	15.7	Average Density (D), pc/mi/ln	15.8

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	12
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	14
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.292
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1286
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1928	Outer Lanes Freeway Speed (S_O), mi/h	72.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1942	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	15.7	Average Density (D), pc/mi/ln	15.8

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	12
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	14
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.293
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1966	Outer Lanes Freeway Speed (S_O), mi/h	72.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1980	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	16.0	Average Density (D), pc/mi/ln	16.1

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	12
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	14
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.293
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1966	Outer Lanes Freeway Speed (S_O), mi/h	72.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1980	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	16.0	Average Density (D), pc/mi/ln	16.1

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	15
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	17
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.55	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.307
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1578
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2367	Outer Lanes Freeway Speed (S_O), mi/h	71.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2384	Ramp Junction Speed (S), mi/h	67.5
Density in Ramp Influence Area (D_R), pc/mi/ln	19.1	Average Density (D), pc/mi/ln	19.6

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	15
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	17
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.55	0.01

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.307
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1578
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.1
Flow in Lanes 1 and 2 (v_{12}), pc/h	2367	Outer Lanes Freeway Speed (S_O), mi/h	71.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2384	Ramp Junction Speed (S), mi/h	67.5
Density in Ramp Influence Area (D_R), pc/mi/ln	19.1	Average Density (D), pc/mi/ln	19.6

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	48
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	55
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.45	0.03

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.293
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1286
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1928	Outer Lanes Freeway Speed (S_O), mi/h	72.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	1983	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	16.0	Average Density (D), pc/mi/ln	16.0

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2020
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2828	91
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3214	103
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.05

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.295
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1286
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	1928	Outer Lanes Freeway Speed (S_O), mi/h	72.6
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2031	Ramp Junction Speed (S), mi/h	68.1
Density in Ramp Influence Area (D_R), pc/mi/ln	16.3	Average Density (D), pc/mi/ln	16.2

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	49
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	56
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.46	0.03

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.294
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.6
Flow in Lanes 1 and 2 (v_{12}), pc/h	1966	Outer Lanes Freeway Speed (S_O), mi/h	72.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2022	Ramp Junction Speed (S), mi/h	68.2
Density in Ramp Influence Area (D_R), pc/mi/ln	16.3	Average Density (D), pc/mi/ln	16.3

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2023
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	2884	92
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3277	105
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.47	0.05

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.296
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1311
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.5
Flow in Lanes 1 and 2 (v_{12}), pc/h	1966	Outer Lanes Freeway Speed (S_O), mi/h	72.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2071	Ramp Junction Speed (S), mi/h	68.0
Density in Ramp Influence Area (D_R), pc/mi/ln	16.6	Average Density (D), pc/mi/ln	16.6

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	60
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	68
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.56	0.03

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.310
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1578
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	2367	Outer Lanes Freeway Speed (S_O), mi/h	71.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2435	Ramp Junction Speed (S), mi/h	67.4
Density in Ramp Influence Area (D_R), pc/mi/ln	19.5	Average Density (D), pc/mi/ln	19.8

Level of Service (LOS)	B		

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HCS7 Freeway Merge Report

Project Information

Analyst	DMBR	Date	4/7/2021
Agency	LAVPinnacle	Analysis Year	2042
Jurisdiction	KERN	Time Period Analyzed	PM Peak Hour
Project Description	TIS Taft Hwy		

Geometric Data

	Freeway	Ramp
Number of Lanes (N)	3	1
Free-Flow Speed (FFS), mi/h	75.4	35.0
Segment Length (L) / Acceleration Length (L_A), ft	1500	800
Terrain Type	Level	Level
Percent Grade, %	-	-
Segment Type / Ramp Side	Freeway	Right

Adjustment Factors

Driver Population	All Familiar	All Familiar
Weather Type	Non-Severe Weather	Non-Severe Weather
Incident Type	No Incident	-
Final Speed Adjustment Factor (SAF)	1.000	1.000
Final Capacity Adjustment Factor (CAF)	1.000	1.000
Demand Adjustment Factor (DAF)	1.000	1.000

Demand and Capacity

Volume (V_i), veh/h	3472	103
Peak Hour Factor (PHF)	0.88	0.88
Total Trucks, %	0.00	0.00
Single-Unit Trucks (SUT), %	-	-
Tractor-Trailers (TT), %	-	-
Passenger Car Equivalent (E_T)	2.000	2.000
Heavy Vehicle Adjustment Factor (f_{HV})	1.000	1.000
Flow Rate (v_i), pc/h	3945	117
Capacity (c), pc/h	7200	2000
Volume-to-Capacity Ratio (v/c)	0.56	0.06

Speed and Density

Upstream Equilibrium Distance (L_{EQ}), ft	-	Speed Index (M_S)	0.312
Downstream Equilibrium Distance (L_{EQ}), ft	-	Flow Outer Lanes (v_{OA}), pc/h/ln	1578
Prop. Freeway Vehicles in Lane 1 and 2 (P_{FM})	0.600	On-Ramp Influence Area Speed (S_R), mi/h	65.0
Flow in Lanes 1 and 2 (v_{12}), pc/h	2367	Outer Lanes Freeway Speed (S_O), mi/h	71.5
Flow Entering Ramp-Infl. Area (v_{R12}), pc/h	2484	Ramp Junction Speed (S), mi/h	67.4
Density in Ramp Influence Area (D_R), pc/mi/ln	19.9	Average Density (D), pc/mi/ln	20.1

Level of Service (LOS)	B		

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