INITIAL STUDY/MITIGATED NEGATIVE DECLARATION
[Pursuant to Public Resources Code Section 21080(c) and California Code of Regulations, Title 14, Sections 15070-15071]

LEAD AGENCY: San Joaquin County Community Development Department

PROJECT APPLICANT: DBBC Freight Lines Inc/Railport Logistics Inc

PROJECT TITLE/FILE NUMBER(S): PA-2100226 (GP), PA-2100227 (ZR), PA-2100228 (UP)

PROJECT DESCRIPTION: This project is comprised of three components:

General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T).

Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T).

Use Permit No. PA-2100228 (UP) to be completed in two phases. Phase One, with permits issued within 36 months, includes the construction of a 1,000 square foot guard house, a 2,800 square foot fueling station, an 80 square foot scale building, a 4,900 square foot maintenance shop, and the conversion of an existing 900 square foot residential home to a caretaker's unit. Phase Two, with permits issued within 5 years to include the construction of three covered parking structures totaling 72,300 square feet. The project is proposing a total of 711 truck and trailer parking spaces, and truck access off South Manthey Road. West Frewert Road access is for emergency vehicles only. The project proposes a new well, new septic system, and new on-site retention pond for storm drainage. The parcel is not under a Williamson Act contract. (Use Type: Truck Sales and Services-Truck Terminal)

The project site is located on the southeast corner of South Manthey Road and West Frewert Road. Lathrop

ASSESSOR PARCEL NO.: 191-230-14, 191-230-12, & 191-230-11

ACRES: 34-ac

GENERAL PLAN: A/G

ZONING: AG-40

POTENTIAL POPULATION, NUMBER OF DWELLING UNITS, OR SQUARE FOOTAGE OF USE(S):
A truck terminal facility with parking for 711 trucks and trailers with 81,900 square feet of buildings.

SURROUNDING LAND USES:

NORTH: Agricultural with Scattered Residences
SOUTH: Agricultural with Scattered Residences/City of Lathrop
EAST: Agricultural with scattered residences
WEST: Interstate 5/City of Lathrop

REFERENCES AND SOURCES FOR DETERMINING ENVIRONMENTAL IMPACTS:

Original source materials and maps on file in the Community Development Department including: all County and City general plans and community plans; assessor parcel books; various local and FEMA flood zone maps; service district maps; maps of geologic instability; maps and reports on endangered species such as the Natural Diversity Data Base; noise contour maps; specific roadway plans; maps and/or records of archeological/historic resources; soil reports and maps; etc.

Many of these original source materials have been collected from other public agencies or from previously prepared EIR's and other technical studies. Additional standard sources which should be specifically cited below include on-site visits by staff (San Joaquin Valley Air Pollution Control District Air Impact Assessment approval dated November 6, 2023, Frewert Trucking Traffic Impact Study dated April 28, 2023); staff knowledge or experience; and independent environmental studies submitted to the County as part of the project application (. Copies of these reports can be found by contacting the Community Development Department.

TRIBAL CULTURAL RESOURCES:
Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?

No

GENERAL CONSIDERATIONS:

1. Does it appear that any environmental feature of the project will generate significant public concern or controversy?
   ☐ Yes ☒ No

   Nature of concern(s): Enter concern(s).

2. Will the project require approval or permits by agencies other than the County?
   ☒ Yes ☐ No

   Agency: **Air Pollution Control District**

   Agency name(s): Enter agency name(s).

3. Is the project within the Sphere of Influence, or within two miles, of any city?
   ☒ Yes ☐ No

   City: **Lathrop**

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology / Soils	☐ Greenhouse Gas Emissions	☐ Hazards & 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

DETERMINATION: (To be completed by the Lead Agency) 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 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on 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 (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature: Giuseppe Sanfilippo
Associate Planner

11/15/2023
Date

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 will 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 on-site, 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 (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

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 significance.

Issues:

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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 outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒	☐
c) In non-urbanized 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?	☐	☐	☒	☐	☐

Impact Discussion:

a-d) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The Use Permit will be completed in 2 phases over 5 years. Phase 1 to include the construction of a 1,000-square-foot guard house; a 2,800-square-foot fueling station; an 80-square-foot scale building; a 4,900-square-foot maintenance shop; and the conversion of an existing 900-square-foot residential home to a caretaker's unit. Phase 2 to include the construction of 3 covered parking structures totaling 72,300 square-feet. The project is proposing a total of 711 truck and trailer parking spaces. The project site is not located along a designated scenic route pursuant to 2035 General Plan Figure 12-2, and the surrounding area is a mixture of, and agricultural with scattered residences. The project will be subject to all Development Title requirements regarding building heights, setbacks, site lighting, and signs. As a result, the proposed project is not anticipated to have an impact on aesthetics.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
II. AGRICULTURE AND FORESTRY 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?	☐	☐	☐	☒	☐

Impact Discussion:

a-e) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The Use Permit will be completed in 2 phases over 5 years. Phase 1 to include the construction of a 1,000-square-foot guard house; a 2,800-square-foot fueling station; an 80-square-foot scale building; a 4,900-square-foot maintenance shop; and the conversion of an existing 900-square-foot residential home to a caretaker's unit. Phase 2 to include the construction of 3 covered parking structures totaling 72,300 square-feet. The project is proposing a total of 711 truck and trailer parking spaces. The proposed project will not affect the nearby Williamson Act contracted property or displace any existing agricultural uses. No forest or timberland exists in the area. Therefore, the proposed application will have no impact on agriculture and forestry resources.

Since the project includes a General Plan and Zoning designation change, agricultural mitigation will be required. Pursuant to Development Title Section 9-701.040(c), agricultural mitigation shall be satisfied by granting a farmland conservation easement or other farmland conservation mechanism set forth in San Joaquin County Development Title Section 9-701.040(d) to or for the benefit of a Qualifying Entity. The number of acres of agricultural mitigation land shall be at least equal to the number of acres that will be changed to a nonagricultural use (1:1 ratio). A referral has been sent to the San Joaquin Farm Bureau for review.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
III. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management 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 substantial emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐	☐

Impact Discussion:

a-d) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The Use Permit will be completed in 2 phases over 5 years. Phase 1 to include the construction of a 1,000-square-foot guard house; a 2,800-square-foot fueling station; an 80-square-foot scale building; a 4,900-square-foot maintenance shop; and the conversion of an existing 900-square-foot residential home to a caretaker's unit. Phase 2 to include the construction of 3 covered parking structures totaling 72,300 square-feet. The project is proposing a total of 711 truck and trailer parking spaces. The San Joaquin Valley Unified Air Pollution Control District (SJVAPCD) has been established by the State in an effort to control and minimize air pollution. On November 29, 2021, the SJVAPCD provided written notice that an Air Impact Assessment (AIA) would be required for the project. On August 31, 2023, the applicant was notified that the AIA application to the SJVAPCD was deemed complete for processing. On November 6, 2023, the SJVAPCD issued the final AIA approval for the project. The SJVAPCD determined that the construction and operation for the project will be less than two-tons of NOx per year, and two tons PM10 per year. The SJVAPCD provided the following mitigation measures:

- For each project phase, all records shall be maintained on site during construction and for a period of ten years following either the end of construction or the issuance of the first certificate of occupancy, whichever is later. Records shall be made available for District inspection upon request.
- For each project phase, maintain records of (1) the construction start and end dates and (2) the date of issuance of the first certificate of occupancy, if applicable.
- Provide one electric vehicle charging station for the project.

In addition to these measures, the project will be required to file a Dust Control Plan prior to commencing any earth moving activities and obtain an Authority to Construct and Permit to Operate prior to the installation of equipment that controls or may emit air contaminants, including but not limited to emergency internal combustion engines, boilers, and bag houses. As a result, air impacts are anticipated to be less than significant.

IV. BIOLOGICAL RESOURCES: Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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 Game 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 Game or US 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?	☐	☐	☐	☒	☐

Impact Discussion:

a-f) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The Natural Diversity Database identifies the Suisun Marsh aster (Aster lentus), burrowing owl (Athene Cunicularia), Tricolored blackbird (Agelaius Tricolor), and the Swainson's Hawk (Buteo Swainsoni) as rare, endangered, or threatened species located on or near the project area. Referrals have been sent to the San Joaquin Council of Governments (SJCOG) for review. SJCOG has determined that the applicant may participate in the San Joaquin Multi-Species Habitat Conservation and Open Space Plan (SJMSCP), and the applicant has confirmed participation. As a result, the proposed project is consistent with the SJMSCP, as amended, as reflected in the conditions of project approval for this proposal. Pursuant to the *Final EIR/EIS for San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP),* dated November 15, 2000, and certified by SJCOG on December 7, 2000, implementation of the SJMSCP is expected to reduce impacts to biological resources resulting from the proposed project to a level of less-than-significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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?	☐	☐	☐	☒	☐

Impact Discussion:

a–c) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. No impact on cultural resources is anticipated. Should human remains be discovered during any ground disturbing activities, all work shall stop immediately in the vicinity (e.g. 100 feet) of the finds until they can be verified. The County coroner shall be immediately contacted in accordance with Health and Safety Code section 7050.5(b). Protocol and requirements outlined in Health and Safety Code Sections 7050.5(b) and 7050.5(c), as well as Public Resources Code Section 5097.98, shall be followed.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
VI. ENERGY. Would the project:					
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy, or wasteful use of energy resources, during project construction or operation?	☐	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒	☐

Impact Discussion:

(a,b) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The California Energy Code (also titled The Energy Efficiency Standards for Residential and Non-residential Buildings) was created by the California Building Standards Commission in response to a legislative mandate to reduce California's energy consumption. The code's purpose is to advance the state's energy policy, develop renewable energy sources and prepare for energy emergencies. These standards are updated periodically by the California Energy Commission. The code includes energy conservation standards applicable to most buildings throughout California. These requirements will be applied to the proposed project ensuring that any impact to the environment due to wasteful, inefficient, or unnecessary consumption of energy will be less than significant and prevent any conflict with state or local plans for energy efficiency and renewable energy.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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 and create direct or indirect risks to life or property?	☐	☐	☒	☐	☐
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?	☐	☐	☐	☒	☐

Impact Discussion:

a-f) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The proposed project is not anticipated to cause seismic effects, erosion, safety effects, or impact water and geologic features. The proposed project will not cause the risk of injury or death as a result of a rupture of a known earthquake fault, seismic activity, or landslides because there are no fault lines in the project vicinity. The proposed project will not result in substantial soil erosion or the loss of topsoil. The proposed project will not destroy a unique paleontological resource or site or unique geological feature. The proposed project is not 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. As a result, the impact to geology and soils is anticipated to be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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?	☐	☐	☒	☐	☐

Impact Discussion:

a-b) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. Greenhouse Gas Emissions (GHG) contributing to global climate change are attributable in large part to human activities associated with the industrial/manufacturing, utility, transportation, residential, and agricultural sectors. Therefore, the cumulative global emissions of GHGs contributing to global climate change can be attributed to every nation, region, and city, and virtually every individual on earth. An individual project's GHG emissions are at a micro-scale level relative to global emissions and effects to global climate change; however, an individual project could result in a cumulatively considerable incremental contribution to a significant cumulative macro-scale impact. As such, impacts related to emissions of GHG, are inherently considered cumulative impacts.

Implementation of the underlying project would cumulatively contribute to increases of GHG emissions. Estimated GHG emissions attributable to future development would be primarily associated with increases of carbon dioxide (CO_2) and, to a lesser extent, other GHG pollutants, such as methane (CH_4) and nitrous oxide (N_2O) associated with area sources, mobile sources or vehicles, utilities (electricity and natural gas), water usage, wastewater generation, and the generation of solid waste. The primary source of GHG emissions for the project would be mobile source emissions. The common unit of measurement for GHG is expressed in terms of annual metric tons of CO_2 equivalents ($MTCO_2e$/yr).

As noted previously, the underlying project will be subject to the rules and regulations of the SJVAPCD. The SJVAPCD has adopted the *Guidance for Valley Land- use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA* and the *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency.**1*** The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards (BPS) to assess significance of project specific GHG, on global climate change during the environmental review process, as required by CEQA. To be determined to have a less-than-significant individual and cumulative impact with regard to GHG, emissions, projects must include BPS sufficient to reduce GHG emissions by 29 percent when compared to Business As Usual (BAU) GHG emissions. Per the SJVAPCD, BAU is defined as projected emissions for the 2002-2004 baseline period. Projects which do not achieve a 29 percent reduction from BAU levels with BPS alone are required to quantify additional project-specific reductions demonstrating a combined reduction of 29 percent. Potential mitigation measures may include, but not limited to: on-site renewable energy (e.g. solar photovoltaic systems), electric vehicle charging stations, the use of alternative-fueled vehicles, exceeding Title 24 energy efficiency standards, the installation of energy-efficient lighting and control systems, the installation of energy-efficient mechanical systems, the installation of drought-tolerant landscaping, efficient irrigation systems, and the use of low-flow plumbing fixtures.

It should be noted that neither the SJVAPCD nor the County provide project-level thresholds for construction-related GHG emissions. Construction GHG emissions are a one-time release and are, therefore, not typically expected to generate a significant contribution to global climate change. As a result, impacts related to GHG emissions are anticipated to be less than significant and not in conflict with any plans, policies, or regulations.

1 San Joaquin Valley Air Pollution Control District. *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects under CEQA*. December 17, 2009.San Joaquin Valley Air Pollution Control

District. *District Policy Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. December 17, 2009.

IX. HAZARDS AND HAZARDOUS MATERIALS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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 Section 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, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐	☐

Impact Discussion:

a-g) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The project site is not located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, the site is not a significant hazard to the public or the environment. The project proposes to have an on-site fueling pumps for on-site trucks at the proposed facility, not open to the general public. This fueling facility will be subject to statutory regulations facilitated by the Environmental Health Department for above and underground storage tanks and the 2022 California Building Code. As a result, impacts from hazardous materials related to the diesel fueling facilities are anticipated to be less than significant.

Construction activities for the project typically involve the use of toxic or hazardous materials such as paint, fuels, and solvents. Construction activities would be subject to federal, state, and local laws and requirements designed to minimize and avoid potential health and safety risks associated with hazardous materials. The proposed application would not result in, create, or induce hazards and associated risks to the public as no significant impacts are anticipated related to the transport, use, or storage of hazardous materials during construction activities. The project site is located within an Airport Land Use Plan (ALUP), and subject to the Airport Land Use Commission (ALUC) rules and regulations. The project site does not physically interfere with an emergency evacuation plan or affect wildlands. Therefore, the project's impacts are less than significant.

X. HYDROLOGY AND WATER QUALITY. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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 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 off-site;	☐	☐	☐	☒	☐
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; or	☐	☐	☐	☒	☐
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?	☐	☐	☒	☐	☐

Impact Discussion:

a-e) The project site is located in the Flood Zone X, 0.2 percent annual chance of flood designations. A referral has been sent to the Department of Public Works, Flood Control Division for comments. If approved, any new developments will have to comply with Development Title Section 9-1605 regarding flood hazards.

The project site is located approximately 3 miles south of French Camp Slough, and approximately 1.7 miles east of the San Joaquin River. The proposed project will not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality, conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

The project will not substantially decrease groundwater supplies or interfere substantially with groundwater recharge because operations are unmanned and very little water will be used. The project will 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 through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site; substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; 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; or impede or redirect flood flows. Additionally, the proposed project would not risk release of pollutants in flood hazard, tsunami, or seiche zones.

XI. LAND USE AND PLANNING. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
a) Physically divide an established community?	☐	☐	☐	☒	☐
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?	☐	☐	☒	☐	☐

Impact Discussion:

a,b) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The project is proposed on adjacent parcels under common ownership. Therefore, project will not physically divide an established community and is consistent with surrounding land uses.

The current General Plan designation is A/G, and the current zoning is AG-40 (General Agriculture, 40-acre minimum). The Truck Terminal use type is not consistent with the parcel's current General Plan and zoning designations. If the General Plan designation is changed to I/T and zoning to I-T as proposed, then the development project will be consistent with the County's General Plan. The proposed project will have a less than significant impact to surrounding parcels and will not create premature development pressure on surrounding agricultural lands to convert land from agricultural uses to non-agricultural uses. Therefore, this project is not a growth-inducing action.

Pursuant to Development Title Section 9-701.040(c), agricultural mitigation shall be satisfied by granting a farmland conservation easement or other farmland conservation mechanism set forth in San Joaquin County Development Title Section 9-701.040(d) or for the benefit of a Qualifying Entity. The number of acres of agricultural mitigation land shall be at least equal to the number of acres that will be changed to a nonagricultural use (1:1 ratio).

The City of Lathrop has an approved plan called the North Lathrop Transportation Fee (NLTF), a fee based on new vehicle trips associated with new development projects. This fee was adopted by the City of Lathrop City Council. However, the fee was never adopted by the San Joaquin County Board of Supervisors. As a result, the NLTF is not applicable to development projects within the boundaries of unincorporated San Joaquin County. The proposed project will not be a conflict with any existing or planned uses or set a significant land use precedent. The proposed project is not in conflict with any Master Plans, Specific Plans, or Special Purpose Plans, or any other applicable plan adopted by the County.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
XII. MINERAL RESOURCES. Would the project:					
a) 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) 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?	☐	☐	☒	☐	☐

Impact Discussion:

a, b) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. San Joaquin County applies a mineral resource zone (MRZ) designation to land that meets the significant mineral deposits definition by the State Division of Mines and Geology. Although the project site is in an area designated as MRZ-1, there is currently no mining activity in the area, and the surrounding area is developed with agricultural and residential uses. Therefore, the proposed project will not result in the loss of availability of a known mineral resource because the site does not contain minerals of significance or known mineral resources. Therefore, the proposed project applications will have less than a significant impact on the availability of mineral resources or mineral resource recovery sites within San Joaquin County.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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 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?	☐	☐	☒	☐	☐

Impact Discussion:

a-c) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The nearest single-family residence is located on an adjacent parcel to the north of the project site.

Development Title Section 9-404 lists the Residential use type as a noise sensitive land use. Development Title Section Table 9-404.050 states that the maximum sound level for stationary noise sources of 65dB is normally acceptable and do not require additional study. This applies to outdoor activity areas of the receiving use or applies at the lot line if no activity area is known. Additionally, noises from construction activities are exempt from noise standards provided the construction occurs no earlier than 6:00 A.M. and no later than 9:00 P.M. The proposed project would be subject to these Development Title standards. No excessive sound or vibration are anticipated, and the project is not near an airport. Therefore, noise impacts from the proposed project are expected to be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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?	☐	☐	☒	☐	☐

Impact Discussion:

a-b) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The project does not involve displacing any housing and will not induce substantial unplanned population growth in the area. Therefore, the project's impact on population and housing will be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
XV. PUBLIC SERVICES.					
a) Would the project 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:	☐	☐	☒	☐	☐
Fire protection?	☐	☐	☒	☐	☐
Police protection?	☐	☐	☒	☐	☐
Schools?	☐	☐	☒	☐	☐
Parks?	☐	☐	☒	☐	☐
Other public facilities?	☐	☐	☒	☐	☐

Impact Discussion:

a) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The Lathrop-Manteca Fire District provides the fire protection in the vicinity, law enforcement protection is provided by the San Joaquin County Sheriff's Department, and Manteca Unified School District serves the area for schools. No parks are impacted as a result of this project. Therefore, impacts to public services are also anticipated to be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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?	☐	☐	☐	☒	☐

Impact Discussion:

a-b) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The proposed project will not substantially increase the use of existing neighborhood and regional parks because no increase in housing or people is associated with this application. Additionally, the project does not include recreation facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment. No impacts to recreation opportunities are anticipated.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
XVII. TRANSPORTATION. Would the project:					
a) Conflict with a program plan, ordinance, or policy addressing the circulation system, including transit, roadways, bicycle, and pedestrian facilities?	☐	☐	☒	☐	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 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?	☐	☐	☐	☒	☐

Impact Discussion:

a-d) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The project site proposes truck access from South Manthey Road, and emergency vehicle only access from West Frewert access.

California Environmental Quality Act (CEQA) Guidelines section 15064.3 requires Vehicle Miles Traveled (VMT) be evaluated as a part of the environmental review. TJKM prepared a VMT analysis dated April 28, 2023 for this project. The analysis considered the following proposed structures: 1,000 square foot guardhouse, a 2,800 square foot truck fueling facility canopy, an 80 square foot truck scale building, and an existing 4,900 truck maintenance shop for the facility totaling 8,780 square feet. The VMT conclusion is included below:

> *"For VMT forecasting, the San Joaquin County Transportation Analysis Guidelines (September 2020, page 5) states that VMT is only relevant for daily automobile travel. As this project is a truck terminal parking facility, only the site buildings will be analyzed for the VMT significance criteria. Under CEQA, small office projects that are consistent with the San Joaquin County General Plan and are smaller than 11,300 square feet in size are exempt from VMT analysis and thus do not have a significant VMT impact. Since the total build out component for this project totals only 8,780 square feet, it is found to have an insignificant impact on VMT. The truck parking terminal project is also strategically located near other trucking hubs, and also is located near two major freeway ramps (Roth Road to the north and Lathrop Road to the south) for Interstate 5. Most importantly, this project is located right next to the Union Pacific Lathrop Intermodal Terminal, which handles large amounts of freight and container transfers between rail and trucks. This project synergizes well with other truck facilities in the area and provides direct access to Interstate 5 and other major distribution centers in the area, decreasing the need for trucks to travel further to find adequate parking and resting facilities. Thus, the proposed truck parking terminal project would have a less than significant impact on VMT."*

The project site falls within Zone 8 of the Airport Influence Area the comprehensive Airport Land Use Plan boundaries for the Stockton Metropolitan Airport. The project site is located approximately 3.25 miles southwest of the nearest runway. The project shall abide by the applicable Airport Land Use Plan for the Stockton Metropolitan Airport. A referral was sent to the Airport Land Use Commission and the Stockton Metropolitan Airport on November 1, 2021, for review. As a Condition of Approval, the project will be subject to the Airport Land Use Commission's rules and regulations. As a result, impacts to airport flight paths will be reduced to less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
XVIII. TRIBAL CULTURAL RESOURCES.					
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
i) 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), or	☐	☐	☐	☒	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒	☐

Impact Discussion:

a) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. A referral was sent to the United Auburn Indian Community (UAIC), North Valley Yokuts Tribe, and the Buena Vista Rancheria for review related to potential Tribal Cultural Resources (TCR).

If any suspected TCR are discovered during ground disturbing construction activities, all work shall cease within 100 feet of the find. A tribal representative from culturally affiliated tribes shall be immediately notified and shall determine if the find is a TCR pursuant to Public Resources Code Section 21074. The tribal representative will make recommendations regarding the treatment of the discovery. Preservation in place is the preferred alternative under CEQA and UAIC protocols, and every effort must be made to preserve the resources in place, including through project redesign. Work at the discovery location cannot resume until all necessary investigation and evaluation of the discovery under the requirements of CEQA, including AB 52, has been satisfied. The contractor shall implement any measures deemed by the lead agency to be necessary and feasible to preserve in place, avoid, or minimize impacts to the resource, including but not limited to, facilitating the appropriate tribal treatment of the find, as necessary. This has been incorporated into the project's Conditions of Approval.

Additionally, if human remains are discovered during any ground disturbing activities, all work shall stop immediately in the vicinity (e.g. 100 feet) of the finds until they can be verified. The County Coroner shall be immediately contacted in accordance with Health and Safety Code section 7050.5(b). Protocol and requirements outlined in Health and Safety Code sections 7050.5(b) and 7050.5(c) as well as Public Resources Code section 5097.98 shall be followed.

As a result of the Conditions of Approval for the discovery of TCRs and meeting the existing Health and Safety Code regulations, the impact to tribal cultural resources is anticipated to be less than significant.

XIX. UTILITIES AND SERVICE SYSTEMS. Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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 wastewater 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?	☐	☐	☐	☒	☐

Impact Discussion:

a-e) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. Water will be provided by an existing on-site agricultural well. Additionally, well and on-site wastewater disposal systems will be subject to the rules and regulation of the Environmental Health Department. Storm water drainage will be subject to the rules and regulations of the Department of Public Works. Therefore, the impact to utility and service systems is anticipated to be less than significant.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
XX. WILDFIRE. 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?	☐	☐	☐	☒	☐

Impact Discussion:

a-d) This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. Pursuant to the San Joaquin Fire Severity Zone map, the project site is in an area with non-wildland/non-urban fire zone designation.

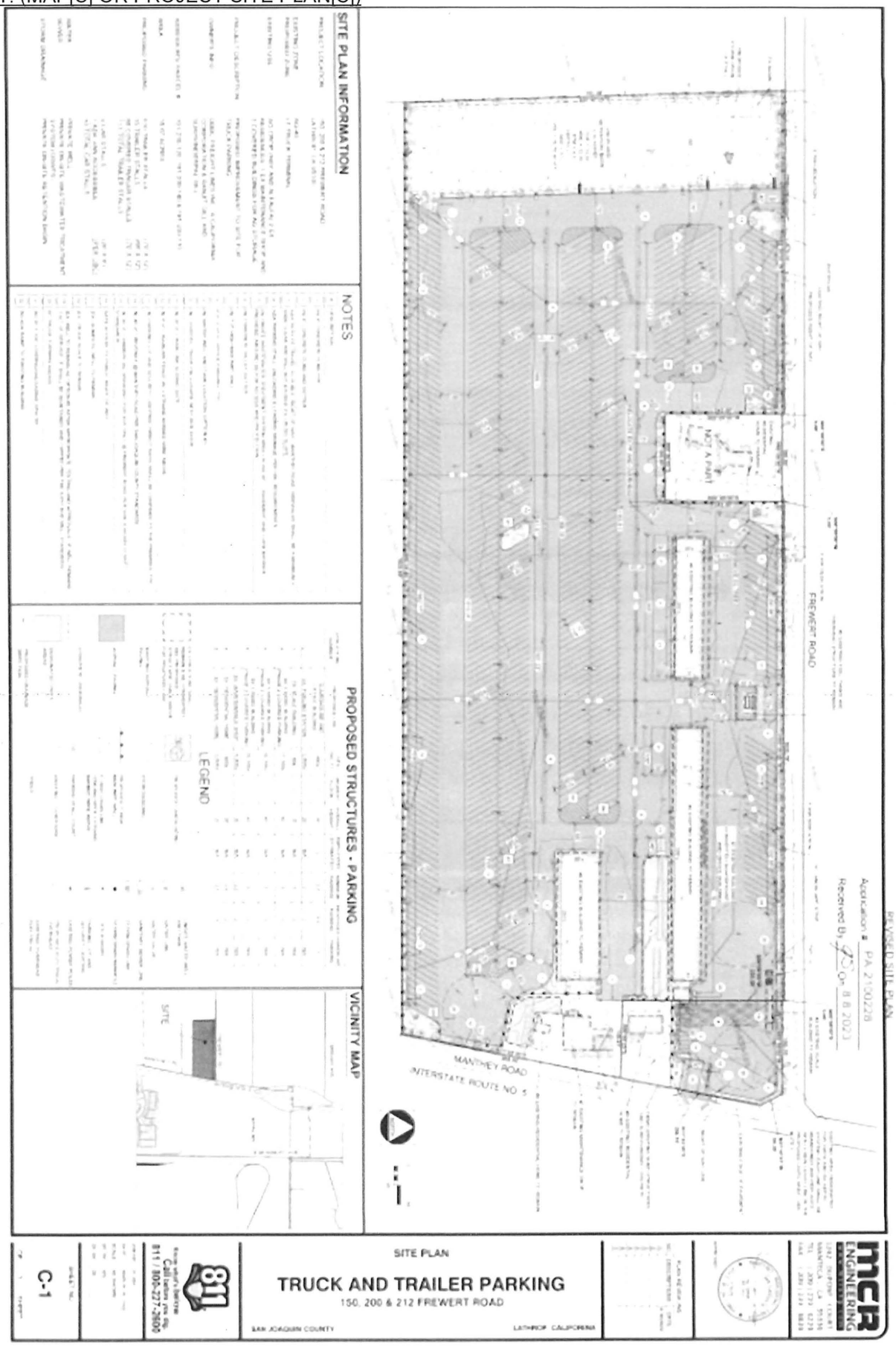
Proposed truck access for the project site is off South Manthey Road, a County maintained road. There is a proposed driveway off of Frewert Road, however that is for emergency vehicle access only. The project will not require the installation or maintenance of additional infrastructure to mitigate fire risk or may result in impacts to the environment. As a result, the proposed project will have a less than significant impact on potential wildfire hazards.

XXI. MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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?	☐	☐	☐	☒	☐

Impact Discussion:

a-c). This project is comprised of three components. General Plan Map Amendment No. PA-2100226 proposes to change the General Plan land use designation from General Agriculture (A/G) to Truck Terminal (I/T). Zone Reclassification No. PA-2100227 to proposes to change the Zoning Designation from General Agriculture, 40-acre minimum (AG-40) to Truck Terminal (I-T). Use Permit No. PA-2100228 (UP) to establish the use of a Truck Terminal. The proposed application does not have the potential to degrade the environment or eliminate a plant or animal community or eliminate important examples of major periods of California history or prehistory. The project would not result in significant cumulative impacts or cause substantial adverse effects on human beings, either directly or indirectly.

ATTACHMENT: (MAP[S] OR PROJECT SITE PLAN[S])



Mitigation Monitoring Reporting Plan-PA-2100226, -227, -228 November 15, 2023

Impact	Mitigation Measure/Condition	Type of Review		Agency for Monitoring and Reporting Compliance	Action Indicating Compliance or Review	Verification of Compliance or Annual Review of Conditions		
		Monitoring	Reporting			By	Date	Remarks
III. Air Quality	Construction and Operation - Recordkeeping		X	San Joaquin Valley Air Pollution Control District	For each project phase, all records shall be maintained on site during construction and for a period of ten years following either the end of construction or the issuance of the first certificate of occupancy, whichever is later. Records shall be made available for District inspection upon request.			
III. Air Quality	Construction and Operational Dates		X	San Joaquin Valley Air Pollution Control District	For each project phase, maintain records of (1) the construction start and end dates and (2) the date of issuance of the first certificate of occupancy, if applicable			
III. Air Quality	Install Electric Vehicle Chargers		X	San Joaquin Valley Air Pollution Control District	Install electirc vehicle chargers with 1 outlet totla.			
IV. Biological Resources	Participation in the SJMSCP	X		San Joaquin Council of Governments	The developer shall apply to the San Joaquin Council of Governments (SJCOG) for coverage under the San Joaquin County Multi-Species Open Space and Habitat Conservation Plan (SJMSCP). The project site shall be inspected by the SJMSCP biologist, who will recommend which Incidental Take Minimization Measures set forth in the SJMSCP should be applied to the project and implemented. The project applicant shall pay the required SJMSCP fee, if any, and be responsible for the implementation of the specified Incidental Take Minimization Measures.			

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

November 6, 2023

Planning Department
County of San Joaquin
1810 East Hazelton Avenue
Stockton, CA 95205

Re: Air Impact Assessment (AIA) Application Approval
ISR Project Number: C-20230309
Land Use Agency: County of San Joaquin
Land Use Agency ID Number: Pa-2100226, -2100227, -2100228

To Whom It May Concern:

The San Joaquin Valley Air Pollution Control District (District) has approved the Air Impact Assessment (AIA) application for the Dbbc Freight Lines Truck Terminal project located at 150 W. Frewert Road in Lathrop, California. The project consists of construction of a truck parking facility/terminal. Pursuant to District Rule 9510, Section 8.4, the District is providing the County of San Joaquin with the following information:

- A notification of AIA approval (this letter)
- A statement of tentative rule compliance (this letter)
- A summary of project emissions and emission reductions
- A summary of the off-site fees
- A copy of the Air Impact Assessment Application
- An approved Monitoring and Reporting Schedule

Certain emission mitigation measures proposed by the applicant may be subject to approval or enforcement by theCounty of San Joaquin. No provision of District Rule 9510 requires action on the part of the County of San Joaquin; however, please review the enclosed list of mitigation measures and notify the District if the proposed mitigation measures are inconsistent with your agency's requirements for this project. The District can provide the detailed emissions analysis upon request.

Samir Sheikh
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: (661) 392-5500 FAX: (661) 392-5585

www.valleyair.org www.healthyairliving.com

If you have any questions, please contact Mr. Matt Crow by telephone at (559) 230-5931 or by email at matt.crow@valleyair.org.

Sincerely,

Brian Clements
Director of Permit Services



For: Mark Montelongo
Program Manager

Enclosures

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

Indirect Source Review (ISR) - Air Impact Assessment (AIA) Application

A. Applicant Information

Applicant/Business Name: **DBBC Freight Lines, Inc.**			
Mailing Address: **4928 Tiller Court**	City: **Stockton**	State: **CA**	Zip: **94603**
Contact: **Gurbinder Singh**	Title:		
Is the Applicant a licensed state contractor? ☒ No ☐ Yes, please provide State License number:			
Phone: **925-525-7653**	Email: **gbsingh84@gmail.com**		

B. Agent Information (if applicable)

Agent/Business Name: **BaseCamp Environmental, Inc.**			
Mailing Address: **802 W Lodi Avenue**	City: **Lodi**	State: **CA**	Zip: **95240**
Contact: **Charlie Simpson**	Title: **Principal**		
Phone: **209-224-8213**	Email: **csimpson@gmail.com**		

C. Project Information

Project Name: **DBBC Freight Lines Truck Terminal**			
Project Location	Street: **150 W. Frewert Road**	City: **Lathrop**	Zip: **95330**
Cross Streets: **S. Manthey Road**		County: **San Joaquin County**	
Permitting Agency: **San Joaquin County**	Planner: **Giuseppe Sanfilippo**	Contact Number: **209-468-0227**	
Permit Type and Number (if known): **PA-2100226, -2100227, -2100228**			
Subject to Project-Level Discretionary Approval? ☒ Yes ☐ No		Last Project-Level Discretionary Approval Date: **Unknown - Issuance of approval is awaiting AIA approval**	
		Last Project-Level Ministerial Approval Date:	

D. Project Description

Please briefly describe the project (e.g.: 300 multi-family residential units apartments or 6 miles road widening):
The project proposes to develop 35.6 acres as a truck terminal. As proposed, the project would be constructed in two phases, with 711 parking spaces for trucks at buildout. Of these parking spaces, 86 would be provided within three existing buildings that would be renovated for the purpose; the remaining parking spaces would be outdoors. The project also proposes one new guardhouse/office building totaling 990 square feet in floor area. An existing maintenance shop of approximately 4,900 square feet and an existing permitted fueling station would remain to provide services to trucks.

For **Residential/Non-Residential/Mixed-Use** please check the box next to each applicable land use below:

☐ Commercial / Retail	☐ Educational	☐ Office	☐ Warehouse
☐ Residential	☐ Government	☐ Industrial	☐ Distribution Center
☐ Recreational (e.g. park)	☐ Medical	☐ Manufacturing	☒ Other: **Truck Terminal**

For **Transportation/Transit** please check the box next to each applicable land use below:

☐ New Road Construction ☐ Expansion to an Existing Road ☐ Bridge / Overpass ☐ Interchange or Intersection Improvements

Select land use setting: ☐ Urban ☒ Rural

E. Notice of Violation

Is this application being submitted as a result of receiving a Notice of Violation (NOV)? ☒ No ☐ Yes, NOV #:

FOR DISTRICT USE ONLY

Filing Fee Received: _____ Date Paid: _____ Applicant #: _____	Check #: _____ Project #: _____	Date Stamp: Finance	Date Stamp: Permit

F. Voluntary Emission Reduction Agreement (VERA)

Is this project part of a larger project for which there is a VERA with the District? [X] No [ ] Yes, VERA #:

G. Optional Section

Do you want to receive information about the Healthy Air Living Business Partners Program? [X] No [ ] Yes

H. Parcel and Land Owner Information

	APN (000-000-00 Format)	Gross Acres	Land Owner
1.	**191-230-11**	**1.46**	**DBBC Freight Lines, Inc. - Ravinder Singh Dhillon, Daljit Kaur Dhillon**
2.	**191-230-12**	**11.63**	**DBBC Freight Lines, Inc. - Ravinder Singh Dhillon, Daljit Kaur Dhillon; Ranjit**
3.	**191-230-14**	**22.58**	**Singh Gill, Sukhvinderpal Gill**

Additional sheets for listing APN numbers can be found on the District's website at www.valleyair.org/ISR.

I. Project Development and Operation

Will the project require demolition of existing structures?	[X] Yes, *complete J*
	[ ] No, *complete K*

J. Demolition

Total square feet of building(s) footprint to be demolished: **2,000**	Number of Building Stories: **1**
Demolition Start Date (Month/Year): **May 2024**	Number of Days for Demolition: **2**

K. Timing

Expected number of work days per week during construction? [X] 5 days [ ] 6 days [ ] 7 days	
For **Transportation/Transit** projects, *please complete L-1*	
For **Residential/Non-Residential/Mixed-Use** projects, will it be developed in multiple phases?	[ ] No, *complete L-2*
	[X] Yes, *complete L-3*

L-1. Transporation / Transit Development and Timing Details

Please note that development timelines provided within this section should reflect actual work time, and should not account for possible project delays.

Start of Construction (Month/Year):	End of Construction (Month/Year):
Number of actual construction days:	
Length of road being constructed: miles	Width of road being constructed: feet
Predominant Soil Type (choose one): [ ] Sand Gravel	[ ] Weathered Rock – Earth [ ] Blasted Rock
Amount of soil imported: cubic yards	Amount of soil exported: cubic yards
Amount of asphalt imported: cubic yards	Amount of asphalt exported: cubic yards
Total area to be disturbed: acres	Maximum area disturbed per day: acres
Average truck capacity: cubic yards	Will water trucks be used? [ ] Yes [ ] No

L-2. Single Phase Development

Start of Construction (Month/Year):	Gross Acres:
End of Construction (Month/Year):	Net Acres (area devoted to buildings/structures):
First Date of Occupation (Month/Year):	Paved Parking Area (# of Spaces):
Building Square Footage:	Number of Dwelling Units:

L-3. Phased Site Development and Building Construction

In addition to the information below you can submit phase specific activity timeline found on District's website at www.valleyair.org/ISR.

1	Start of Construction (Month/Year): **May 2024**	Gross Acres: **24.04**
	End of Construction (Month/Year): **May 2026**	Net Acres (area devoted to buildings/structures): **0.20**
	First Date of Occupation (Month/Year): **May 2026**	Paved Parking Area (# of Spaces): **625**
	Building Square Footage: **8,780**	Number of Dwelling Units: **0**
2	Start of Construction (Month/Year): **May 2027**	Gross Acres: **11.63**
	End of Construction (Month/Year): **May 2029**	Net Acres (area devoted to buildings/structures): **1.66**
	First Date of Occupation (Month/Year): **May 2029**	Paved Parking Area (# of Spaces): **86**
	Building Square Footage: **72,300**	Number of Dwelling Units: **0**

3	Start of Construction (Month/Year):	Gross Acres:
	End of Construction (Month/Year):	Net Acres (area devoted to buildings/structures):
	First Date of Occupation (Month/Year):	Paved Parking Area (# of Spaces):
	Building Square Footage:	Number of Dwelling Units:
4	Start of Construction (Month/Year):	Gross Acres:
	End of Construction (Month/Year):	Net Acres (area devoted to buildings/structures):
	First Date of Occupation (Month/Year):	Paved Parking Area (# of Spaces):
	Building Square Footage:	Number of Dwelling Units:
Additional sheets for phasing information can be found on the District's website at www.valleyair.org/ISR.		

M. On-Site Emission Reduction Measures (Mitigation Measures)

Listed below are categories of possible mitigation measures for applicants to implement that will reduce a project's impact on air quality. Check "Yes" next to any measure that will be utilized for this project, and please complete the corresponding page in this form to identify specifics related to that measure. If a category is not applicable to the project, check "No" and provide justification for not selecting the measure. Also, the applicant is encouraged to provide any mitigation measures including supporting documentation that are not listed on this application form for District consideration. For reference, see www.valleyair.org/ISR for potential additional mitigiation measures.

Clean Construction Fleet Mitgation Measure below can be selected for all development types

1. Clean Construction Fleet (Note: Making a commitment to using less polluting construction equipment)
☐ Yes, *please complete mitigation measure 1 below*
☒ No, *please provide justification why not selected:* **Project is limited in size and construction time, unknown contractor**

Operational Mitgation Measure below can be selected for all development types, except for transportation and transit projects

2. Clean On-Road Trucks (e.g. Heavy Duty Trucks, Medium Duty Trucks, and Light Duty Trucks)
Note: Operational fleet will use zero and/or near-zero emissions for all or part of its activities.
☐ Yes, *please complete applicable mitigation measure 2a through 2c below*
☒ No, *please provide justification why not selected:* **Project intended to only provide parking for trucks**

3. On-Site Zero Emission Off-Road Vehicles and Equipment (e.g. electric forklifts and electric yard trucks)
☐ Yes, *please complete applicable mitigation measure 3 below*
☒ No, *please provide justification why not selected:* **Project intended to only provide parking for trucks**

4. Solar Panels (e.g. incorporate solar panels in the project)
☐ Yes, *please complete applicable mitigation measure 4 below*
☐ No, *please provide justification why not selected:*

5. Electric Vehicle (EV) Chargers (e.g. incorporate onsite EV charging infrastructure)
☐ Yes, *please complete applicable mitigation measure 5 below*
☒ No, *please provide justification why not selected:* **No solar panels are proposed, as no new or expanded buildings are proposed**

6. Clean Lawn and Garden Equipment (e.g. eletric mowers, electric leaf blowers, electric trimmers, etc.)
☐ Yes, *please complete applicable mitigation measure 6 below*
☒ No, *please provide justification why not selected:* **Project intended to only provide parking for trucks**

7. Land Use/Location (e.g. increased density, improve walkability design, increase transit, etc.)
☐ Yes, *please complete applicable mitigation measures 7a through 7f below*
☒ No, *please provide justification why not selected:* **Project is truck terminal in rural area; no nearby urban development**

8. Neighborhood/Site Enhancements (e.g. improve pedestrial network, traffic calming measures, NEV network, etc.)
☐ Yes, *please complete applicable mitigation measures 8a through 8c below*
☒ No, *please provide justification why not selected:* **Project is truck terminal in rural area; no nearby urban development**

9. Parking Policy/Pricing (e.g. parking cost, on-street market pricing, limit parking supply, etc.)
☐ Yes, *please complete applicable mitigation measure 9a through 9e below*
☒ No, *please provide justification why not selected:* **Project intended to provide parking for trucks; parking programs not available**

10. Commute Trip Reduction Programs (e.g. workplace parking charge, employee vanpool/shuttle, ride sharing program, etc.)
☐ Yes, *please complete applicable mitigation measures 10a through 10f below* **Project does not include typical work hours and associated**
☒ No, *please provide justification why not selected:* **commute patterns. Therefore, project does not warrant parking and trip reduction programs.**

11. Hearth (e.g. woodstoves or fireplaces)
☐ Yes, *please complete mitigation measure 11 below*
☒ No, *please provide justification why not selected:* **Project does not include woodstoves or fireplaces.**

12. Exceed Title 24 (e.g. exceed California Title 24 required energy efficiency for building(s) associated with the project)
☐ Yes, *please complete applicable mitigation measures 12 below*
☒ No, *please provide justification why not selected:* **Project will comply with Tile 24 as required.**

N. Review Period

You may request a five (5) day period to review a draft of the District's analysis of your project before it is finalized. However, if you choose this option, it will delay the project's finalization by five (5) business days.

[X] I request to review a draft of the District's analysis.

O. Fee Deferral Schedule

If the project's on-site air pollution reductions (mitigation measure) insufficiently reduced air pollution as outlined in Rule 9510, an off-site fee is assessed based on the excess air pollution. The money collected from this fee will be used by the District to reduce air pollution emissions 'off-site' on behalf of the project.

An Applicant may request a deferral of all or part of the 'off-site' fees up to, but not to exceed, the start date of construction. The start of construction is any of the following, whichever occcurs first: start of grading, start of demolition, or any other site development activities not mentioned above.

[ ] I request a Fee Deferral Schedule, and have enclosed the Fee Deferral Schedule Application.

The Fee Deferral Schedule Application. can be found on the District's website at www.valleyair.org/ISR.

P. Change of Project Developer

The Applicant assumes all responsibility for ISR compliance for this project. If the project developer changes, the Applicant must notify the Buyer, and both Buyer and Applicant must file a 'Change of Project Developer' form with the District. If there is a change of project developer, and a 'Change of Project Developer' form is not filed with the District, the Applicant will remain liable for ISR compliance.

The Change of Project Developer form can be found on the District's website at www.valleyair.org/ISR.

Q. Attachments

Required:	*If applicable:*
[X] Tract Map or Project Design Map	[ ] Letter from Applicant granting Agent authorization
[X] Vicinity Map	[ ] Fee Deferral Schedule Application
[ ] Application Filing Fee $841.00 for mixed use / non-residential / transporation / transit projects **OR** $562.00 for residential projects only	[ ] Monitoring & Reporting Schedule [ ] Supporting documentation for selected Mitigation Measures

R. Certification Statement

I certify that I have reviewed and completed the entire application and hereby attest that the information relayed within is true and correct to the best of my knowledge. I commit to implementation of those on-site mitigation measures that I have selected above. I am responsible for notifying the District if I will be unable to implement these mitigation measures. If a committed mitigation measure is not implemented, the project may be re-assessed for air quality impacts.

(An authorized Agent may sign the form in lieu of the Applicant if an authorization letter signed by the Applicant is provided)

Name (printed): **Charlie Simpson**	Title: **Principal, BaseCamp Environmental, Inc.**
Signature:	Date: 8-22-23

Emissions Estimator Worksheet

11/6/2023

Applicant/Business Name:	DBBC Freight Lines, Inc.
Project Name:	DBBC Freight Lines Truck Terminal
Project Location:	150 W. Frewert Road in Lathrop
District Project ID No.:	20230309

Project Construction Emissions

If applicant selected Construction Clean Fleet Mitigation Measure - Please select "Yes" from dropdown menu: No

			NOx					PM10					
Project Phase Name	ISR Phase	Construction Start Date	Unmitigated Baseline[1] (TPY)	Mitigated Baseline[2] (TPY)	Achieved On-site Reductions[3] (tons)	Required Off-site Reductions[4] (tons)	Emission Reductions Required by Rule[5]	Unmitigated Baseline[1] (TPY)	Mitigated Baseline[2] (TPY)	Achieved On-site Reductions[3] (tons)	Required Off-site Reductions[4] (tons)	Emission Reductions Required by Rule[5]
DBBC Freight Lines, Inc.	1	7/1/2024	0.5332	0.5332	0.0000	0.1066	0.1066	0.0249	0.0249	0.0000	0.0112	0.0112
	2				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	3				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	4				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	5				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	6				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	7				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	8				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	9				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
	10				0.0000	0.0000	0.0000			0.0000	0.0000	0.0000
		Total	0.5332	0.5332	0.0000	0.1066	0.1066	0.0249	0.0249	0.0000	0.0112	0.0112

Total Achieved On-Site Reductions (tons)

ISR Phase	NOx	PM10
1	0.0000	0.0000
2	0.0210	0.0000
3	0.0000	0.0000
4	0.0000	0.0000
5	0.0000	0.0000
6	0.0000	0.0000
7	0.0000	0.0000
8	0.0000	0.0000
9	0.0000	0.0000
10	0.0000	0.0000
Total	0.0210	0.0000

Project Operations Emissions (Area + Mobile)

			NOx						PM10					
Project Phase Name	ISR Phase	Operation Start Date	Unmitigated Baseline[1] (TPY)	Mitigated Baseline[2] (TPY)	Achieved On-site Reductions[3] (tons)	Required Off-site Reductions[4] (tons)	Total Emission Reductions Required by Rule[6]	Average Annual Emission Reductions Required by Rule[7]	Unmitigated Baseline[1] (TPY)	Mitigated Baseline[2] (TPY)	Achieved On-site Reductions[3] (tons)	Required Off-site Reductions[4] (tons)	Total Emission Reductions Required by Rule[6]	Average Annual Emission Reductions Required by Rule[7]
	1				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
DBBC Freight Lines, Inc. (Non-HHD + HHD)	2	12/1/2024	2.1911	2.1883	0.0210	5.4568	5.4778	0.5478	0.0900	0.0900	0.0000	0.4500	0.4500	0.0450
	3				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	4				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	5				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	6				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	7				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	8				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	9				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
	10				0.0000	0.0000	0.0000	0.0000			0.0000	0.0000	0.0000	0.0000
		Total	2.1911	2.1883	0.0210	5.4568	5.4778	0.5478	0.0900	0.0900	0.0000	0.4500	0.4500	0.0450

Total Required Off-Site Reductions (tons)

ISR Phase	NOx	PM10
1	0.1066	0.0112
2	5.4568	0.4500
3	0.0000	0.0000
4	0.0000	0.0000
5	0.0000	0.0000
6	0.0000	0.0000
7	0.0000	0.0000
8	0.0000	0.0000
9	0.0000	0.0000
10	0.0000	0.0000
Total	5.5634	0.4612

Notes:

TPY: Tons Per Year

[1] **Unmitigated Baseline:** The project's baseline emissions generated with no on-site emission reduction measures.

[2] **Mitigated Baseline:** The project's baseline emissions generated after on-site emisison reduction measures have been applied.

[3] **Achieved On-site Reductions:** The project's emission reductions achieved after on-site emission reduction measures have been applied.

[4] **Required Off-site Reductions:** The project's remaining emission reductions required by Rule 9510 if on-site emission reduction measures did not achieive the required rule reductions.

[5] **Emission Reductions Required by Rule:** The project's emission reductions required (20% NOx and 45% PM10) for construction from the unmitigated baseline.

[6] **Total Emission Reductions Required by Rule:** The project's emission reductions required (33.3% NOx and 50% PM10) for operations from the unmitigated baseline over a 10-year period.

[7] **Average Annual Emission Reductions Required by Rule:** The project's total emission reduction for operations required by Rule 9510 divided by 10 years.

Fee Estimator Worksheet

11/6/2023

Applicant/Business Name:	DBBC Freight Lines, Inc.
Project Name:	DBBC Freight Lines Truck Terminal
Project Location:	150 W. Frewert Road in Lathrop
District Project ID No.:	20230309

NOTES:

(1) The start date for each ISR phase is shown in TABLE 1.

(2) If you have chosen a **ONE-TIME** payment for the project, then the total amount due for ALL PHASES is shown under TABLE 2.

(3) If you have chosen a **DEFERRED** payment schedule or would like to propose a **DEFERRED** payment schedule for the project, the total amount due for a specific year is shown in TABLE 3 according to the schedule in TABLE 1.

* If you have not provided a proposed payment date, the District sets a default invoice date of 60 days prior to start of the ISR phase.

If applicant selected Fee Deferral Schedule - Please select "Yes" from dropdown menu	No ▼

TABLE 1 - PROJECT INFORMATION

Project Phase Name	ISR Phase	Start Date per Phase	Scheduled Payment Date*
DBBC Freight Lines, Inc.	1	7/1/24	6/30/2024
DBBC Freight Lines, Inc. (Non-HHD + HHD)	2	12/1/24	6/30/2024
	3		
	4		
	5		
	6		
	7		
	8		
	9		
	10		
TOTAL (tons)			

TABLE 2 - No Fee Deferral Schedule (FDS)

Pollutant	Required Offsite Reductions (tons)	TABLE 2 - NO FDS 2024
NOx	0.1066	0.1066
PM10	0.0112	0.0112
NOx	5.4568	5.4568
PM10	0.4500	0.4500
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	0.0000	0.0000
PM10	0.0000	0.0000
NOx	5.5634	5.5634
PM10	0.4612	0.4612

Offsite Fee by Pollutant ($)	NOx	$52,017
	PM10	$4,154
Administrative Fee ($)		$2,246.84
Offsite Fee ($)		$56,171.00
Total Project Offsite Fee ($)		$58,417.84

Rule 9510 Fee Schedule ($/ton)		
Year	Nox	PM10
2024 and Beyond	$9,350	$9,011

TABLE 3 - APPROVED FEE DEFERRAL SCHEDULE (FDS) BY PAYMENT YEAR

2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
$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	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
					$0.00					

Indirect Source Review
Complete Project Summary Sheet & Monitoring and Reporting Schedule

Project Name:	**DBBC FREIGHT LINES TRUCK TERMINAL**
Applicant Name:	**DBBC FREIGHT LINES, INC.**
Project Location:	**150 W. FREWERT ROAD** **S. MANTHEY ROAD** **APN(s): 191-230-11, 191-230-12, 191-230-14**
Project Description:	**LAND USE:** **Other - 4 Acres - Other** **Other - 4 Acres - Other** **ACREAGE: 34.21**
ISR Project ID Number:	**C-20230309**
Applicant ID Number:	**C-303845**
Permitting Public Agency:	**COUNTY OF SAN JOAQUIN**
Public Agency Permit No.	**PA-2100226, -2100227, -2100228**

Existing Emission Reduction Measures

Enforcing Agency	Measure	Quantification	Notes

There are no Existing Measures for this project.

Non-District Enforced Emission Reduction Measures

Enforcing Agency	Measure	Specific Implementation	Source Of Requirements

There are no Non-District Enforced Measures for this project.

District Enforced Emission Reduction Measures

Enforcing Agency	Measure	Specific Implementation	Measure For Compliance	District Review
SJVAPCD	Construction and Operation - Recordkeeping	For each project phase, all records shall be maintained on site during construction and for a period of ten years following either the end of construction or the issuance of the first certificate of occupancy, whichever is later. Records shall be made available for District inspection upon request.	(Compliance Dept. Review)	
SJVAPCD	Construction and Operational Dates	For each project phase, maintain records of (1) the construction start and end dates and (2) the date of issuance of the first certificate of occupancy, if applicable.	(Compliance Dept. Review)	
SJVAPCD	Install Electric Vehicle (EV) Chargers	Install electric vehicle chargers with 1 outlets total	(Compliance Dept. Review)	

(District Enforced Emission Reduction Measures Continued)

Enforcing Agency	Measure	Specific Implementation	Measure For Compliance	District Review

Number of District Enforced Measures: 3

Traffic Impact Analysis Report

Frewert Trucking TIS

San Joaquin County, California

April 28, 2023

TJKM

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EXECUTIVE SUMMARY

This report summarizes the results of the Traffic Impact Study (TIS) conducted for the proposed Frewert Road Truck Parking facility located southwest of the intersection of Manthey Road Frewert Road in unincorporated San Joaquin County. The proposed project consists of a 34 acre paved parking lot with the potential for 677 truck and trailer parking stalls, and three support buildings of about 9,000 square feet (s.f.).

The purpose of this report is to evaluate traffic impacts on the surrounding transportation system with the proposed project. A focused VMT analysis of the proposed project was conducted for CEQA purposes and is summarized in this report. To evaluate the effects on the transportation infrastructure due to the addition of traffic from the proposed project, an LOS analysis was conducted to determine consistency with San Joaquin County plans and standards.

Vehicle Miles Traveled

For VMT forecasting, the San Joaquin County Transportation Analysis Guidelines (September 2020, page 5) states that VMT is only relevant for daily automobile travel. As this project is a truck terminal parking facility, only the site buildings are analyzed for the VMT significance criteria. Under CEQA, small office projects that are consistent with the San Joaquin County General Plan and are smaller than 11,300 square feet in size are exempt from VMT analysis and thus do not have a significant VMT impact. Since the total build out component for this project totals only 8,780 square feet, it is found to have a less than significant impact on VMT.

Project Trip Generation

TJKM developed estimated project trip generation for the proposed project based on trip generation rates developed for this project, since published trip rates were not available. The proposed project is expected to generate 2,395 total daily trips, including 124 a.m. peak hour trips (60 in, 64 out) and 170 p.m. peak hour trips (77 in, 93 out).

Existing Conditions

Under this scenario, all study intersections operate within applicable jurisdictional standards during both peak hours, except the intersection at Roth Road/S. Harlan Road (Intersection #1), which operates at unacceptable LOS E during the p.m. peak hour. This project is in the City of Lathrop, who has plans to improve this intersection. In effect, the main intersection will be relocated about 600 feet to the east and signalized. The current intersection will essentially operate with turns to and from Harlan Road restricted to right turns only.

Background Conditions

Under this scenario, all study intersections operate within applicable jurisdictional standards during both peak hours, except the intersections at Roth Road/S. Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps, which operate at unacceptable LOS during at least one peak hour.

Background plus Project Conditions

Under this scenario, all study intersections operate within applicable jurisdictional standards during both peak hours, except the intersections at Roth Road/S. Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps, which operate at unacceptable LOS during at least one peak hour.

With mitigations, which include signalization at Roth Road/S. Harlan Road and all-way stop control at Roth Road/I-5 Southbound Ramps, they will operate at acceptable LOS during both peak hours. However, as noted above the main Harlan/Roth intersection will be relocated to the east. The signalization of the intersections at the Roth Road and I-5 interchange are included in the list of planned improvements by the County's RTP/SCS and Congestion Management Program (CMP).

Cumulative Conditions

Under this scenario, all study intersections operate within applicable jurisdictional standards during both peak hours, except the intersections at Roth Road/S. Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps, which operate at unacceptable LOS during at least one peak hour.

Cumulative plus Project Conditions

Under this scenario, all study intersections operate within applicable jurisdictional standards during both peak hours, except the intersections at Roth Road/S. Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps, which operate at unacceptable LOS during at least one peak hour.

With mitigations, which include signalization at Roth Road/S. Harlan Road and all-way stop control at Roth Road/I-5 Southbound Ramps, both intersections will operate at acceptable LOS during both peak hours as noted in the Harlan adjustments described above. The signalization of the intersections at the Roth Road and I-5 interchange are included in the list of planned improvements by the County's RTP/SCS and Congestion Management Program (CMP).

Site Access and On-Site Circulation

TJKM concluded that the site plan will operate acceptably and provide adequate connection to existing streets and circulation within the site. The proposed project does not conflict with existing and planned pedestrian, bicycle, or transit facilities, and project trips can be accommodated by the existing transit capacity. Although site access and circulation for passenger vehicles and trucks are considered adequate, TJKM notes potential conflicts at the eastern driveway. A right turn must be performed just after entering the eastern driveway. This may be a difficult movement for larger trucks to complete, and thus it is likely that larger trucks would mainly use the western driveway.

Parking

In order to satisfy San Joaquin County requirements, the project must provide two parking spaces. The project provides five parking spaces, including one accessible space. Thus, the provided parking is **adequate** and meets San Joaquin County requirements. Private vehicles for truckers using the site

Queueing Analysis

Queue lengths at the study intersections do not exceed capacity without and with the addition of project traffic. Thus, the proposed project does not create a significant impact by itself on the expected left-turn or right-turn queues at the study intersections. Queue lengths at the proposed project driveways do not

exceed capacity without and with the addition of project traffic. Thus, the proposed project does not create a significant impact by itself on the expected left-turn or right-turn queues at the project driveways.

1.0 INTRODUCTION

This report summarizes the results of the Traffic Impact Study (TIS) conducted for the proposed truck parking facility located southwest of the intersection of Manthey Road and Frewert Road in an unincorporated area west of Lathrop. The proposed project consists of a 34 acre paved parking lot with the potential for 677 truck and trailer parking stalls, and three support buildings of about 9,000 square feet (s.f.).

This chapter discusses the TIS purpose, project study area, and analysis scenarios. **Figure 1** shows the study area and project site location. **Figure 2** shows the site plan for the proposed project, dated September 15, 2021.

1.1 Study Purpose

The purpose of this report is to evaluate traffic impacts on the surrounding transportation system with the proposed project. For CEQA purposes, a VMT screening analysis was conducted. To evaluate the effects on the transportation infrastructure due to the addition of traffic from the proposed project, an LOS analysis was conducted to determine consistency with San Joaquin County plans and standards.

1.2 Study Locations

TJKM evaluated traffic conditions at seven study intersections during the a.m. and p.m. peak hours for a typical weekday. The study intersections were selected based on TJKM's working knowledge of the area with input and approval from San Joaquin County staff.

The peak periods observed were between 7:00-9:00 a.m. and 4:00-6:00 p.m. The study intersections and associated traffic controls are as follows:

1. Roth Road & S. Harlan Road (All-Way Stop)
2. Roth Road & I-5 Northbound Ramps (One-Way Stop)
3. Roth Road & I-5 Southbound Ramps (One-Way Stop)
4. Roth Road & Manthey Road (One-Way Stop)
5. Manthey Road & Frewert Road (One-Way Stop)
6. Frewert Road & Project Access #1 (One-Way Stop)
7. Frewert Road & Project Access #2 (One-Way Stop)

TJKM evaluated traffic conditions along one roadway segment for a typical weekday under all study scenarios. The roadway segment follows:

1. Manthey Road, between Frewert Road and Roth Road

1.3 Study Scenarios

The roadway operations analysis addresses the following four traffic scenarios:

- **Existing Conditions** – This scenario evaluates the study intersections based on existing traffic volumes, lane geometry and traffic controls.

- **Background Conditions** – This scenario is based on Existing Conditions, with the addition of traffic generated by major development projects affecting the study area.
- **Background plus Project** – This scenario is identical to Background Conditions, but with the addition of traffic from the proposed project.
- **Cumulative Conditions (2040)** – This scenario considers the development of the county and surrounding communities to the year 2040, projecting existing traffic volumes to the year 2040 using a compounding annual growth factor. TJKM has calculated growth rates for a.m. and p.m. peak hours, based on the current SJCOG travel demand model for the I-5 corridor near Roth Road, as furnished by the City of Lathrop. Annual growth rates of 1.11 percent (a.m. peak) and 1.61 (p.m. peak) were used.
- **Cumulative plus Project Conditions** – This scenario is identical to Cumulative Conditions, but with the addition of traffic from the proposed project.

Figure 1: Vicinity Map

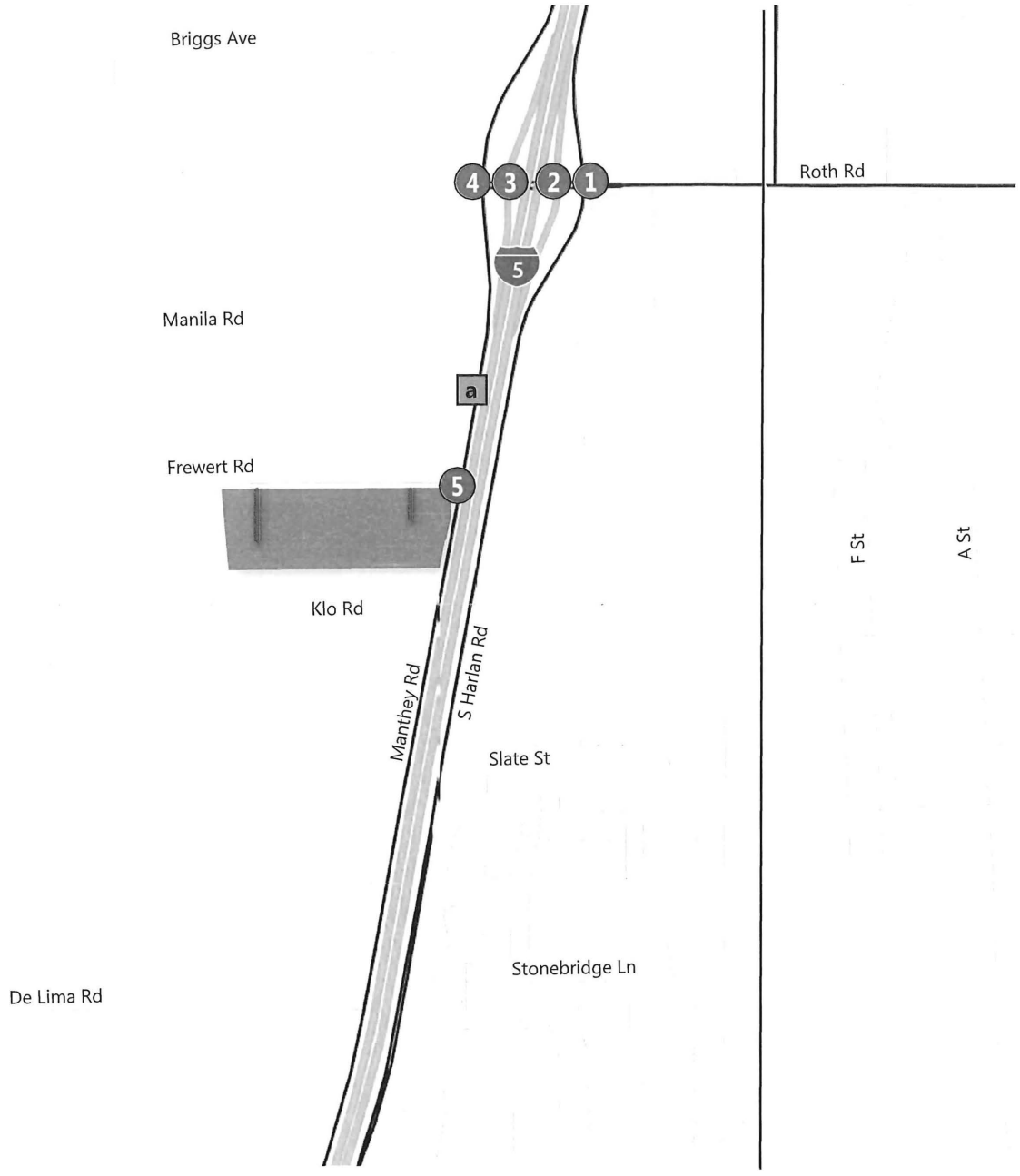
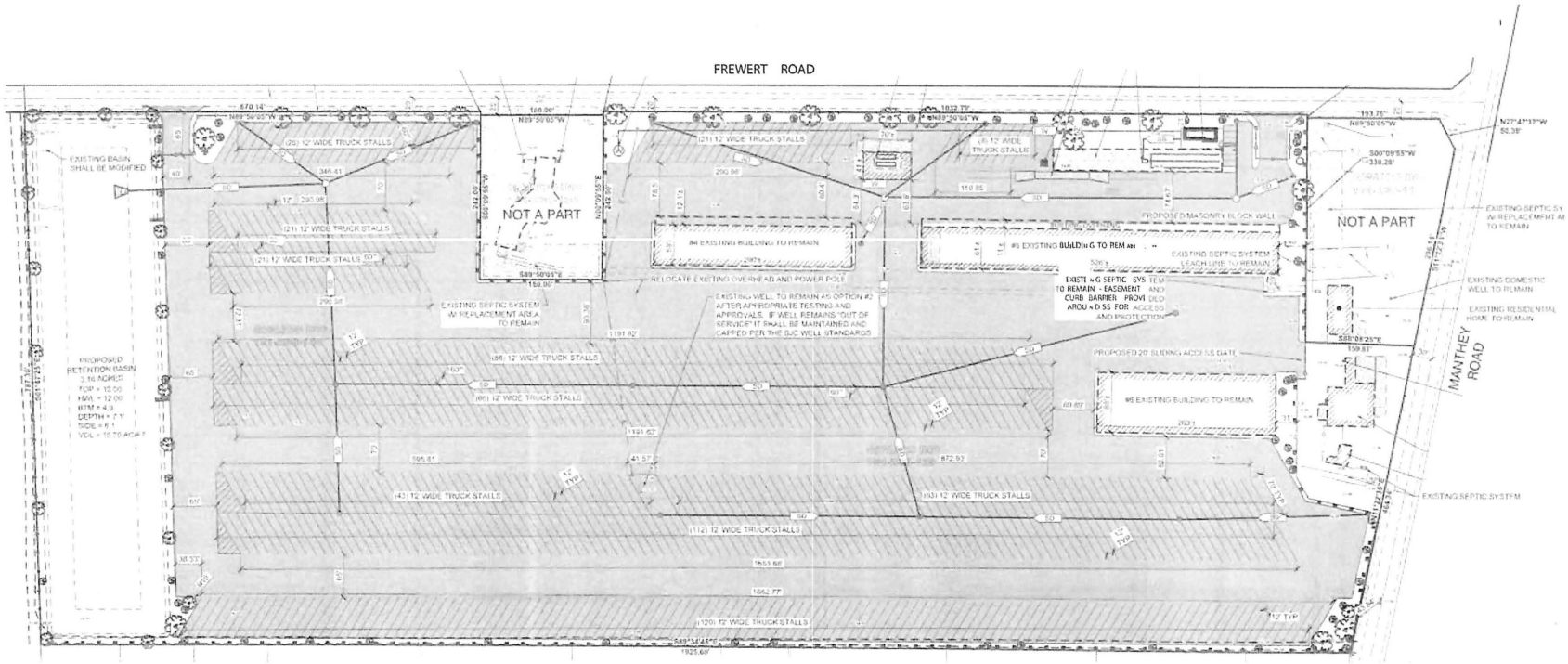


Figure 2: Site Plan



2.0 STUDY METHODOLOGY

Traffic impacts related to the proposed project were evaluated for both compliance with applicable regulatory documents and environmental significance as defined in the California Environmental Quality Act (CEQA). The CEQA analysis was conducted in accordance with the *CEQA Transportation Analysis Guidelines* finalized in September 2020 by San Joaquin County. As of July 1, 2020, intersection level of service (LOS) can no longer be used to determine significant CEQA impacts. However, a local traffic impact study was conducted to determine consistency with San Joaquin County plans and standards. This non-CEQA analysis was conducted based on the Traffic Impact Study Guidelines for San Joaquin County, dated November 2008, as updated.

2.1 Vehicle Miles Traveled

This study evaluates project-related VMT as outlined in the adopted San Joaquin County VMT methodology, as outlined in the *CEQA Transportation Analysis Guidelines*.

The Governor's Office of Planning and Research (OPR) *Technical Advisory* (December 2018) provides guidance to analysts and local jurisdictions for implementing VMT as a metric for determining the transportation impact for land use projects. The OPR guidelines state that for analysis purposes, "VMT" refers to automobile VMT, specifically passenger vehicles and light trucks. Heavy truck traffic is typically excluded.

The County guidelines include a screening process that describes scenarios in which a project would be exempted from a VMT analysis requirement, including screening by project type and maps identifying low-VMT areas. Since the screening criteria mentioned above do not apply to this project, a qualitative VMT analysis was prepared.

2.2 Level of Service Analysis Methodology

Although Level of Service (LOS) is no longer relevant to CEQA, LOS can be used to determine conformity with an adopted general plan or congestion management program. LOS is a qualitative measure that describes operational conditions as they relate to the traffic stream and perceptions by motorists and passengers. The LOS generally describes these conditions in terms of such factors as speed and travel time, delays, freedom to maneuver, traffic interruptions, comfort, convenience, and safety. The operational LOS are given letter designations from A to F, with A representing the best operating conditions (free-flow) and F the worst (severely congested flow with high delays). Intersections generally are the capacity-controlling locations with respect to traffic operations on arterial and collector streets in urban areas.

Signalized Intersections

The study intersections under traffic signal control were analyzed using the 6th Edition Highway Capacity Manual (HCM) Operations Methodology for signalized intersections described in Chapter 18 (HCM 6th Ed.). This methodology determines LOS based on average control delay per vehicle for the overall intersection during peak hour intersection operating conditions. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for

signalized intersections was calculated using Synchro 10 analysis software and was correlated to a LOS designation as shown in **Table 1**.

Table 1: Signalized Intersection Delay and LOS Definitions

Level of Service	Description	Average Control Delay
A	Signal progression is extremely favorable. Most vehicles arrive during the green phase and do not stop at all. Short cycle lengths may also contribute to the very low vehicle delay.	10.0 or less
B	Operations characterized by good signal progression and/or short cycle lengths. More vehicles stop than with LOS A, causing higher levels of average vehicle delay.	10.1 to 20.0
C	Higher delays may result from fair signal progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, though may still pass through the intersection without stopping.	20.1 to 35.0
D	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable signal progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 55.0
E	This is considered to be the limit of acceptable delay. These high delay values generally indicate poor signal progression, long cycle lengths, and high volume-to-capacity (V/C) ratios. Individual cycle failures occur frequently.	55.1 to 80.0
F	This level of delay is considered unacceptable by most drivers. This condition often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. Poor progression and long cycle lengths may also be major-contributing causes of such delay levels.	greater than 80.0

Source: Highway Capacity Manual 6th Ed., Chapter 18 (Transportation Research Board, 2010)
Average Control Delay per Vehicle in seconds

Unsignalized Intersections

The study intersections under stop control (unsignalized) were analyzed using the 6th Edition HCM Operations Methodology for unsignalized intersections described in Chapter 20 (HCM 6th Ed.). LOS ratings for stop-sign controlled intersections are based on the average control delay expressed in seconds per vehicle. At the side street, one-way or two-way stop controlled intersections, the control delay is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, the control delay is computed as the average of all movements in that lane. The weighted average delay for the entire intersections is presented for all-way stop controlled intersections. The average control delay for unsignalized intersections was calculated using Synchro 10 analysis software and was correlated to a LOS designation as shown in **Table 1a**.

Table 1a: Unsignalized Intersection Delay and LOS Definitions

Level of Service	Description	Average Control Delay
A	Little or no traffic delay	≤10
B	Short Traffic delays	>10 – 15
C	Average traffic delays	>15 – 25
D	Long traffic delays	>25 – 35
E	Very long traffic delays	>35 – 50
F	Extreme traffic delays	>50

Source: Highway Capacity Manual 6th Ed., Chapter 20 (Transportation Research Board, 2010)
Average Control Delay per Vehicle in seconds

2.3 Level of Service Standards

Although level of service is no longer used for identifying impacts under CEQA, level of service analysis is still used for determining consistency with adopted agency plans and standards. Where standards refer to significant environmental impacts, this analysis instead identifies these as significant inconsistencies with adopted plans.

San Joaquin County

San Joaquin County has established the acceptable LOS on County roadways and intersections. On minor arterials and roadways of higher classification, the level of service standard for intersections is LOS D, and LOS C on all other roads. For roadways and intersections already exceeding the applicable acceptable LOS standard, any increase in v/c or delay, respectively, would constitute a significant impact requiring mitigation.

3.0 EXISTING CONDITIONS

This section describes existing conditions in the immediate project site vicinity, including roadway facilities, bicycle and pedestrian facilities, and available transit service. In addition, existing traffic volumes and operations are presented for the study intersections, including the results of LOS calculations.

3.1 Existing Setting and Roadway System

Relevant roadways in the project vicinity are discussed below and shown in **Figure 1**:

Interstate 5 (I-5) is a major north-south freeway that runs through the eastern portion of the City of Lathrop. It is generally an eight-lane freeway with three travel lanes in each direction through the City of Lathrop and near the project site. Between Sacramento and Grapevine, SR 99 and I-5 generally run parallel, serving inland cities and counties.

Roth Road is a two- to four-lane, east-west roadway north of the project frontage. In the study area, the arterial mainly provides access to industrial land uses. Roth Road extends between Manthey Road in the west to Airport Way to the east. The posted speed limit on Roth Road ranges between 45 and 50 miles per hour (mph) within the roadway extents.

Manthey Road is a two-lane, north-south frontage road that runs parallel to I-5 Southbound. The roadway extends between French Camp Road in the north and Spartan Way to the south. In the study area, this roadway mainly provides access to industrial and agricultural land uses. Manthey Road has a posted speed limit ranging between 35 and 45 mph within the project vicinity.

Frewert Road is a two-lane, east-west roadway that is located along the northern frontage of the project site. Frewert Road extends from the Manthey Road in the east to the San Joaquin River in the west. In the study area, the roadway mainly provides access to agricultural land uses. Frewert Road does not have a posted speed limit.

3.2 Existing Pedestrian Facilities

Walkability is defined as the ability to travel easily and safely between various origins and destinations without having to rely on automobiles or other motorized travel. The ideal "walkable" community includes wide sidewalks, a mix of land uses such as residential, employment, and shopping opportunities, a limited number of conflict points with vehicle traffic, and easy access to transit facilities and services.

Pedestrian facilities consist of crosswalks, sidewalks, pedestrian signals, and off-street paths, which provide safe and convenient routes for pedestrians to access the destinations such as institutions, businesses, public transportation, and recreation facilities.

In the immediate project vicinity, sidewalks are not provided. A short sidewalk segment exists on the north side of Roth Road for approximately 600 feet.

3.3 Existing Bicycle Facilities

Bicycle paths, lanes and routes are typical examples of bicycle transportation facilities, which are defined by Caltrans as being in one of the following three classes:

- Class I Multi-use Trail – a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
- Class II Bike Lane –a designated lane for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and cross-flows by pedestrians and motorists permitted.
- Class III Bike Route –a route designated by signs or pavement markings and shared with pedestrians and motorists.

There are no bicycle facilities within the immediate project vicinity. The nearest bike facility is a Class I multi-use path that runs parallel to State Route 120, located at the southern portion of the City of Lathrop.

The San Joaquin Council of Governments (SJCOG) Regional Bicycle, Pedestrian, and Safe Routes to School Master Plan, adopted September 2012, proposes several bicycle facilities in the City of Lathrop. In the project vicinity, the plan proposes Class III bike routes on Roth Road, Manthey Road, Harlan Road and Golden Valley Parkway. In the future, Golden Valley Parkway is planned to extend north to Roth Road, and thus will provide vehicle and bicycle access to the project site.

3.4 Existing Transit Facilities

The project vicinity is served by the San Joaquin Regional Transit District (RTD). RTD operates local, express, and inter-city buses within San Joaquin County. In the immediate project vicinity, there are no bus stops. Routes 90 and 91 run through the project area via Interstate 5 and Harlan Road.

3.5 Existing Conditions Data Collection

TJKM evaluated existing traffic conditions at selected study intersections during the a.m. and p.m. peak hours on a typical weekday. Intersection turning movement counts of vehicles, bicycles, and pedestrians were collected during weekday a.m. peak period (7:00-9:00 a.m.) and p.m. peak period (4:00-6:00 p.m.) on in 2018 for the study intersections along Roth Road, and on Wednesday, July 27, 2022, for the intersection at Manthey Road and Frewert Road (Intersection #5). Additionally, 24-hour volume counts (ADT) were collected on Manthey Road on Thursday, July 28, 2022. Under Existing Conditions, TJKM used the collected traffic counts for intersection and segment operations analyses.

The traffic count data are included in **Appendix A.** The existing lane geometries and traffic control at each study intersection are illustrated on **Figure 3** and intersection turning movement volumes at each study intersection are illustrated on **Figure 4**.

3.6 Intersection Level of Service Analysis – Existing Conditions

This scenario evaluates the study intersections based on collected peak hour traffic volumes, and existing lane geometry and traffic controls, as described above. The peak hour factors calculated from the existing

turning movement counts were used for the study intersections for the Existing Conditions analysis. The results of the LOS analysis are reported using the HCM 6th Edition methodology in the Synchro 10 software program. **Table 2** summarizes the LOS results for the study intersections under Existing Conditions.

Under this scenario, all study intersections operate within applicable jurisdictional standards during both peak hours, except the intersection at Roth Road/S Harlan Road (Intersection #1), which operates at LOS E during the p.m. peak. **Appendix B** contains the detailed LOS analysis worksheets under Existing Conditions.

Table 2: Intersection Level of Service Analysis – Existing Conditions

ID	*Intersection*	*Intersection Control*	*Peak Hour*[1]	*Existing Conditions*	
				Average Delay[2]	*LOS*[3]
1	Roth Road & S Harlan Road	AWSC	AM	19.1	C
			PM	**42.5**	**E**
2*	Roth Road & I-5 Northbound Ramps	One-Way Stop	AM	10.6	B
			PM	11.9	B
3*	Roth Road & I-5 Southbound Ramps	One-Way Stop	AM	17.6	C
			PM	18.4	C
4	Roth Road & Manthey Road	One-Way Stop	AM	10.5	B
			PM	10.3	B
5	Manthey Road & Frewert Road	One-Way Stop	AM	9.3	A
			PM	9.7	A

Notes:
*Indicates intersections which follow Caltrans standards of LOS C or better.
1. AM – morning peak hour, PM – evening peak hour
2. Whole intersection weighted average control delay expressed in seconds per vehicle for all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.
3. LOS = Level of Service
Bold indicates unacceptable operational conditions based on applicable jurisdictional standards.

3.7 Roadway Segment Level of Service Analysis – Existing Conditions

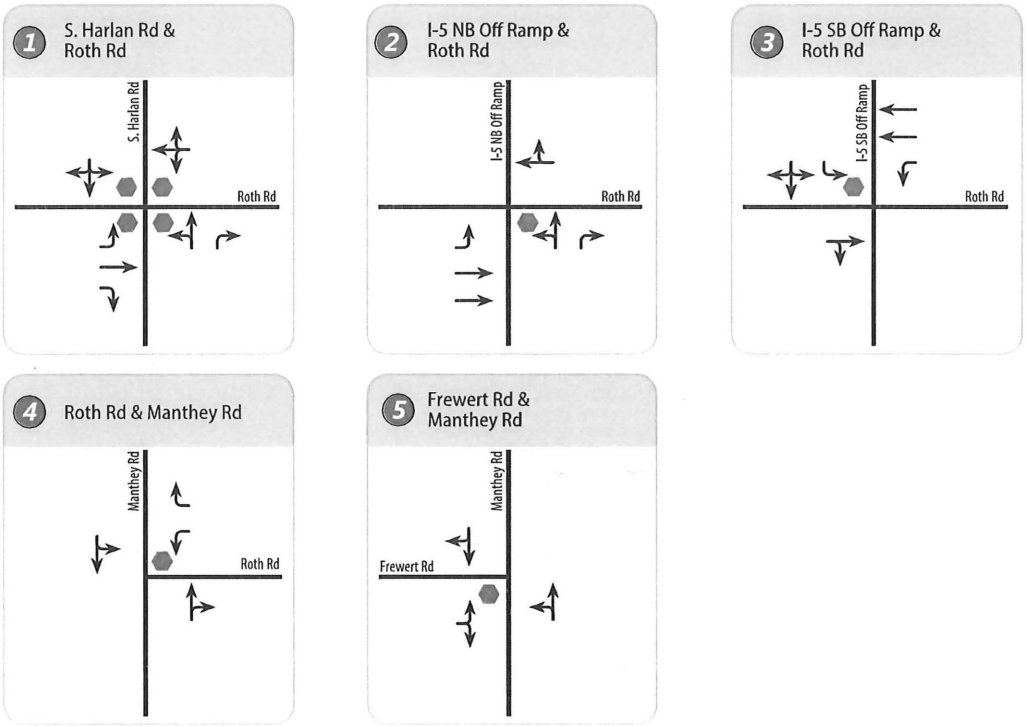
The analysis methodology used to analyze roadway facilities is described in the LOS analysis methodology section. LOS was determined by comparing existing traffic volumes for selected roadway segments with daily traffic capacities. A 24-hour, bi-directional count was collected for the listed roadway segment on Thursday, July 28, 2022. **Table 3** below summarizes the roadway segment operations under existing conditions and includes facility type; maximum daily volumes, no. of lanes, daily volumes and LOS information for each study roadway segment. Under Existing Conditions, the study segment is expected to be operating at a satisfactory LOS B.

Table 3: Roadway Segment Level of Service Analysis - Existing Conditions

#	*Roadway Segment*	*Facility Type*	*No. of Lanes / Divided-Undivided*	*NB Daily Volume*	*SB Daily Volume*	*Daily Volume[1]*	*Level of Service[2]*
1	Manthey Road, between Frewert Road and Roth Road	Collector	2-Lane Undivided	1,640	1,418	3,058	B

Notes:
[1]Daily traffic bi-directional volume under Existing Conditions.
[2]LOS – Level of Service

Figure 3: Existing Lane Geometry and Traffic Controls

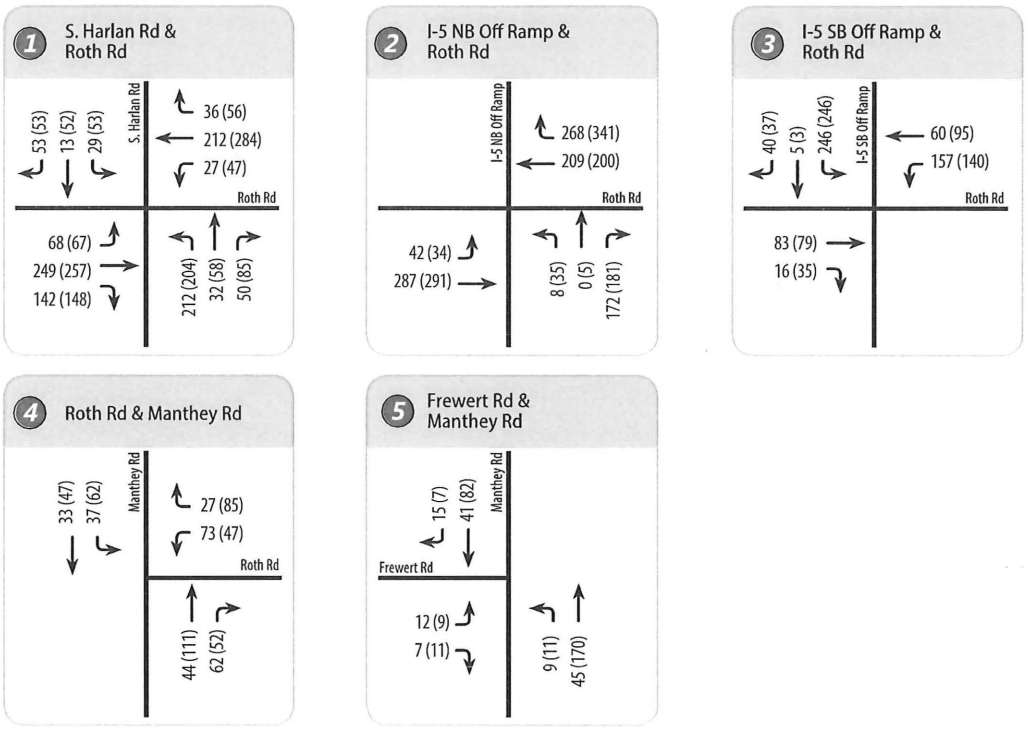


LEGEND

- Project Site
- Study Intersection
- Project Driveway
- Stop Sign

N

Figure 4: Existing Conditions Peak Hour Traffic Volumes



LEGEND

■	Project Site	XX	AM Peak Hour Volumes
Ⓧ	Study Intersection	(XX)	PM Peak Hour Volumes
—	Project Driveway		

N

4.0 BACKGROUND NO-PROJECT CONDITIONS

The Background No-Project Conditions analysis forecasts how the study area's transportation system would operate with the growth and changes of the surrounding community for the near term future traffic conditions. Background (No-Project) Conditions volumes were based on Existing Conditions traffic counts with the addition of approved near term projects in the surrounding area. Near term projects were obtained from the City of Lathrop and San Joaquin County. **Figure 5** shows projected turning movement volumes at the study intersections under Background Conditions.

4.1 Intersections Level of Service Analysis – Background No-Project Conditions

The intersection LOS analysis results for Background No-Project Conditions are summarized in **Table 4**. Under this scenario, all study intersections would continue to operate within applicable jurisdictional standards during both peak hours, except the intersection at Roth Road/S Harlan Road (Intersection #1), which operates at LOS F during the p.m. peak, and the intersection at Roth Road/I-5 Southbound Ramps (Intersection #3), which operates at LOS D during both peaks. **Appendix C** contains detailed LOS analysis worksheets for Background (No-Project) Conditions.

Table 4: Intersection Level of Service Analysis – Background (No-Project) Conditions

ID	*Intersection*	*Intersection Control*	*Peak Hour*[1]	*Background Conditions*	
				Average Delay[2]	*LOS*[3]
1	Roth Road & S Harlan Road	AWSC	AM	28.1	D
			PM	**73.1**	**F**
2*	Roth Road & I-5 Northbound Ramps	One-Way Stop	AM	11.6	B
			PM	13.4	B
3*	Roth Road & I-5 Southbound Ramps	One-Way Stop	AM	**26.5**	**D**
			PM	**26.1**	**D**
4	Roth Road & Manthey Road	One-Way Stop	AM	12.4	B
			PM	15.6	C
5	Manthey Road & Frewert Road	One-Way Stop	AM	11.2	B
			PM	12.9	B

Notes:
1. AM – morning peak hour, PM – evening peak hour
2. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.
3. LOS = Level of Service
Bold indicates unacceptable operational conditions based on applicable jurisdictional standards.

4.2 Roadway Segment Level of Service Analysis – Background Conditions

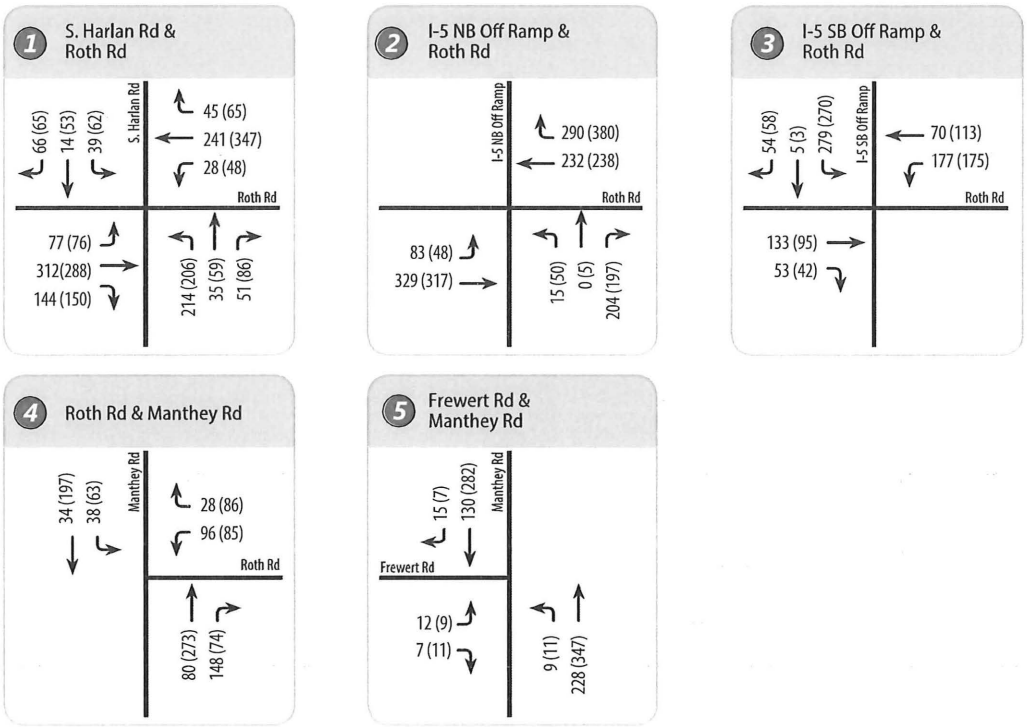
Table 5 below summarizes the roadway segment operations under Background Conditions and includes facility type; maximum daily volumes, number of lanes, daily volumes and LOS information for each study roadway segment. Under Background Conditions, the study segment is expected to be operating at a satisfactory LOS C.

Table 5: Roadway Segment Level of Service Analysis – Background Conditions

#	*Roadway Segment*	*Facility Type*	*No. of Lanes / Divided-Undivided*	*NB Daily Volume*	*SB Daily Volume*	*Daily Volume[1]*	*Level of Service[2]*
1	Manthey Road, between Frewert Road and Roth Road	Collector	2-Lane Undivided	2,215	1,830	4,045	C

Notes:
[1]Daily traffic bi-directional volume under Background Conditions.
[2]LOS – Level of Service

Figure 5: Background Conditions Peak Hour Traffic Volumes



LEGEND

- Project Site
- Study Intersection
- Project Driveway
- XX AM Peak Hour Volumes
- (XX) PM Peak Hour Volumes

N

5.0 BACKGROUND PLUS PROJECT CONDITIONS

5.1 Vehicle Miles Traveled (VMT)

Compliance with Senate Bill (SB) 743 will include replacement of LOS with Vehicle Miles Traveled (VMT) for purposes of assessing traffic impacts under the California Environmental Quality Act (CEQA) described in new Section 15064.3 of the CEQA Guidelines that will be applied statewide that began on July 1, 2020. Lead agencies will have discretion to choose the most appropriate methodology to evaluate a project's vehicles miles traveled, including whether to express the change in absolute terms, per capita, per household or any other measure. VMT refers to the amount and distance of automobile travel "attributable to a project". San Joaquin County formally adopted CEQA Transportation Analysis Guidelines in September 2020. The guidelines provide a general guide in assessing the potential transportation impacts of proposed projects under CEQA.

1. Screening Criteria

The County guidelines provide standards for identifying which types of projects should be expected to not result in a significant VMT impact, and a detailed CEQA analysis would not be required to evaluate the project VMT. The following are project types that maybe screened out for further VMT analysis:

- Projects that generate fewer than 110 daily trips.
- Map based screening for Residential and Office Projects. The project falls outside of the screening maps provided by San Joaquin County.
- Less than significant impact near transit stations. The project is not located within a half mile of an existing major transit stop.
- Less than significant impact near affordable residential development. The project is not a housing project and thus does not contain any affordable residential housing units.

Since the screening criteria mentioned above do not apply to this project, a qualitative VMT analysis was prepared.

2. VMT Forecasting

TJKM has prepared this VMT analysis for the Lathrop Area Truck Parking Facility project, which consist of a 34 acre parcel which will be converted to a truck parking terminal for 677 trucks. In addition, there will be a 1,000 square foot guardhouse, a 2,800 square foot truck fueling facility canopy, an 80 square foot truck scale building, and an existing 4,900 truck maintenance shop for the facility. The facilities for this project total 8,780 square feet. For VMT forecasting, the San Joaquin County Transportation Analysis Guidelines (September 2020, page 5) states that VMT is only relevant for daily automobile travel. As this project is a truck terminal parking facility, only the site buildings will be analyzed for the VMT significance criteria.

Under CEQA, small office projects that are consistent with the San Joaquin County General Plan and are smaller than 11,300 square feet in size are exempt from VMT analysis and thus do not have a significant VMT impact. Since the total build out component for this project totals only 8,780 square feet, it is found to have an insignificant impact on VMT.

The truck parking terminal project is also strategically located near other trucking hubs, and also is located near two major freeway ramps (Roth Road to the north and Lathrop Road to the south) for Interstate 5. Most importantly, this project is located right next to the Union Pacific Lathrop Intermodal Terminal, which

handles large amounts of freight and container transfers between rail and trucks. This project synergizes well with other truck facilities in the area and provides direct access to Interstate 5 and other major distribution centers in the area, decreasing the need for trucks to travel further to find adequate parking and resting facilities. Thus, the proposed truck parking terminal project would have a **less than significant impact on VMT.**

5.2 Project Trip Generation

TJKM would normally develop estimated project trip generation for the proposed project by utilizing published trip generation rates from the ITE publication *Trip Generation (11th Edition)*. In this case, the appropriate land use category is Intermodal Truck Terminal (ITE Code 030). For this land use, the two land use variables available are Trips/Employee and Trips/Building Area. In this case, neither of these categories seem relevant. The desired variable is Trips/Acre. Previous editions of *Trip Generation* did include this variable but not the 11th edition. Presumably, the omission was because the information was out of date or unreliable. Accordingly, TJKM conducted a detailed evaluation of Sunrise Trucking, a Lathrop truck terminal located at 865 E. Roth Road. To conduct the study, TJKM filmed the entrance and exit of the facility for 48 hours, making note of the type of vehicle (auto, single unit truck, or tractor trailer) and recorded the information in 15 minute intervals. With this information, reliable trip generation information for daily, a.m. peak hour, and p.m. peak hour rates per acre were obtained. The results were approved by San Joaquin County and are shown in Table 6. Given the newly measured rates, the proposed Frewert Road project is expected to generate 2,395 total daily trips, including 124 a.m. peak hour trips (60 in, 64 out) and 170 p.m. peak hour trips (77 in, 93 out).

Table 6 shows the trips expected to be generated by the proposed project.

Table 6: Project Trip Generation

Land Use (ITE Code)[1]	*Size*		*Daily*		*AM Peak*					*PM Peak*				
			Rate	*Trips*	*Rate*	*In:Out*	*In*	*Out*	*Total*	*Rate*	*In:Out*	*In*	*Out*	*Total*
Intermodal Truck Terminal (LU 030)	34.21	Acre	70.00	2,395	3.63	48:52	60	64	124	4.96	45:55	77	93	170
Total				**2,395**			**60**	**64**	**124**			**77**	**93**	**170**

Notes:
1. *Trip Generation, 11th Edition*, Institute of Transportation Engineers (ITE), 2021.

5.3 Project Trip Distribution and Assignment

Trip distribution is a process that determines in what proportion vehicles would be expected to travel between the project site and various destinations outside the project study area. Assignment determines the various routes that vehicles would take from the project site to each destination using the calculated trip distribution. Trip distribution assumptions for the proposed development project were developed based on the existing travel patterns, TJKM's knowledge of the study area, and input by County staff. The distribution assumptions for the proposed project are as follows:

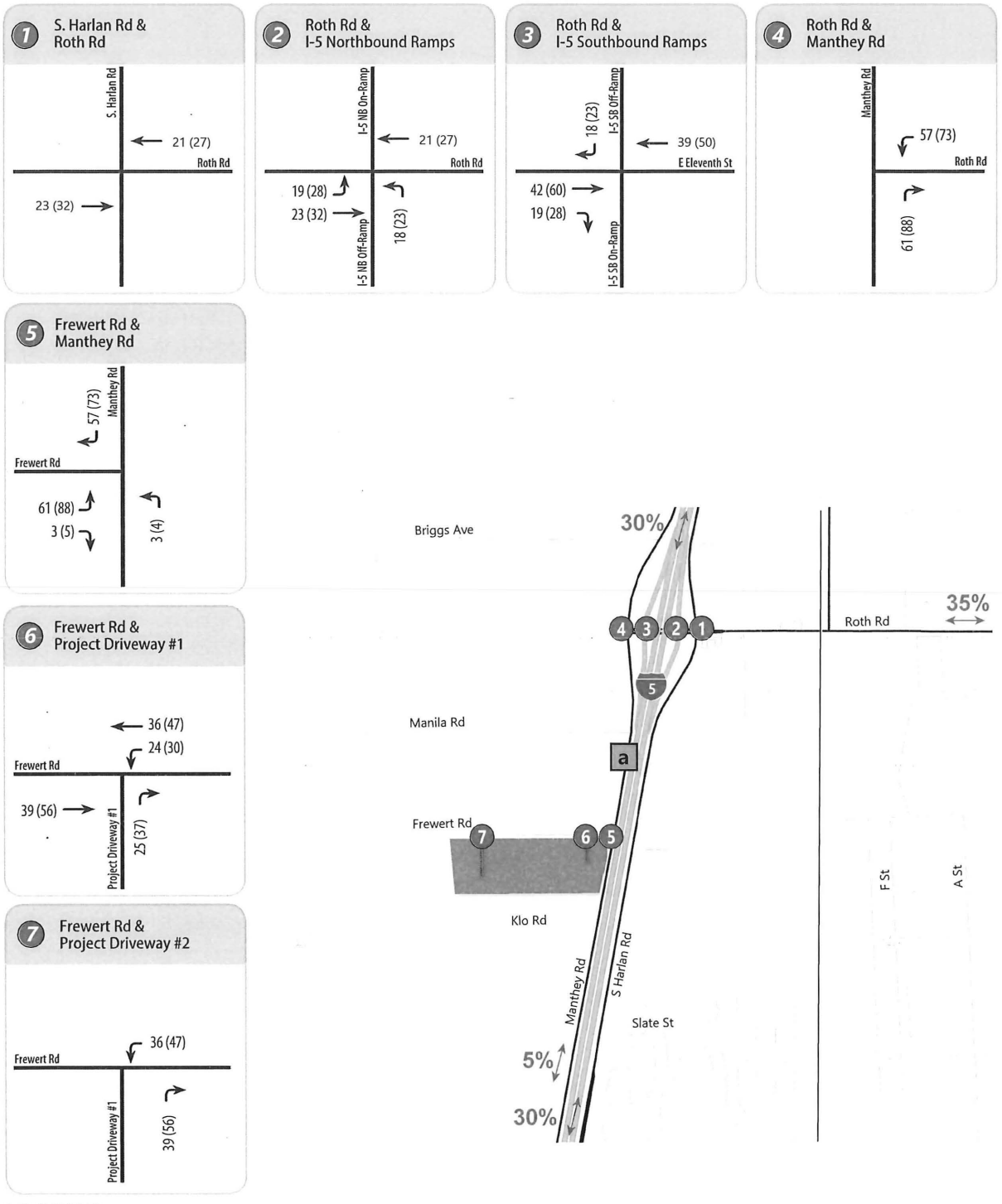
The trip distribution assumptions for the proposed project are as follows:

- 35 percent to/from Roth Road to the east
- 30 percent to/from I-5 to the north

- 30 percent to/from I-5 to the south
- Five percent to/from the south on Manthey Road

All truck trips to and from the project site will use the two project driveways on Frewert Road. **Figure 6** illustrates the trip distribution and trip assignment at the study intersections. The project trips were then added to traffic volumes under Background Conditions and Cumulative Conditions to generate traffic volumes for detailed analysis.

Figure 6: Trip Distribution and Assignment



5.4 Intersection Level of Service Analysis – Background plus Project Conditions

This scenario is identical to Background No-Project Conditions, but with the addition of projected traffic from the proposed project. Trip generation, distribution, and assignment for the proposed project are identical to that assumed under Existing plus Project Conditions. **Figure 7** shows projected turning movement volumes at all the study intersections under Background plus Project Conditions.

The intersection LOS analysis results for Background plus Project Conditions are summarized in **Table 7**. Results of the LOS analysis under Background (No-Project) Conditions are included for comparison purposes. Under this scenario, all study intersections would continue to operate at acceptable LOS D or better during both peak hours, except the intersections at Roth Road/S. Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps (Intersection #3), which operate at LOS E and F during one or more peak hours. **Appendix D** contains detailed LOS analysis worksheets for Background plus Project Conditions.

Table 7: Intersection Level of Service Analysis – Background plus Project Conditions

ID	*Intersection*	*Intersection Control*	*Peak Hour[1]*	*Background Conditions*		*Background plus Project Conditions*			
				Average Delay[2]	*LOS[3]*	*Average Delay[2]*	*LOS[3]*	*Change in Delay[4]*	*Significant Impact?*
1	Roth Road & S Harlan Road	AWSC	AM	28.1	D	34.0	D	5.9	N
			PM	**73.1**	**F**	**89.3**	**F**	16.2	Y
	Mitigation: signalize	*Signal*	*AM*	-	-	*23*	*C*	*-5.1*	-
			PM	-	-	*29.2*	*C*	*-43.9*	-
2*	Roth Road & I-5 Northbound Ramps	One-Way Stop	AM	11.6	B	13.2	B	1.6	N
			PM	13.4	B	17.1	C	3.7	N
3*	Roth Road & I-5 Southbound Ramps	One-Way Stop	AM	**26.5**	**D**	**36.3**	**E**	9.8	Y
			PM	**26.1**	**D**	**40.3**	**E**	14.2	Y
	Mitigation: AWSC	*All-Way Stop*	*AM*	-	-	*15.1*	*C*	*-11.4*	-
			PM	-	-	*14.0*	*B*	*-12.1*	-
4	Roth Road & Manthey Road	One-Way Stop	AM	12.4	B	15.3	C	2.9	N
			PM	15.6	C	22.8	C	7.2	N
5	Manthey Road & Frewert Road	One-Way Stop	AM	11.2	B	14.9	B	3.7	N
			PM	12.9	B	23.6	C	10.7	N
6	Frewert Road & Project Access #1	One-Way Stop	AM	-	-	8.7	A		N
			PM	-	-	8.8	A		N
7	Frewert Road & Project Access #2	One-Way Stop	AM	-	-	8.5	A		N
			PM	-	-	8.6	A		N

Notes:
1. AM – morning peak hour, PM – evening peak hour
2. Whole intersection weighted average control delay expressed in seconds per vehicle for all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
3. LOS = Level of Service
4. Change in average delay between Existing and Existing plus Project Conditions. Average delay may be reduced with the addition of project traffic to non-critical movements.

Bold indicates unacceptable operational conditions based on applicable jurisdictional standards.

Impact Findings

The project impact to the intersections of Roth Road/S. Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps (Intersection #3) are significant because the project adds five or more seconds of

delay to already failing intersection delay. Peak hour signal warrants were evaluated for the intersections based on the *California Manual on Uniform Traffic Control Devices (CA MUTCD), Revision 4 (2019)* guidelines for traffic signal warrant 3, which evaluates traffic signal installation for peak hour traffic. At the intersection of Roth Road/S. Harlan Road (Intersection #1) the peak hour signal warrant is met under background traffic conditions, during the p.m. peak hour, without and with the proposed project traffic. At the intersection of Roth Road/I-5 Southbound Ramps (Intersection #3) the peak hour signal warrant is not met under background traffic conditions, during either peak hour, without and with the proposed project traffic. However, the San Joaquin Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), adopted June 2018, proposes improvements to the Roth Road interchange, including signalization and relocation of intersections along Roth Road.

At the intersection of Roth Road/S. Harlan Road (Intersection #1), the addition of an exclusive westbound left-turn lane, and installation of signal control, improve intersection operations to acceptable LOS C during both peak hours. With mitigations, the impacts of the proposed project would be less than significant. However, this project is in the City of Lathrop, who has plans to improve this intersection differently. In effect, the main intersection will be relocated about 600 feet to the east and signalized. The current intersection will essentially operate with turns to and from Harlan Road restricted to right turns only. For the purposes of this report, the Harlan Road intersection has been evaluated in its current location and traffic situation.

At the intersection of Roth Road/I-5 Southbound Ramps (Intersection #3), the installation of all-way stop control improves intersection operations to acceptable LOS C or better during both peak hours. The *CA MUTCD* supports the installation of all-way stop control as an interim measure before installation of signal control. With mitigations, the impacts of the proposed project would be less than significant. The above-mentioned intersection signalizations are included in the list of planned improvements by the County's RTP/SCS and Congestion Management Program (CMP).

Appendix E contains the peak hour signal warrant worksheets and detailed LOS analysis worksheets for Background plus Project Conditions Mitigations.

5.5 Roadway Segment Level of Service Analysis – Background Plus Project Conditions

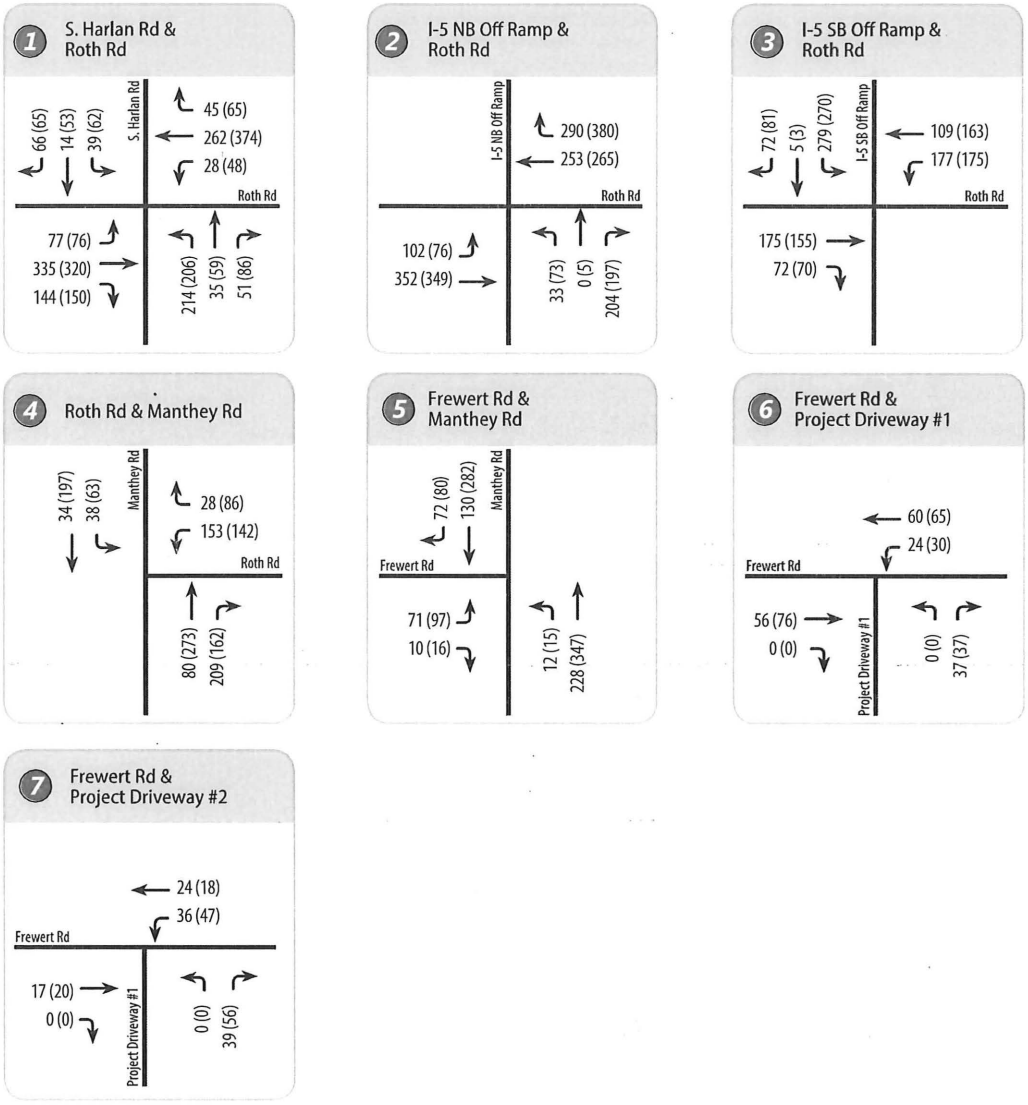
Table 8 below summarizes the study roadway segment operations under Background plus Project conditions and includes facility type; maximum daily volumes, no. of lanes, daily volumes and LOS information for each study roadway segment. Under Background plus project Conditions, the study segment is expected to continue to operate at LOS C. Based on the San Joaquin County impact criteria, the proposed project will have a less-than-significant impact on the study roadway segments under Background plus Project Conditions.

Table 8: Roadway Segment Level of Service Analysis – Background plus Project Conditions

#	*Roadway Segment*	*Facility Type*	*No. of Lanes / Divided-Undivided*	*NB Daily Volume*	*SB Daily Volume*	*Daily Volume[1]*	*Level of Service[2]*
1	Manthey Road, between Frewert Road and Roth Road	Collector	2-Lane Undivided	3,413	2,907	6,320	C

Notes:
[1]Daily traffic bi-directional volume under Background plus Project Conditions.
[2]LOS – Level of Service

Figure 7: Background plus Project Peak Hour Traffic Volumes



LEGEND

- Project Site
- Study Intersection
- Project Driveway
- XX AM Peak Hour Volumes
- (XX) PM Peak Hour Volumes

N

6.0 CUMULATIVE NO-PROJECT CONDITIONS (2040)

The Cumulative No-Project Conditions analysis forecasts how the study area's transportation system would operate with the growth and changes of the surrounding community by the year 2040. This scenario considers the development of the county and surrounding communities to the year 2040, projecting existing traffic volumes to the year 2040 using a compounding annual growth factor. TJKM has calculated growth rates for a.m. and p.m. peak hours, based on the current SJCOG travel demand model for the I-5 corridor near Roth Road, as furnished by the City of Lathrop. Annual growth rates of 1.11 percent (a.m. peak) and 1.61 (p.m. peak) were used. **Figure 8** shows projected turning movement volumes at the study intersections under Cumulative Conditions.

6.1 Intersections Level of Service Analysis – Cumulative No-Project Conditions

Table 9 summarizes the intersection LOS analysis results for Cumulative No-Project Conditions. Under this scenario, all study intersections operate within applicable jurisdictional standards during both peak hours, except the intersections at Roth Road/S Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps (Intersection #3), which operate at unacceptable LOS during both peak hours. **Appendix F** contains the detailed LOS analysis worksheets for Cumulative Conditions.

Table 9: Intersection Level of Service Analysis – Cumulative (No-Project) Conditions

ID	*Intersection*	*Intersection Control*	*Peak Hour*[1]	*Cumulative Conditions*	
				Average Delay[2]	*LOS*[3]
1	Roth Road & S Harlan Road	AWSC	AM	**41.8**	**E**
			PM	**161.0**	**F**
2*	Roth Road & I-5 Northbound Ramps	One-Way Stop	AM	11.7	B
			PM	15.7	C
3*	Roth Road & I-5 Southbound Ramps	One-Way Stop	AM	**25.2**	**D**
			PM	**38.0**	**E**
4	Roth Road & Manthey Road	One-Way Stop	AM	10.4	B
			PM	11.3	B
5	Manthey Road & Frewert Road	One-Way Stop	AM	9.3	A
			PM	10.0	B

Notes:
1. AM – morning peak hour, PM – evening peak hour
2. Whole intersection weighted average control delay expressed in seconds per vehicle for all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop controlled intersections.
3. LOS = Level of Service
Bold indicates unacceptable operational conditions based on applicable jurisdictional standards.

6.2 Roadway Segment Level of Service Analysis – Cumulative No-Project Conditions

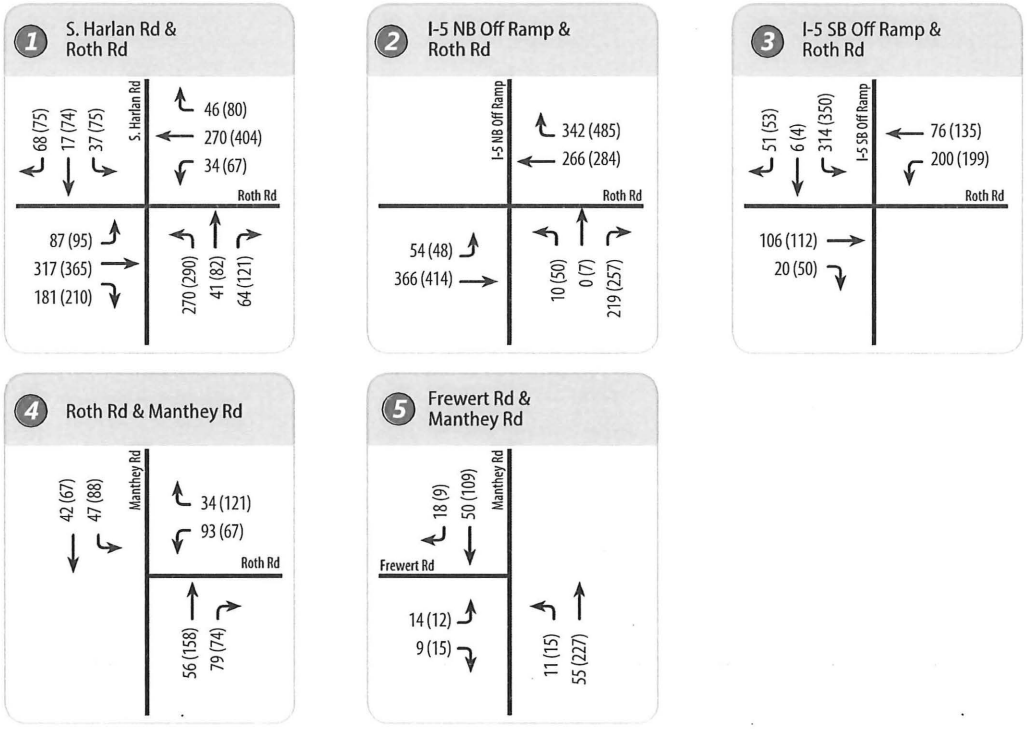
Table 10 below summarizes the study roadway segment operations under Cumulative Conditions and includes facility type; maximum daily volumes, no. of lanes, daily volumes and LOS information for each study roadway segment. Under Cumulative Conditions, the study segment is expected to be operating at a satisfactory LOS C.

Table 10: Roadway Segment Level of Service Analysis – Cumulative Conditions

#	*Roadway Segment*	*Facility Type*	*No. of Lanes / Divided-Undivided*	*NB Daily Volume*	*SB Daily Volume*	*Daily Volume[1]*	*Level of Service[2]*
1	Manthey Road, between Frewert Road and Roth Road	Collector	2-Lane Undivided	2,186	1,890	4,076	C

Notes:
[1]Daily traffic bi-directional volume under Cumulative Conditions.
[2]LOS – Level of Service

Figure 8: Cumulative Conditions Peak Hour Traffic Volumes



LEGEND

- Project Site
- Study Intersection
- Project Driveway

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes

N

7.0 CUMULATIVE PLUS PROJECT CONDITIONS

This scenario is identical to Cumulative No-Project Conditions, but with the addition of projected traffic from the proposed project. Trip generation, distribution, and assignment for the proposed project are identical to that assumed under Existing plus Project Conditions. **Figure 9** shows projected turning movement volumes at the study intersections under Cumulative plus Project Conditions.

7.1 Intersection Level of Service Analysis – Cumulative plus Project Conditions

Table 11 summarizes the intersection LOS analysis results for Cumulative plus Project Conditions. Results of the LOS analysis for Cumulative (No-Project) Conditions are included for comparison purposes. Under Cumulative plus Project Conditions, all study intersections would continue to operate within applicable jurisdictional standards of LOS during both peak hours, except the intersections at Roth Road/S Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps (Intersection #3), which continue to operate at unacceptable LOS during both peak hours. Under Cumulative plus Project Conditions, both intersections of Roth Road/S Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps (Intersection #3) experience increases in delay of more than five seconds from Cumulative (No-Project) Conditions, and thus, significant impacts are observed. **Appendix G** contains the detailed LOS analysis worksheets for Cumulative plus Project Conditions.

Table 11: Intersection Level of Service Analysis – Cumulative plus Project Conditions

ID	*Intersection*	*Intersection Control*	*Peak Hour[1]*	*Cumulative Conditions*		*Cumulative plus Project Conditions*			
				Average Delay[2]	*LOS[3]*	*Average Delay[2]*	*LOS[3]*	*Change in Delay[4]*	*Significant Impact?*
1	Roth Road & S Harlan Road	AWSC	AM	**41.8**	**E**	**49.4**	**E**	7.6	Y
			PM	**161.0**	**F**	**180.2**	**F**	19.2	Y
	Mitigation: signalize	*Signal*	*AM*	-	-	*24.6*	*C*	*-17.2*	-
			PM	-	-	*56.7*	*E*	*-104.3*	-
2*	Roth Road & I-5 Northbound Ramps	One-Way Stop	AM	11.7	B	13.1	C	1.4	N
			PM	15.7	C	22.0	C	6.3	N
3*	Roth Road & I-5 Southbound Ramps	One-Way Stop	AM	**25.2**	**D**	**32.7**	**D**	7.5	N
			PM	**38.0**	**E**	**64.6**	**F**	26.6	Y
	Mitigation: AWSC	*All-Way Stop*	*AM*	-	-	*12.9*	*B*	*-12.3*	-
			PM	-	-	*14.8*	*B*	*-23.2*	-
4	Roth Road & Manthey Road	One-Way Stop	AM	10.4	B	11.5	B	1.1	N
			PM	11.3	B	13.2	B	1.9	N
5	Manthey Road & Frewert Road	One-Way Stop	AM	9.3	A	10.2	B	0.9	N
			PM	10.0	B	12.8	B	2.8	N
6	Frewert Road & Project Access #1	One-Way Stop	AM	-	-	8.8	A	-	N
			PM	-	-	8.9	A	-	N
7	Frewert Road & Project Access #2	One-Way Stop	AM	-	-	8.6	A	-	N
			PM	-	-	8.7	A	-	N

Notes:
1. AM – morning peak hour, PM – evening peak hour
2. Whole intersection weighted average control delay expressed in seconds per vehicle for signalized and all-way stop controlled intersections. Total control delay for the worst movement is presented for side-street stop – controlled intersections.
3. LOS = Level of Service

Bold indicates unacceptable operational conditions based on applicable jurisdictional standards.

Impact Findings

The project impact to the intersections of Roth Road/S. Harlan Road (Intersection #1) and Roth Road/I-5 Southbound Ramps (Intersection #3) are significant because the project adds five or more seconds of delay to already failing intersection delay. Peak hour signal warrants were evaluated for the intersections based on the *California Manual on Uniform Traffic Control Devices (CA MUTCD), Revision 4 (2019)* guidelines for traffic signal warrant 3, which evaluates traffic signal installation for peak hour traffic. At the intersection of Roth Road/S. Harlan Road (Intersection #1) the peak hour signal warrant is met under cumulative traffic conditions, during both peak hours, without and with the proposed project traffic. With mitigations, the impacts of the proposed project would be less than significant.

At the intersection of Roth Road/I-5 Southbound Ramps (Intersection #3) the peak hour signal warrant is not met under cumulative traffic conditions, during either peak hour, without and with the proposed project traffic. However, the San Joaquin Regional Transportation Plan and Sustainable Communities Strategy (RTP/SCS), adopted June 2018, proposes improvements to the Roth Road interchange, including signalization and relocation of intersections along Roth Road.

At the intersection of Roth Road/S. Harlan Road (Intersection #1), the addition of an exclusive westbound left-turn lane, and installation of signal control, improve intersection operations to acceptable LOS D or better during both peak hours. With mitigations, the impacts of the proposed project would be less than significant. However, as noted under background conditions, this project is in the City of Lathrop, who has plans to improve this intersection differently. In effect, the main intersection will be relocated about 600 feet to the east and signalized. The current intersection will essentially operate with turns to and from Harlan Road restricted to right turns only. For the purposes of this report, the Harlan Road intersection has been evaluated in its current location and traffic situation.

At the intersection of Roth Road/I-5 Southbound Ramps (Intersection #3), the installation of all-way stop control improves intersection operations to acceptable LOS B during both peak hours. The *CA MUTCD* supports the installation of all-way stop control as an interim measure before installation of signal control. With mitigations, the impacts of the proposed project would be less than significant. The above-mentioned intersection signalizations are included in the list of planned improvements by the County's RTP/SCS and Congestion Management Program (CMP).

Appendix H contains the peak hour signal warrant worksheets and detailed LOS analysis worksheets for Background plus Project Conditions Mitigations.

Fair Share Analysis

As noted above, the City of Lathrop has plans to relocate and improve the intersection of Roth Road/S. Harlan Road (Intersection #1), a project estimated to cost approximately $7.777 million. A traffic study of the Harlan Road realignment, part of overall Roth Road corridor improvements, was completed by DKS. At the direction of San Joaquin County staff, and based on discussions with City of Lathrop staff, a fair share analysis was conducted using Cumulative Conditions volumes from the DKS study. The results of the fair share analysis are shown in **Table 12**. The average fair share proportion of project trips is 2.4 percent, which is equivalent to approximately $186,648.

Table 12: Fair Share Analysis

		AM	*PM*
A	Existing Volume	1266	1505
B	Project Trips	44	59
C	Cumulative Volume	3280	3805
D	Cumulative Growth (C-A)	2014	2300
	Fair Share (B ÷ D)	2.2%	2.6%

7.2 Roadway Segment Level of Service Analysis – Cumulative Plus Project Conditions

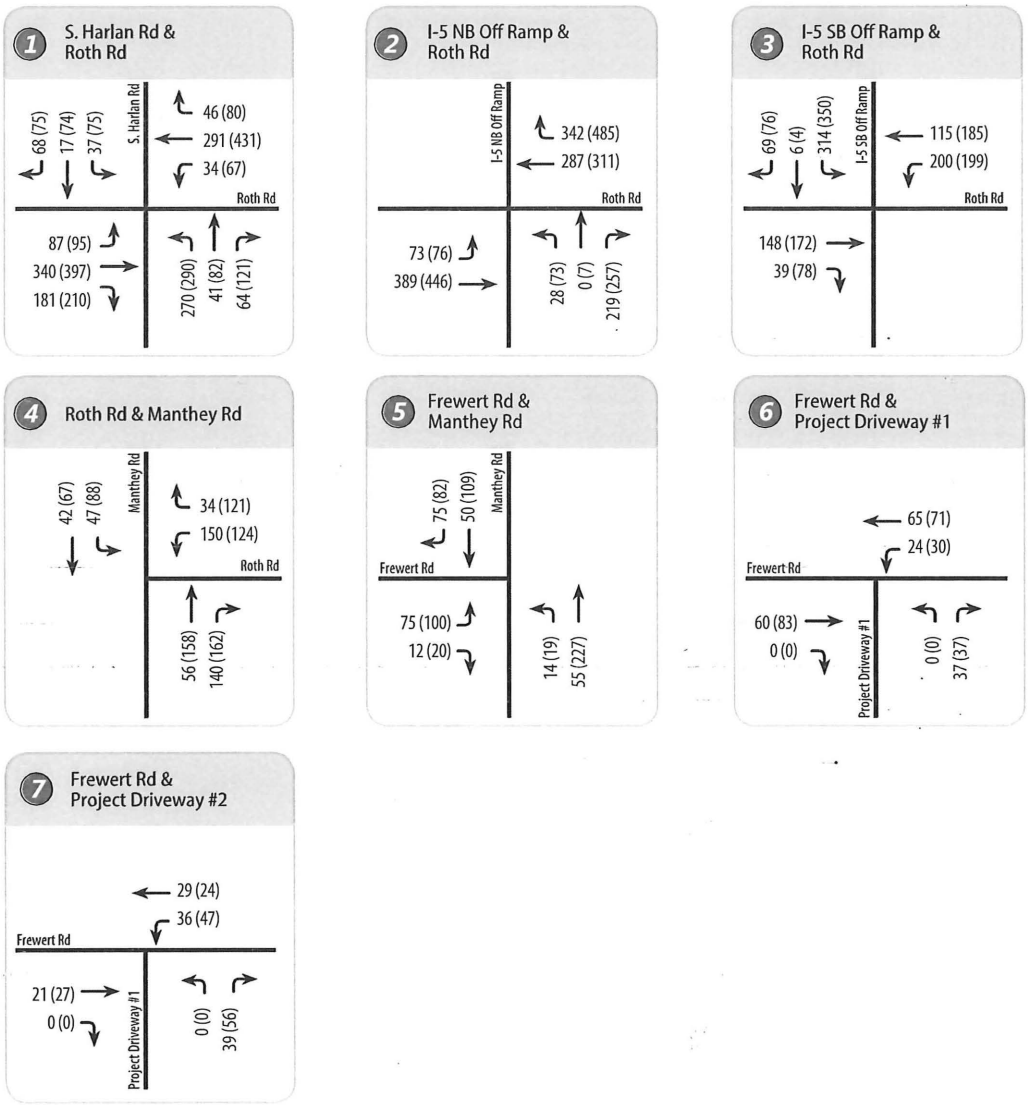
Table 13 below summarizes the study roadway segment operations under Cumulative plus Project Conditions and includes facility type; maximum daily volumes, no. of lanes, daily volumes and LOS information for each study roadway segment. Under Cumulative plus project Conditions, the study segment is expected to continue to operate at LOS C. Based on the San Joaquin County impact criteria, the proposed project will have a less-than-significant impact on the study roadway segments under Cumulative plus Project Conditions.

Table 13: Roadway Segment Level of Service Analysis – Cumulative plus Project Conditions

#	*Roadway Segment*	*Facility Type*	*No. of Lanes / Divided-Undivided*	*NB Daily Volume*	*SB Daily Volume*	*Daily Volume*[1]	*Level of Service*[2]
1	Manthey Road, between Frewert Road and Roth Road	Collector	2-Lane Undivided	3,430	2,921	6,351	C

Notes:
[1]Daily traffic bi-directional volume under Cumulative Conditions.
[2]LOS – Level of Service

Figure 9: Cumulative plus Project Peak Hour Traffic Volumes



LEGEND

- Project Site
- Study Intersection
- Project Driveway

XX AM Peak Hour Volumes

(XX) PM Peak Hour Volumes

N

8.0 ADDITIONAL ANALYSIS

The following sections provide additional analyses of other transportation issues associated with the project site, including:

- Site access and impacts
- Parking analysis
- Queueing Analysis
- Recommendations

The analyses in these sections are based on professional judgment in accordance with the standards and methods employed by traffic engineers. Although operational issues are not considered CEQA impacts, they do describe traffic conditions that are relevant to describing the project environment.

8.1 Site Access, Circulation, and Multimodal Impacts

This section analyzes site access and internal circulation based on the site plans presented in **Figure 2** (dated September 15, 2021).

Vehicle Access and Circulation

Access to the project site at 150 and 212 Frewert Road via two proposed driveways on Frewert Road. Both driveways support left- and right-turn movements entering and exiting the project site, and will be one-way top controlled. As shown in **Figure 2**, both proposed project driveways are 40 feet wide.

Vehicles accessing the project site would enter via the driveways on Frewert Road. The project does not propose pedestrian or bicycle facilities along the project frontage. Trucks would enter the project site via the either driveway on Frewert Road and exit via the either driveway on Frewert Road. Emergency vehicles would access the project site via either driveway.

The truck parking land use accommodates two-way vehicular and truck traffic via internal drive aisles ranging approximately between 40 and 80 feet. A right turn must be performed just after entering the eastern driveway. This may be a difficult movement for larger trucks to complete, and thus it is likely that larger trucks would mainly use the western driveway.

Pedestrian Access, Circulation, and Impacts

The project does not propose to provide pedestrian facilities along the project frontages on Frewert Road and Manthey Road, or within the project site.

A significant impact occurs if the proposed project conflicts with applicable or adopted policies, plans or programs related to pedestrians facilities or otherwise decreases the performance or safety of pedestrian facilities. Due to the nature of the land use, internal pedestrian facilities are not needed. Thus, the proposed project will not result in any such conflicts and impacts are considered ***less-than-significant***.

Bicycle Access, Circulation, and Impacts

As noted in Section 3.3, on-street bicycle facilities do not exist within the project vicinity. The project does not propose to provide new bicycle facilities along the project frontage.

An impact to bicyclists occurs if the proposed project disrupt existing bicycle facilities; or conflict or create inconsistencies with adopted bicycle system plans, guidelines, and policies. A significant impact occurs if the proposed project conflicts with applicable or adopted policies, plans or programs related to bicycle facilities or otherwise decrease the performance or safety of bicycle facilities. Due to the nature of the land use, internal bicycle facilities are not needed. Thus, the proposed project will not result in any such conflicts and impacts are considered ***less-than-significant***.

Transit Access and Impacts

A proposed project is considered to have a significant impact on transit if it conflicts with existing or planned transit facilities, or is expected to generate additional transit trips and does not provide adequate facilities for pedestrians and bicyclists to access transit routes and stops. There are no transit stops located within the project vicinity. Thus, the proposed project will not result in any such conflicts and impacts are considered ***less-than-significant***.

8.2 Parking

The San Joaquin County Development Title Chapter 9-1015M requires two parking spaces per employee for guard house land uses. In order to satisfy San Joaquin County requirements, the project must provide two parking spaces. In addition, as some truck drivers will arrive at the site with their own personal vehicles, those will be parked in the same space as the truck vehicle occupies before it is driven off the site.

The project provides five parking spaces, including one accessible space. Since the land use provides parking services, additional parking is not needed. Thus, the provided parking is **adequate** and meets San Joaquin County requirements.

8.3 Queueing Analysis and Driveway Analysis

Queuing Analysis at Study Intersections

TJKM conducted a vehicle queuing and storage analysis for all exclusive left and right turn pockets at selected study intersections and driveways where project traffic is added under plus Project Conditions. The 95th percentile (maximum) queues were analyzed using the HCM 6th methodology contained in Synchro software. Detailed calculations are included in the LOS appendices corresponding to each analysis scenario. **Table 14** summarizes the 95th percentile queue lengths at selected study intersections under Background and Background plus Project Conditions scenarios. As shown below, queue lengths at the study intersections do not exceed capacity without and with the addition of project traffic. Thus, the proposed project ***does not create a significant impact*** by itself on the expected left-turn or right-turn queues at the study intersections.

Table 14: 95th Percentile Queues at Turn Pockets Affected by Project Traffic

#	Study Intersections	Lane Group	Storage Length	Background		Background plus Project		Change	
				AM	PM	AM	PM	AM	PM
1	Roth Road/S. Harlan Road	NBR	100	10	20	10	20	0	0
		EBL	105	20	20	20	20	0	0
2	Roth Road/I-5 Northbound Ramps	NBTL	630	5	25	15	45	10	20
		EBL	360	10	5	10	10	0	5
3	Roth Road/I-5 Southbound Ramps	SBLTR	520	45	45	65	70	20	25
		WBL	360	15	15	15	15	0	0
4	Roth Road/Manthey Road	WBL	160	25	30	50	80	25	50
		WBR	155	5	15	5	15	0	0

Notes: Storage length and 95th percentile queue is expressed in feet per lane and rounded to nearest 5 feet interval
AM – morning peak hour, PM – evening peak hour
Bold indicates queue lengths exceeding capacity

Queuing Analysis at Project Driveways

TJKM conducted a vehicle queuing and storage analysis for at the project driveways under plus Project scenarios. The 95th percentile (maximum) queues were analyzed using the HCM 6th Edition methodology contained in Synchro software. Detailed calculations are included in the LOS appendices corresponding to each analysis scenario.

Table 15 summarizes the 95th percentile queue lengths at the project driveways under all plus Project scenarios. At the Frewert Road driveways, queue lengths entering and exiting the project site remain below one vehicle length (one vehicle=25 feet) for both peak hours under Background plus Project and Cumulative plus Project Conditions. The queue calculations are included in the respective appendices for each plus Project scenario. As shown below, queue lengths at the proposed project driveways do not exceed capacity without and with the addition of project traffic. Thus, the proposed project ***does not create a significant impact*** by itself on the expected left-turn or right-turn queues at the project driveways.

Table 15: Queueing for Study Intersections, in Feet

#	Study Intersections	Lane Group	Background plus Project		Cumulative plus Project	
			AM	PM	AM	PM
6	Frewert Road/Project Access #1	NB	5	5	5	5
		WB	5	5	5	5
7	Frewert Road/Project Access #2	NB	5	5	5	5
		WB	5	5	5	5

Notes: 95th percentile queue is expressed in feet per lane, and rounded to nearest 5 feet interval
AM – morning peak hour, PM – evening peak hour
Bold indicates queue lengths exceeding capacity

Appendix A – Existing Turning Movement Counts and Average Daily Traffic

Prepared by NDS/ATD

Prepared by National Data & Surveying Services

VOLUME

Manthey Rd N/O Frewert Rd

Day: Thursday
Date: 7/28/2022

City: Lathrop
Project #: CA22_090082_001

DAILY TOTALS	NB	SB	EB	WB	Total
	1,640	1,418	0	0	3,058

AM Period	NB		SB		EB	WB	TOTAL		PM Period	NB		SB		EB	WB	TOTAL	
00:00	0		1		0	0	1		12:00	18		34		0	0	52	
00:15	1		1		0	0	2		12:15	15		27		0	0	42	
00:30	2		3		0	0	5		12:30	32		26		0	0	58	
00:45	0	3	1	6	0	0	1	9	12:45	22	87	34	121	0	0	56	208
01:00	1		3		0	0	4		13:00	22		26		0	0	48	
01:15	0		0		0	0			13:15	28		23		0	0	51	
01:30	2		0		0	0	2		13:30	23		25		0	0	48	
01:45	0	3	0	3	0	0		6	13:45	24	97	20	94	0	0	44	191
02:00	0		2		0	0	2		14:00	28		26		0	0	54	
02:15	3		1		0	0	4		14:15	44		23		0	0	67	
02:30	0		2		0	0	2		14:30	66		26		0	0	92	
02:45	2	5	2	7	0	0	4	12	14:45	62	200	26	101	0	0	88	301
03:00	0		0		0	0			15:00	59		27		0	0	86	
03:15	0		1		0	0	1		15:15	71		24		0	0	95	
03:30	0		1		0	0	1		15:30	79		31		0	0	110	
03:45	3	3	4	6	0	0	7	9	15:45	78	287	25	107	0	0	103	394
04:00	0		3		0	0	3		16:00	41		29		0	0	70	
04:15	6		11		0	0	17		16:15	45		21		0	0	66	
04:30	8		8		0	0	16		16:30	38		35		0	0	73	
04:45	2	16	7	29	0	0	9	45	16:45	31	155	40	125	0	0	71	280
05:00	3		6		0	0	9		17:00	37		23		0	0	60	
05:15	4		9		0	0	13		17:15	25		19		0	0	44	
05:30	8		11		0	0	19		17:30	23		30		0	0	53	
05:45	9	24	12	38	0	0	21	62	17:45	22	107	19	91	0	0	41	198
06:00	6		10		0	0	16		18:00	26		20		0	0	46	
06:15	5		12		0	0	17		18:15	17		11		0	0	28	
06:30	15		19		0	0	34		18:30	17		23		0	0	40	
06:45	17	43	22	63	0	0	39	106	18:45	19	79	14	68	0	0	33	147
07:00	13		14		0	0	27		19:00	21		11		0	0	32	
07:15	13		17		0	0	30		19:15	12		15		0	0	27	
07:30	21		25		0	0	46		19:30	10		18		0	0	28	
07:45	19	66	13	69	0	0	32	135	19:45	12	55	12	56	0	0	24	111
08:00	15		12		0	0	27		20:00	20		14		0	0	34	
08:15	12		7		0	0	19		20:15	30		6		0	0	36	
08:30	11		15		0	0	26		20:30	19		2		0	0	21	
08:45	15	53	21	55	0	0	36	108	20:45	9	78	12	34	0	0	21	112
09:00	17		21		0	0	38		21:00	16		4		0	0	20	
09:15	10		19		0	0	29		21:15	16		9		0	0	25	
09:30	16		25		0	0	41		21:30	6		5		0	0	11	
09:45	17	60	22	87	0	0	39	147	21:45	7	45	8	26	0	0	15	71
10:00	12		17		0	0	29		22:00	3		6		0	0	9	
10:15	14		30		0	0	44		22:15	6		4		0	0	10	
10:30	16		24		0	0	40		22:30	1		4		0	0	5	
10:45	18	60	18	89	0	0	36	149	22:45	3	13	2	16	0	0	5	29
11:00	16		24		0	0	40		23:00	2		2		0	0	4	
11:15	23		33		0	0	56		23:15	6		4		0	0	10	
11:30	21		32		0	0	53		23:30	1		1		0	0	2	
11:45	29	89	31	120	0	0	60	209	23:45	3	12	0	7	0	0	3	19
TOTALS		425		572				997	TOTALS		1215		846				2061
SPLIT %		42.6%		57.4%				32.6%	SPLIT %		59.0%		41.0%				67.4%

DAILY TOTALS	NB	SB	EB	WB	Total
	1,640	1,418	0	0	3,058

AM Peak Hour	11:45		11:15				11:15		PM Peak Hour	15:00		16:00				15:00		
AM Pk Volume	94		130				221		PM Pk Volume	287		125				394		
Pk Hr Factor	0.734		0.956				0.921		Pk Hr Factor	0.908		0.781				0.895		
7 - 9 Volume	119		124		0	0	243		4 - 6 Volume	262		216		0	0	478		
7 - 9 Peak Hour	07:15		07:00				07:00		4 - 6 Peak Hour	16:00		16:00				16:00		
7 - 9 Pk Volume	68		69		0	0	135		4 - 6 Pk Volume	155		125		0	0	280		
Pk Hr Factor	0.810		0.690		0.000	0.000	0.734		Pk Hr Factor	0.861		0.781		0.000	0.000	0.959		

Prepared by National Data & Surveying Services

Manthey Rd & Frewert Rd

Peak Hour Turning Movement Count

ID: 22-090081-001
City: Lathrop

Day: Wednesday
Date: 7/27/2022

PEAK HOURS		COUNT PERIODS
AM	07:45 AM - 08:45 AM	AM 7:00 AM - 09:00 AM
NOON	NONE	NOON NONE
PM	05:00 PM - 06:00 PM	PM 4:00 PM - 06:00 PM

CONTROL: 1-Way Stop(EB)

	AM	NOON	PM
TEV	129	0	290
PHF	0.79		0.86

SOUTHBOUND (Manthey Rd)

	L	T	R	U	Total	
AM	15	41	0	0	55	AM
NOON	0	0	0	0	0	NOON
PM	7	82	0	0	179	PM

Approach volumes: 0 1 0 0

EASTBOUND (Frewert Rd)

	L	T	R	
AM	26	0	18	
NOON	0	0	0	
PM	18	0	11	

Approach volumes: 2 0 0 | 10 0 9 | 0 0 0 | 7 0 11

WESTBOUND (Frewert Rd)

	L	T	R	
PM	0	0	0	
NOON	0	0	0	
AM	0	0	0	

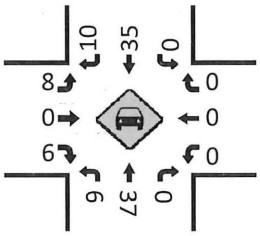
Approach volumes: 0 | 0 | 0 | 0

NORTHBOUND (Manthey Rd)

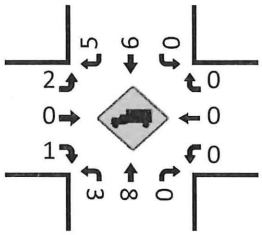
	L	T	R	U	Total	
PM	93	0	11	170	0	PM
NOON	0	0	0	0	0	NOON
AM	48	0	9	45	0	AM

Approach volumes: 0 0 1 0

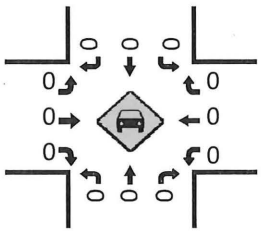
Cars (AM)



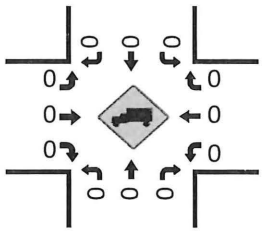
HT (AM)



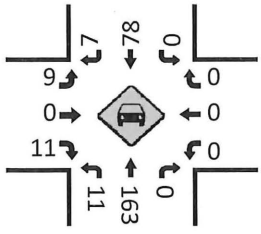
Cars (NOON)



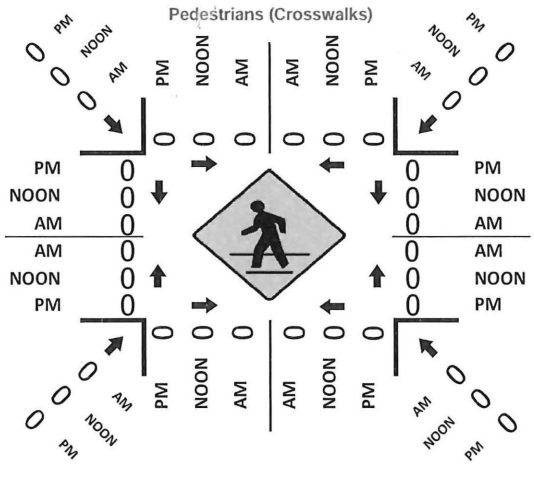
HT (NOON)



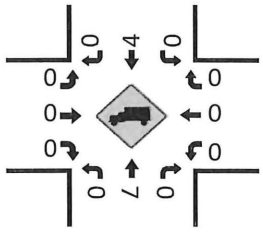
Cars (PM)



Pedestrians (Crosswalks)



HT (PM)



Appendix B – Existing Conditions Intersections Level of Service Worksheets

Intersection	
Intersection Delay, s/veh	19.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	249	142	27	212	36	212	32	50	29	13	53
Future Vol, veh/h	68	249	142	27	212	36	212	32	50	29	13	53
Peak Hour Factor	0.90	0.90	0.90	0.89	0.89	0.89	0.90	0.90	0.90	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	76	277	158	30	238	40	236	36	56	36	16	65
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	15	25	21.7	14.3
HCM LOS	B	C	C	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	87%	0%	100%	0%	0%	10%	31%
Vol Thru, %	13%	0%	0%	100%	0%	77%	14%
Vol Right, %	0%	100%	0%	0%	100%	13%	56%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	244	50	68	249	142	275	95
LT Vol	212	0	68	0	0	27	29
Through Vol	32	0	0	249	0	212	13
RT Vol	0	50	0	0	142	36	53
Lane Flow Rate	271	56	76	277	158	309	117
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.623	0.11	0.159	0.541	0.277	0.669	0.272
Departure Headway (Hd)	8.272	7.112	7.557	7.045	6.329	7.79	8.357
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	436	502	473	509	565	463	428
Service Time	6.047	4.886	5.325	4.813	4.096	5.564	6.152
HCM Lane V/C Ratio	0.622	0.112	0.161	0.544	0.28	0.667	0.273
HCM Control Delay	23.9	10.8	11.8	17.9	11.5	25	14.3
HCM Lane LOS	C	B	B	C	B	C	B
HCM 95th-tile Q	4.1	0.4	0.6	3.2	1.1	4.8	1.1

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	42	287	0	0	209	268	8	0	172	0	0	0
Future Vol, veh/h	42	287	0	0	209	268	8	0	172	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	92	92	92	94	94	94	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	47	322	0	0	227	291	9	0	183	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	518	0	-	-	-	0	789	934	161
Stage 1	-	-	-	-	-	-	416	416	-
Stage 2	-	-	-	-	-	-	373	518	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	1046	-	0	0	-	-	343	265	856
Stage 1	-	-	0	0	-	-	635	591	-
Stage 2	-	-	0	0	-	-	696	532	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1046	-	-	-	-	-	328	0	856
Mov Cap-2 Maneuver	-	-	-	-	-	-	328	0	-
Stage 1	-	-	-	-	-	-	606	0	-
Stage 2	-	-	-	-	-	-	696	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.1	0	10.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	328	856	1046	-	-	-
HCM Lane V/C Ratio	0.026	0.214	0.045	-	-	-
HCM Control Delay (s)	16.3	10.3	8.6	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.1	0.8	0.1	-	-	-

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	83	16	157	60	0	0	0	0	246	5	40
Future Vol, veh/h	0	83	16	157	60	0	0	0	0	246	5	40
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	88	88	88	92	92	92	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	114	22	178	68	0	0	0	0	276	6	45

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	136	0	0	549	560	34
Stage 1	-	-	-	-	-	-	424	424	-
Stage 2	-	-	-	-	-	-	125	136	-
Critical Hdwy	-	-	-	4.13	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1447	-	0	481	436	1032
Stage 1	0	-	-	-	-	0	629	586	-
Stage 2	0	-	-	-	-	0	900	783	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1447	-	-	422	0	1032
Mov Cap-2 Maneuver	-	-	-	-	-	-	422	0	-
Stage 1	-	-	-	-	-	-	629	0	-
Stage 2	-	-	-	-	-	-	789	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.7	17.6
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1447	-	422	523
HCM Lane V/C Ratio	-	-	0.123	-	0.437	0.273
HCM Control Delay (s)	-	-	7.8	-	20	14.4
HCM Lane LOS	-	-	A	-	C	B
HCM 95th %tile Q(veh)	-	-	0.4	-	2.2	1.1

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	73	27	44	62	37	33
Future Vol, veh/h	73	27	44	62	37	33
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	69	69	59	59	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	106	39	75	105	46	41

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	261	128	0	0	180	0
Stage 1	128	-	-	-	-	-
Stage 2	133	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	728	922	-	-	1396	-
Stage 1	898	-	-	-	-	-
Stage 2	893	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	703	922	-	-	1396	-
Mov Cap-2 Maneuver	703	-	-	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	863	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.5	0	4.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	703	922	1396	-
HCM Lane V/C Ratio	-	-	0.15	0.042	0.033	-
HCM Control Delay (s)	-	-	11	9.1	7.7	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0.1	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	7	9	45	41	15
Future Vol, veh/h	12	7	9	45	41	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	53	53	84	84	78	78
Heavy Vehicles, %	17	14	33	18	15	33
Mvmt Flow	23	13	11	54	53	19

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	139	63	72	0	-	0
Stage 1	63	-	-	-	-	-
Stage 2	76	-	-	-	-	-
Critical Hdwy	6.57	6.34	4.43	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.426	2.497	-	-	-
Pot Cap-1 Maneuver	820	969	1353	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	910	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	813	969	1353	-	-	-
Mov Cap-2 Maneuver	813	-	-	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	910	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	1.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1353	-	864	-	-
HCM Lane V/C Ratio	0.008	-	0.041	-	-
HCM Control Delay (s)	7.7	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	42.5
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	67	257	148	47	284	56	204	58	85	53	52	53
Future Vol, veh/h	67	257	148	47	284	56	204	58	85	53	52	53
Peak Hour Factor	0.95	0.95	0.95	0.89	0.89	0.89	0.94	0.94	0.94	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	71	271	156	53	319	63	217	62	90	58	57	58
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	18.9	89.7	28.8	20.6
HCM LOS	C	F	D	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	78%	0%	100%	0%	0%	12%	34%
Vol Thru, %	22%	0%	0%	100%	0%	73%	33%
Vol Right, %	0%	100%	0%	0%	100%	14%	34%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	262	85	67	257	148	387	158
LT Vol	204	0	67	0	0	47	53
Through Vol	58	0	0	257	0	284	52
RT Vol	0	85	0	0	148	56	53
Lane Flow Rate	279	90	71	271	156	435	172
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.725	0.207	0.17	0.612	0.321	1.056	0.455
Departure Headway (Hd)	9.573	8.442	8.855	8.337	7.611	8.739	9.914
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	379	428	408	436	475	417	366
Service Time	7.273	6.142	6.555	6.037	5.311	6.428	7.614
HCM Lane V/C Ratio	0.736	0.21	0.174	0.622	0.328	1.043	0.47
HCM Control Delay	33.8	13.3	13.4	23.3	13.9	89.7	20.6
HCM Lane LOS	D	B	B	C	B	F	C
HCM 95th-tile Q	5.5	0.8	0.6	4	1.4	14.3	2.3

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	291	0	0	200	341	35	5	181	0	0	0
Future Vol, veh/h	34	291	0	0	200	341	35	5	181	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	95	95	95	88	88	88	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	327	0	0	211	359	40	6	206	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	570	0	-	-	-	0	794	973	164
Stage 1	-	-	-	-	-	-	403	403	-
Stage 2	-	-	-	-	-	-	391	570	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	1000	-	0	0	-	-	341	251	852
Stage 1	-	-	0	0	-	-	644	599	-
Stage 2	-	-	0	0	-	-	683	504	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1000	-	-	-	-	-	328	0	852
Mov Cap-2 Maneuver	-	-	-	-	-	-	328	0	-
Stage 1	-	-	-	-	-	-	620	0	-
Stage 2	-	-	-	-	-	-	683	0	-

Approach	EB	WB	NB
HCM Control Delay, s	0.9	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	328	852	1000	-	-	-
HCM Lane V/C Ratio	0.139	0.241	0.038	-	-	-
HCM Control Delay (s)	17.7	10.6	8.7	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.5	0.9	0.1	-	-	-

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	79	35	140	95	0	0	0	0	246	3	37
Future Vol, veh/h	0	79	35	140	95	0	0	0	0	246	3	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	83	83	83	92	92	92	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	101	45	169	114	0	0	0	0	280	3	42

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	146	0	0			576	598	57
Stage 1	-	-	-	-	-	-			452	452	-
Stage 2	-	-	-	-	-	-			124	146	-
Critical Hdwy	-	-	-	4.13	-	-			6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-			5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-			3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1435	-	0			463	415	998
Stage 1	0	-	-	-	-	0			609	570	-
Stage 2	0	-	-	-	-	0			901	776	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1435	-	-			408	0	998
Mov Cap-2 Maneuver	-	-	-	-	-	-			408	0	-
Stage 1	-	-	-	-	-	-			609	0	-
Stage 2	-	-	-	-	-	-			795	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.7	18.4
HCM LOS			C

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1435	-	408	500
HCM Lane V/C Ratio	-	-	0.118	-	0.457	0.277
HCM Control Delay (s)	-	-	7.8	-	21	14.9
HCM Lane LOS	-	-	A	-	C	B
HCM 95th %tile Q(veh)	-	-	0.4	-	2.3	1.1

Intersection	
Int Delay, s/veh	4.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	47	85	111	52	62	47
Future Vol, veh/h	47	85	111	52	62	47
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	84	84	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	102	132	62	77	58

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	375	163	0	0	194	0
Stage 1	163	-	-	-	-	-
Stage 2	212	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	626	882	-	-	1379	-
Stage 1	866	-	-	-	-	-
Stage 2	823	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	590	882	-	-	1379	-
Mov Cap-2 Maneuver	590	-	-	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	775	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.3	0	4.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	590	882	1379	-
HCM Lane V/C Ratio	-	-	0.096	0.116	0.056	-
HCM Control Delay (s)	-	-	11.7	9.6	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.3	0.4	0.2	-

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	11	11	170	82	7
Future Vol, veh/h	9	11	11	170	82	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	85	85	80	80
Heavy Vehicles, %	2	2	2	4	5	2
Mvmt Flow	13	15	13	200	103	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	334	108	112	0	-	0
Stage 1	108	-	-	-	-	-
Stage 2	226	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	661	946	1478	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	812	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	654	946	1478	-	-	-
Mov Cap-2 Maneuver	654	-	-	-	-	-
Stage 1	907	-	-	-	-	-
Stage 2	812	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1478	-	788	-	-
HCM Lane V/C Ratio	0.009	-	0.036	-	-
HCM Control Delay (s)	7.5	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Appendix C – Background Conditions Intersections Level of Service Worksheets

Intersection	
Intersection Delay, s/veh	28.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	312	144	28	241	45	214	35	51	39	14	66
Future Vol, veh/h	77	312	144	28	241	45	214	35	51	39	14	66
Peak Hour Factor	0.90	0.90	0.90	0.89	0.89	0.89	0.90	0.90	0.90	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	347	160	31	271	51	238	39	57	48	17	81
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	22.5	42.2	27.8	17.7
HCM LOS	C	E	D	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	86%	0%	100%	0%	0%	9%	33%
Vol Thru, %	14%	0%	0%	100%	0%	77%	12%
Vol Right, %	0%	100%	0%	0%	100%	14%	55%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	249	51	77	312	144	314	119
LT Vol	214	0	77	0	0	28	39
Through Vol	35	0	0	312	0	241	14
RT Vol	0	51	0	0	144	45	66
Lane Flow Rate	277	57	86	347	160	353	147
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.704	0.126	0.195	0.74	0.31	0.836	0.379
Departure Headway (Hd)	9.158	7.991	8.203	7.688	6.967	8.532	9.284
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	396	448	437	471	515	423	386
Service Time	6.921	5.754	5.959	5.444	4.722	6.293	7.059
HCM Lane V/C Ratio	0.699	0.127	0.197	0.737	0.311	0.835	0.381
HCM Control Delay	31.1	11.9	12.9	29.4	12.8	42.2	17.7
HCM Lane LOS	D	B	B	D	B	E	C
HCM 95th-tile Q	5.2	0.4	0.7	6.1	1.3	7.9	1.7

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	83	329	0	0	232	290	15	0	204	0	0	0
Future Vol, veh/h	83	329	0	0	232	290	15	0	204	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	92	92	92	94	94	94	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	370	0	0	252	315	16	0	217	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	567	0	-	-	-	0	966	1123	185
Stage 1	-	-	-	-	-	-	556	556	-
Stage 2	-	-	-	-	-	-	410	567	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	1003	-	0	0	-	-	267	205	826
Stage 1	-	-	0	0	-	-	539	512	-
Stage 2	-	-	0	0	-	-	669	506	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	1003	-	-	-	-	-	242	0	826
Mov Cap-2 Maneuver	-	-	-	-	-	-	242	0	-
Stage 1	-	-	-	-	-	-	489	0	-
Stage 2	-	-	-	-	-	-	669	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.8	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	242	826	1003	-	-	-
HCM Lane V/C Ratio	0.066	0.263	0.093	-	-	-
HCM Control Delay (s)	20.9	10.9	9	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.2	1.1	0.3	-	-	-

Intersection	
Int Delay, s/veh	12.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	133	53	177	70	0	0	0	0	279	5	54
Future Vol, veh/h	0	133	53	177	70	0	0	0	0	279	5	54
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	88	88	88	92	92	92	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	182	73	201	80	0	0	0	0	313	6	61

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	255	0	0	701	737	40
Stage 1	-	-	-	-	-	-	482	482	-
Stage 2	-	-	-	-	-	-	219	255	-
Critical Hdwy	-	-	-	4.13	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1309	-	0	389	345	1023
Stage 1	0	-	-	-	-	0	588	552	-
Stage 2	0	-	-	-	-	0	817	696	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1309	-	-	329	0	1023
Mov Cap-2 Maneuver	-	-	-	-	-	-	329	0	-
Stage 1	-	-	-	-	-	-	588	0	-
Stage 2	-	-	-	-	-	-	691	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.9	26.5
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1309	-	329	438
HCM Lane V/C Ratio	-	-	0.154	-	0.635	0.39
HCM Control Delay (s)	-	-	8.2	-	33.2	18.4
HCM Lane LOS	-	-	A	-	D	C
HCM 95th %tile Q(veh)	-	-	0.5	-	4.1	1.8

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	96	28	80	148	38	34
Future Vol, veh/h	96	28	80	148	38	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	69	69	59	59	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	139	41	136	251	47	42

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	398	262	0	0	387	0
Stage 1	262	-	-	-	-	-
Stage 2	136	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	607	777	-	-	1171	-
Stage 1	782	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	582	777	-	-	1171	-
Mov Cap-2 Maneuver	582	-	-	-	-	-
Stage 1	782	-	-	-	-	-
Stage 2	854	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.4	0	4.3
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	582	777	1171	-
HCM Lane V/C Ratio	-	-	0.239	0.052	0.04	-
HCM Control Delay (s)	-	-	13.1	9.9	8.2	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	7	9	228	130	15
Future Vol, veh/h	10	7	9	228	130	15
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	53	53	84	84	78	78
Heavy Vehicles, %	17	14	33	18	15	33
Mvmt Flow	19	13	11	271	167	19

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	470	177	186	0	-	0
Stage 1	177	-	-	-	-	-
Stage 2	293	-	-	-	-	-
Critical Hdwy	6.57	6.34	4.43	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.426	2.497	-	-	-
Pot Cap-1 Maneuver	526	836	1222	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	724	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	520	836	1222	-	-	-
Mov Cap-2 Maneuver	520	-	-	-	-	-
Stage 1	810	-	-	-	-	-
Stage 2	724	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.2	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1222	-	616	-	-
HCM Lane V/C Ratio	0.009	-	0.052	-	-
HCM Control Delay (s)	8	0	11.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Intersection Delay, s/veh	73.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	76	288	150	48	347	65	206	59	86	62	53	65
Future Vol, veh/h	76	288	150	48	347	65	206	59	86	62	53	65
Peak Hour Factor	0.95	0.95	0.95	0.89	0.89	0.89	0.94	0.94	0.94	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	80	303	158	54	390	73	219	63	91	67	58	71
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	22.9	173.8	31.9	24.4
HCM LOS	C	F	D	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	78%	0%	100%	0%	0%	10%	34%
Vol Thru, %	22%	0%	0%	100%	0%	75%	29%
Vol Right, %	0%	100%	0%	0%	100%	14%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	86	76	288	150	460	180
LT Vol	206	0	76	0	0	48	62
Through Vol	59	0	0	288	0	347	53
RT Vol	0	86	0	0	150	65	65
Lane Flow Rate	282	91	80	303	158	517	196
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.743	0.213	0.194	0.693	0.33	1.288	0.525
Departure Headway (Hd)	10.327	9.188	9.418	8.896	8.167	8.973	10.593
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	352	393	383	409	444	403	342
Service Time	8.027	6.888	7.118	6.596	5.867	6.757	8.293
HCM Lane V/C Ratio	0.801	0.232	0.209	0.741	0.356	1.283	0.573
HCM Control Delay	37.6	14.4	14.4	29.4	14.8	173.8	24.4
HCM Lane LOS	E	B	B	D	B	F	C
HCM 95th-tile Q	5.7	0.8	0.7	5.1	1.4	22.7	2.9

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	317	0	0	238	380	50	5	197	0	0	0
Future Vol, veh/h	48	317	0	0	238	380	50	5	197	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	95	95	95	88	88	88	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	54	356	0	0	251	400	57	6	224	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	651	0	-	-	-	0	915	1115	178
Stage 1	-	-	-	-	-	-	464	464	-
Stage 2	-	-	-	-	-	-	451	651	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	933	-	0	0	-	-	287	207	835
Stage 1	-	-	0	0	-	-	600	563	-
Stage 2	-	-	0	0	-	-	641	464	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	933	-	-	-	-	-	270	0	835
Mov Cap-2 Maneuver	-	-	-	-	-	-	270	0	-
Stage 1	-	-	-	-	-	-	565	0	-
Stage 2	-	-	-	-	-	-	641	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.2	0	13.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	270	835	933	-	-	-
HCM Lane V/C Ratio	0.231	0.268	0.058	-	-	-
HCM Control Delay (s)	22.3	10.9	9.1	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.9	1.1	0.2	-	-	-

Intersection												
Int Delay, s/veh	12.8											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	95	42	175	113	0	0	0	0	270	3	58
Future Vol, veh/h	0	95	42	175	113	0	0	0	0	270	3	58
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	83	83	83	92	92	92	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	122	54	211	136	0	0	0	0	307	3	66

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	176	0	0	707	734	68
Stage 1	-	-	-	-	-	-	558	558	-
Stage 2	-	-	-	-	-	-	149	176	-
Critical Hdwy	-	-	-	4.13	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1399	-	0	385	347	982
Stage 1	0	-	-	-	-	0	538	511	-
Stage 2	0	-	-	-	-	0	878	753	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1399	-	-	327	0	982
Mov Cap-2 Maneuver	-	-	-	-	-	-	327	0	-
Stage 1	-	-	-	-	-	-	538	0	-
Stage 2	-	-	-	-	-	-	745	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.9	26.1
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1399	-	327	443
HCM Lane V/C Ratio	-	-	0.151	-	0.626	0.387
HCM Control Delay (s)	-	-	8	-	32.7	18.2
HCM Lane LOS	-	-	A	-	D	C
HCM 95th %tile Q(veh)	-	-	0.5	-	4	1.8

Intersection	
Int Delay, s/veh	4.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	85	86	273	74	63	197
Future Vol, veh/h	85	86	273	74	63	197
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	84	84	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	102	104	325	88	78	243

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	768	369	0	0	413	0
Stage 1	369	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	370	677	-	-	1146	-
Stage 1	699	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	341	677	-	-	1146	-
Mov Cap-2 Maneuver	341	-	-	-	-	-
Stage 1	699	-	-	-	-	-
Stage 2	624	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.6	0	2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	341	677	1146	-
HCM Lane V/C Ratio	-	-	0.3	0.153	0.068	-
HCM Control Delay (s)	-	-	20	11.3	8.4	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.5	0.2	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	11	11	347	282	7
Future Vol, veh/h	9	11	11	347	282	7
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	85	85	80	80
Heavy Vehicles, %	2	2	2	4	5	2
Mvmt Flow	13	15	13	408	353	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	792	358	362	0	-	0
Stage 1	358	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	358	686	1197	-	-	-
Stage 1	707	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	353	686	1197	-	-	-
Mov Cap-2 Maneuver	353	-	-	-	-	-
Stage 1	697	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1197	-	482	-	-
HCM Lane V/C Ratio	0.011	-	0.058	-	-
HCM Control Delay (s)	8	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Appendix D – Background plus Project Conditions Intersections Level of Service Worksheets

Intersection	
Intersection Delay, s/veh	34
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	335	144	28	262	45	214	35	51	39	14	66
Future Vol, veh/h	77	335	144	28	262	45	214	35	51	39	14	66
Peak Hour Factor	0.90	0.90	0.90	0.89	0.89	0.89	0.90	0.90	0.90	0.81	0.81	0.81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	86	372	160	31	294	51	238	39	57	48	17	81
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	27.4	54.5	29.9	18.5
HCM LOS	D	F	D	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	86%	0%	100%	0%	0%	8%	33%
Vol Thru, %	14%	0%	0%	100%	0%	78%	12%
Vol Right, %	0%	100%	0%	0%	100%	13%	55%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	249	51	77	335	144	335	119
LT Vol	214	0	77	0	0	28	39
Through Vol	35	0	0	335	0	262	14
RT Vol	0	51	0	0	144	45	66
Lane Flow Rate	277	57	86	372	160	376	147
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.724	0.13	0.199	0.812	0.317	0.91	0.391
Departure Headway (Hd)	9.423	8.253	8.37	7.854	7.132	8.703	9.586
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	385	433	428	462	502	418	375
Service Time	7.195	6.025	6.136	5.62	4.897	6.472	7.376
HCM Lane V/C Ratio	0.719	0.132	0.201	0.805	0.319	0.9	0.392
HCM Control Delay	33.5	12.3	13.2	36.8	13.2	54.5	18.5
HCM Lane LOS	D	B	B	E	B	F	C
HCM 95th-tile Q	5.5	0.4	0.7	7.6	1.3	9.7	1.8

Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	102	352	0	0	253	290	33	0	204	0	0	0
Future Vol, veh/h	102	352	0	0	253	290	33	0	204	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	92	92	92	94	94	94	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	115	396	0	0	275	315	35	0	217	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	590	0	-	-	-	0	1059	1216	198
Stage 1	-	-	-	-	-	-	626	626	-
Stage 2	-	-	-	-	-	-	433	590	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	983	-	0	0	-	-	234	180	811
Stage 1	-	-	0	0	-	-	496	476	-
Stage 2	-	-	0	0	-	-	653	494	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	983	-	-	-	-	-	207	0	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	207	0	-
Stage 1	-	-	-	-	-	-	438	0	-
Stage 2	-	-	-	-	-	-	653	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.1	0	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	207	811	983	-	-	-
HCM Lane V/C Ratio	0.17	0.268	0.117	-	-	-
HCM Control Delay (s)	25.9	11.1	9.1	-	-	-
HCM Lane LOS	D	B	A	-	-	-
HCM 95th %tile Q(veh)	0.6	1.1	0.4	-	-	-

Intersection	
Int Delay, s/veh	15.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	175	72	177	109	0	0	0	0	279	5	72
Future Vol, veh/h	0	175	72	177	109	0	0	0	0	279	5	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	73	73	73	88	88	88	92	92	92	89	89	89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	240	99	201	124	0	0	0	0	313	6	81

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	339	0	0	816	865	62
Stage 1	-	-	-	-	-	-	526	526	-
Stage 2	-	-	-	-	-	-	290	339	-
Critical Hdwy	-	-	-	4.13	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1219	-	0	330	291	990
Stage 1	0	-	-	-	-	0	558	528	-
Stage 2	0	-	-	-	-	0	759	639	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1219	-	-	~ 276	0	990
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 276	0	-
Stage 1	-	-	-	-	-	-	558	0	-
Stage 2	-	-	-	-	-	-	634	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.3	36.3
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1219	-	276	403
HCM Lane V/C Ratio	-	-	0.165	-	0.757	0.474
HCM Control Delay (s)	-	-	8.5	-	49.6	21.7
HCM Lane LOS	-	-	A	-	E	C
HCM 95th %tile Q(veh)	-	-	0.6	-	5.6	2.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	153	28	80	209	38	34
Future Vol, veh/h	153	28	80	209	38	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	69	69	59	59	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	222	41	136	354	47	42

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	449	313	0	0	490	0
Stage 1	313	-	-	-	-	-
Stage 2	136	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	568	727	-	-	1073	-
Stage 1	741	-	-	-	-	-
Stage 2	890	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	542	727	-	-	1073	-
Mov Cap-2 Maneuver	542	-	-	-	-	-
Stage 1	741	-	-	-	-	-
Stage 2	850	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.3	0	4.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	542	727	1073	-
HCM Lane V/C Ratio	-	-	0.409	0.056	0.044	-
HCM Control Delay (s)	-	-	16.2	10.2	8.5	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	2	0.2	0.1	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	71	10	12	228	130	72
Future Vol, veh/h	71	10	12	228	130	72
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	53	53	84	84	78	78
Heavy Vehicles, %	17	14	33	18	15	33
Mvmt Flow	134	19	14	271	167	92

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	512	213	259	0	-	0
Stage 1	213	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Critical Hdwy	6.57	6.34	4.43	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.426	2.497	-	-	-
Pot Cap-1 Maneuver	496	798	1145	-	-	-
Stage 1	788	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	489	798	1145	-	-	-
Mov Cap-2 Maneuver	489	-	-	-	-	-
Stage 1	777	-	-	-	-	-
Stage 2	719	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.9	0.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1145	-	514	-	-
HCM Lane V/C Ratio	0.012	-	0.297	-	-
HCM Control Delay (s)	8.2	0	14.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	1.2	-	-

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	56	0	24	60	0	37
Future Vol, veh/h	56	0	24	60	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	61	0	26	65	0	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	61	0	178	61
Stage 1	-	-	-	-	61	-
Stage 2	-	-	-	-	117	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1542	-	812	1004
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	908	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1542	-	798	1004
Mov Cap-2 Maneuver	-	-	-	-	798	-
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	893	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1004	-	-	1542	-
HCM Lane V/C Ratio	0.04	-	-	0.017	-
HCM Control Delay (s)	8.7	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	17	0	36	24	0	39
Future Vol, veh/h	17	0	36	24	0	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	18	0	39	26	0	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	18	0	122	18
Stage 1	-	-	-	-	18	-
Stage 2	-	-	-	-	104	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1599	-	873	1061
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	920	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1599	-	851	1061
Mov Cap-2 Maneuver	-	-	-	-	851	-
Stage 1	-	-	-	-	1005	-
Stage 2	-	-	-	-	897	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.4	8.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1061	-	-	1599	-
HCM Lane V/C Ratio	0.04	-	-	0.024	-
HCM Control Delay (s)	8.5	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	89.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	76	320	150	48	374	65	206	59	86	62	53	65
Future Vol, veh/h	76	320	150	48	374	65	206	59	86	62	53	65
Peak Hour Factor	0.95	0.95	0.95	0.89	0.89	0.89	0.94	0.94	0.94	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	80	337	158	54	420	73	219	63	91	67	58	71
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	27.8	214.9	33.5	25.4
HCM LOS	D	F	D	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	78%	0%	100%	0%	0%	10%	34%
Vol Thru, %	22%	0%	0%	100%	0%	77%	29%
Vol Right, %	0%	100%	0%	0%	100%	13%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	265	86	76	320	150	487	180
LT Vol	206	0	76	0	0	48	62
Through Vol	59	0	0	320	0	374	53
RT Vol	0	86	0	0	150	65	65
Lane Flow Rate	282	91	80	337	158	547	196
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.753	0.217	0.195	0.774	0.332	1.388	0.532
Departure Headway (Hd)	10.655	9.511	9.615	9.093	8.362	9.135	10.956
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	341	380	376	401	433	399	331
Service Time	8.355	7.211	7.315	6.793	6.062	6.911	8.656
HCM Lane V/C Ratio	0.827	0.239	0.213	0.84	0.365	1.371	0.592
HCM Control Delay	39.6	14.8	14.6	36.8	15.2	214.9	25.4
HCM Lane LOS	E	B	B	E	C	F	D
HCM 95th-tile Q	5.9	0.8	0.7	6.5	1.4	26.6	3

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	76	349	0	0	265	380	73	5	197	0	0	0
Future Vol, veh/h	76	349	0	0	265	380	73	5	197	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	95	95	95	88	88	88	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	85	392	0	0	279	400	83	6	224	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	679	0	-	-	-	0	1041	1241	196
Stage 1	-	-	-	-	-	-	562	562	-
Stage 2	-	-	-	-	-	-	479	679	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	911	-	0	0	-	-	240	174	813
Stage 1	-	-	0	0	-	-	535	509	-
Stage 2	-	-	0	0	-	-	622	450	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	911	-	-	-	-	-	218	0	813
Mov Cap-2 Maneuver	-	-	-	-	-	-	218	0	-
Stage 1	-	-	-	-	-	-	485	0	-
Stage 2	-	-	-	-	-	-	622	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.7	0	17.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	218	813	911	-	-	-
HCM Lane V/C Ratio	0.407	0.275	0.094	-	-	-
HCM Control Delay (s)	32.4	11.1	9.4	-	-	-
HCM Lane LOS	D	B	A	-	-	-
HCM 95th %tile Q(veh)	1.8	1.1	0.3	-	-	-

Intersection	
Int Delay, s/veh	16.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	155	70	175	163	0	0	0	0	270	3	81
Future Vol, veh/h	0	155	70	175	163	0	0	0	0	270	3	81
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	83	83	83	92	92	92	88	88	88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	199	90	211	196	0	0	0	0	307	3	92

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	289	0	0	862	907	98
Stage 1	-	-	-	-	-	-	618	618	-
Stage 2	-	-	-	-	-	-	244	289	-
Critical Hdwy	-	-	-	4.13	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1271	-	0	309	275	939
Stage 1	0	-	-	-	-	0	501	480	-
Stage 2	0	-	-	-	-	0	796	672	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1271	-	-	~ 258	0	939
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 258	0	-
Stage 1	-	-	-	-	-	-	501	0	-
Stage 2	-	-	-	-	-	-	664	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.3	40.3
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1271	-	258	393
HCM Lane V/C Ratio	-	-	0.166	-	0.793	0.503
HCM Control Delay (s)	-	-	8.4	-	56.9	23.1
HCM Lane LOS	-	-	A	-	F	C
HCM 95th %tile Q(veh)	-	-	0.6	-	6	2.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	6.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	142	86	273	162	63	197
Future Vol, veh/h	142	86	273	162	63	197
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	83	83	84	84	81	81
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	171	104	325	193	78	243

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	821	422	0	0	518	0
Stage 1	422	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	344	632	-	-	1048	-
Stage 1	662	-	-	-	-	-
Stage 2	678	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	314	632	-	-	1048	-
Mov Cap-2 Maneuver	314	-	-	-	-	-
Stage 1	662	-	-	-	-	-
Stage 2	620	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	22.8	0	2.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	314	632	1048	-
HCM Lane V/C Ratio	-	-	0.545	0.164	0.074	-
HCM Control Delay (s)	-	-	29.4	11.8	8.7	0
HCM Lane LOS	-	-	D	B	A	A
HCM 95th %tile Q(veh)	-	-	3.1	0.6	0.2	-

Intersection	
Int Delay, s/veh	3.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	97	16	15	347	282	80
Future Vol, veh/h	97	16	15	347	282	80
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	71	71	85	85	80	80
Heavy Vehicles, %	2	2	2	4	5	2
Mvmt Flow	137	23	18	408	353	100

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	847	403	453	0	-	0
Stage 1	403	-	-	-	-	-
Stage 2	444	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	332	647	1108	-	-	-
Stage 1	675	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	325	647	1108	-	-	-
Mov Cap-2 Maneuver	325	-	-	-	-	-
Stage 1	661	-	-	-	-	-
Stage 2	646	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.6	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1108	-	350	-	-
HCM Lane V/C Ratio	0.016	-	0.455	-	-
HCM Control Delay (s)	8.3	0	23.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0	-	2.3	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	76	0	30	65	0	37
Future Vol, veh/h	76	0	30	65	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	83	0	33	71	0	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	83	0	220	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	137	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1514	-	768	976
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	890	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1514	-	750	976
Mov Cap-2 Maneuver	-	-	-	-	750	-
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	870	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	976	-	-	1514	-
HCM Lane V/C Ratio	0.041	-	-	0.022	-
HCM Control Delay (s)	8.8	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection						
Int Delay, s/veh	5.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	0	47	18	0	56
Future Vol, veh/h	20	0	47	18	0	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	0	51	20	0	61

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	22	0	144	22
Stage 1	-	-	-	-	22	-
Stage 2	-	-	-	-	122	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1593	-	849	1055
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	903	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1593	-	822	1055
Mov Cap-2 Maneuver	-	-	-	-	822	-
Stage 1	-	-	-	-	1001	-
Stage 2	-	-	-	-	874	-

Approach	EB	WB	NB
HCM Control Delay, s	0	5.3	8.6
HCM LOS			A

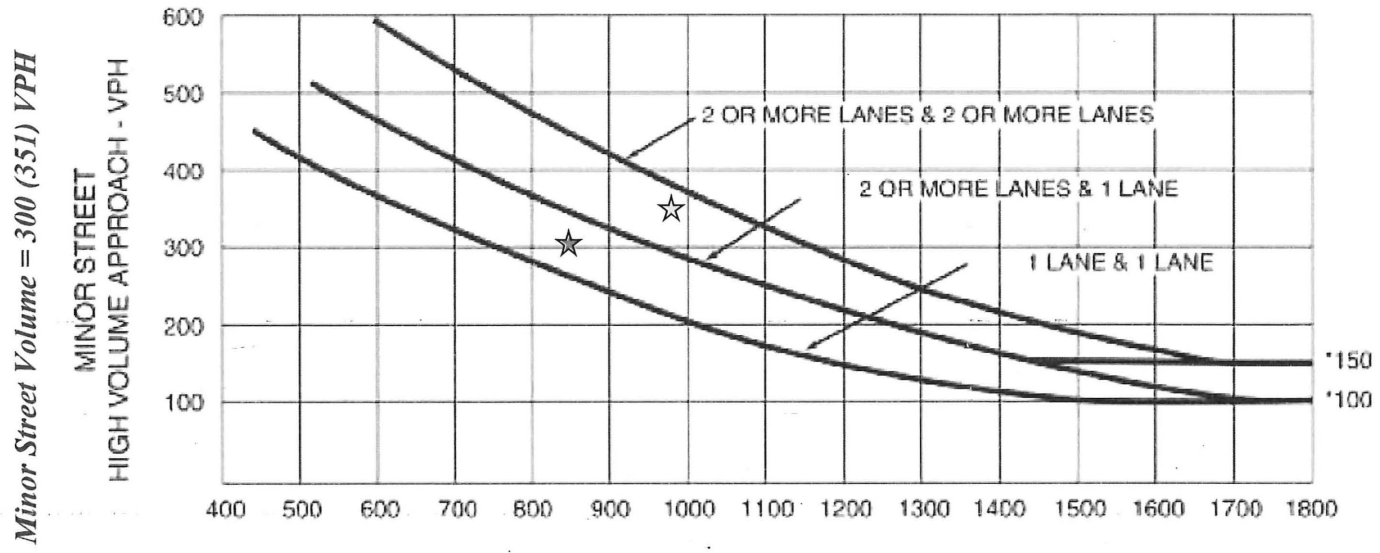
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1055	-	-	1593	-
HCM Lane V/C Ratio	0.058	-	-	0.032	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Appendix E – Peak Hour Signal Warrants and Background plus Project Conditions with Mitigations Intersections Level of Service Worksheets

Peak Hour Warrant (Urban Areas)

Intersection #1: Roth Rd. & S. Harlan Rd., San Joaquin County, CA
Scenario: Background Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 847 (974) VPH

☆ ***AM Peak Hour***

☆ ***PM Peak Hour***

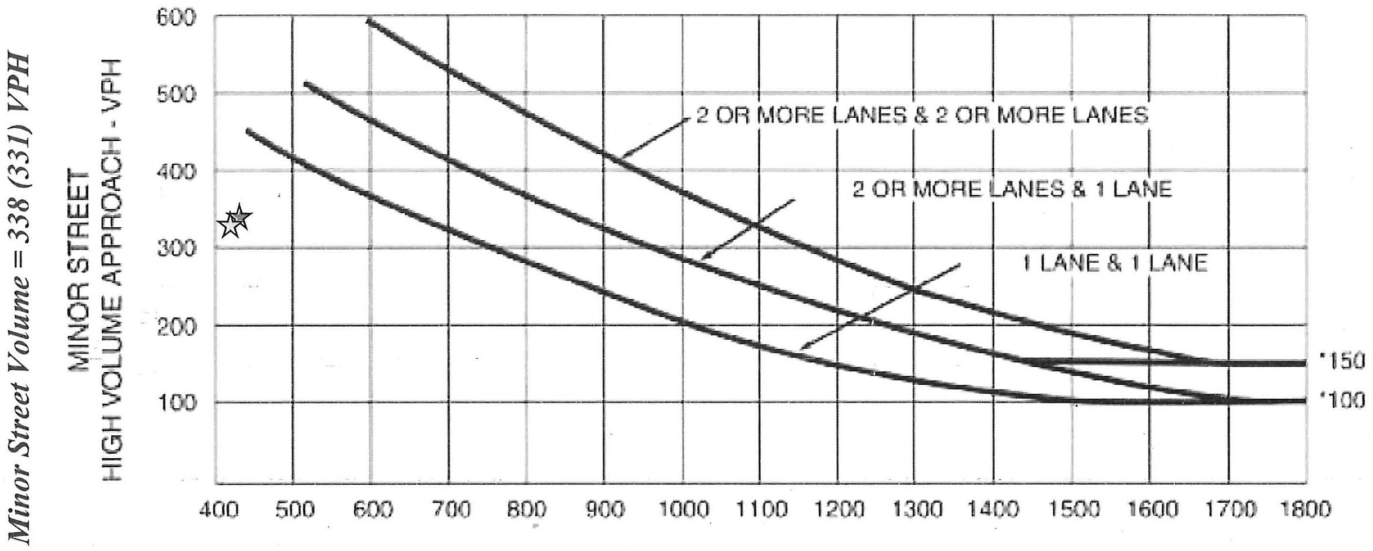
A signal is NOT WARRANTED in the a.m. Peak Hour
A signal is WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Peak Hour Warrant (Urban Areas)

Intersection #3: Roth Rd. & I-5 Southbound Ramps, San Joaquin County, CA
Scenario: Background Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 433 (425) VPH

☆ ***AM Peak Hour***

☆ ***PM Peak Hour***

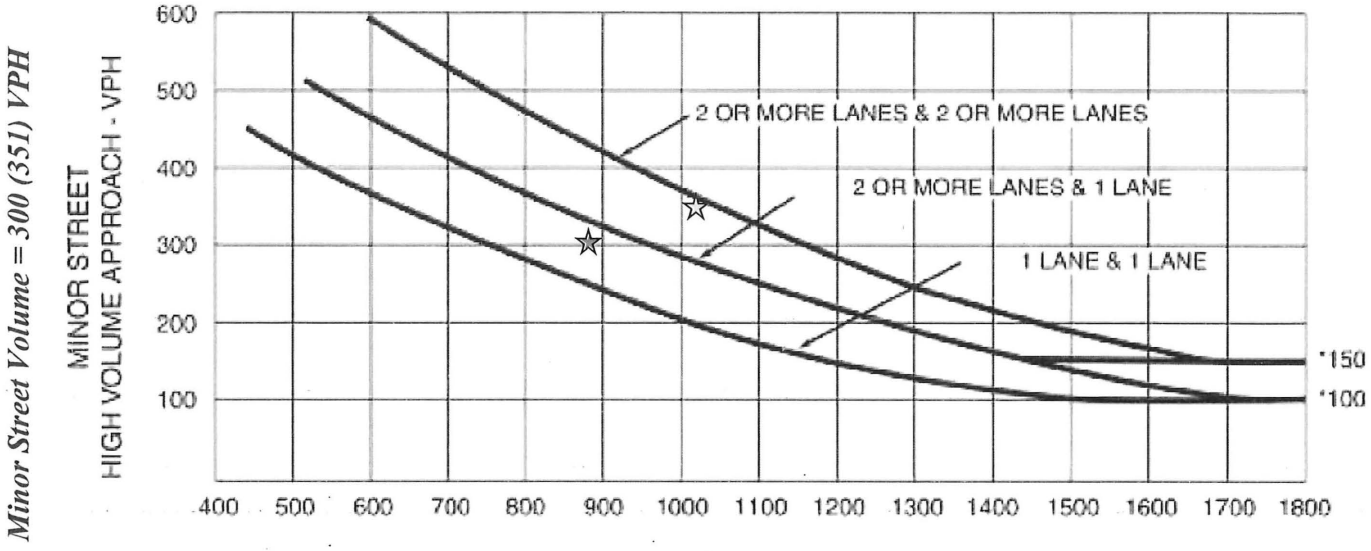
A signal is NOT WARRANTED in the a.m. Peak Hour
A signal is NOT WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Peak Hour Warrant (Urban Areas)

Intersection #1: Roth Rd. & S. Harlan Rd., San Joaquin County, CA
Scenario: Background plus Project Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 891 (1033) VPH

☆ ***AM Peak Hour***

☆ ***PM Peak Hour***

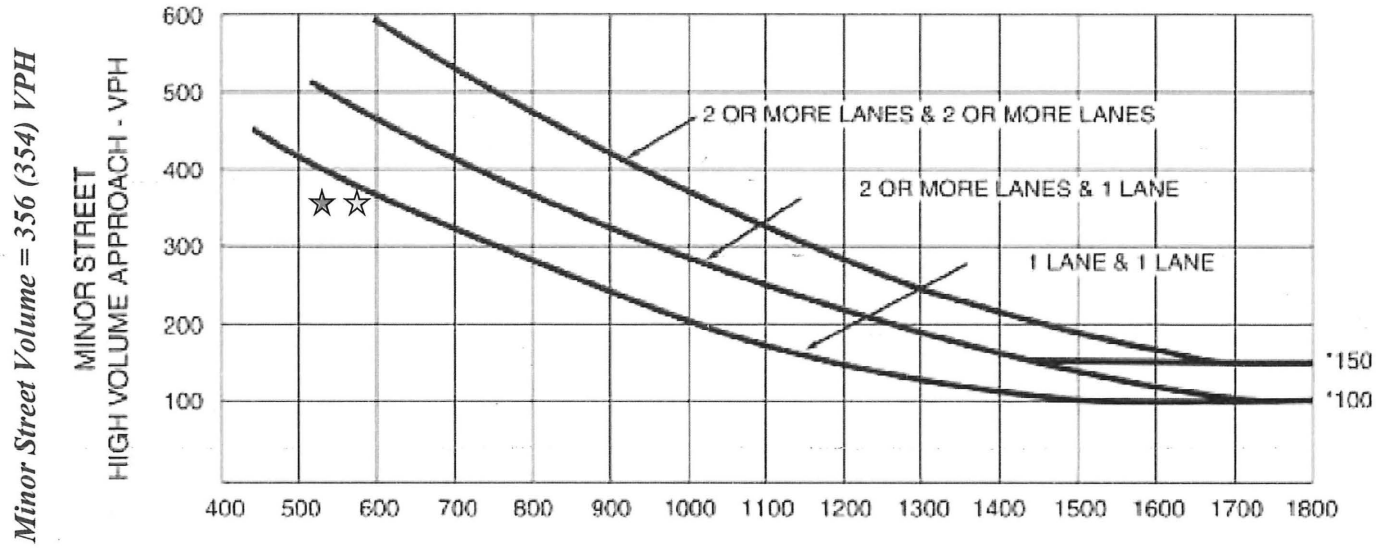
A signal is NOT WARRANTED in the a.m. Peak Hour
A signal is WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Peak Hour Warrant (Urban Areas)

Intersection #3: Roth Rd. & I-5 Southbound Ramps, San Joaquin County, CA
Scenario: Background plus Project Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 533 (563) VPH

★ *AM Peak Hour*

☆ *PM Peak Hour*

A signal is NOT WARRANTED in the a.m. Peak Hour
A signal is NOT WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	77	335	144	28	262	45	214	35	51	39	14	66
Future Volume (veh/h)	77	335	144	28	262	45	214	35	51	39	14	66
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	86	372	160	31	294	51	238	39	57	48	17	81
Peak Hour Factor	0.90	0.90	0.90	0.89	0.89	0.89	0.90	0.90	0.90	0.81	0.81	0.81
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	115	507	430	60	373	65	302	50	311	69	24	116
Arrive On Green	0.06	0.27	0.27	0.03	0.24	0.24	0.20	0.20	0.20	0.13	0.13	0.13
Sat Flow, veh/h	1781	1870	1585	1781	1553	269	1541	252	1585	551	195	930
Grp Volume(v), veh/h	86	372	160	31	0	345	277	0	57	146	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1822	1793	0	1585	1675	0	0
Q Serve(g_s), s	2.7	10.5	4.7	1.0	0.0	10.3	8.5	0.0	1.7	4.8	0.0	0.0
Cycle Q Clear(g_c), s	2.7	10.5	4.7	1.0	0.0	10.3	8.5	0.0	1.7	4.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.15	0.86		1.00	0.33		0.55
Lane Grp Cap(c), veh/h	115	507	430	60	0	438	352	0	311	210	0	0
V/C Ratio(X)	0.75	0.73	0.37	0.51	0.00	0.79	0.79	0.00	0.18	0.70	0.00	0.00
Avail Cap(c_a), veh/h	413	958	812	321	0	839	844	0	746	934	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	26.6	19.2	17.1	27.4	0.0	20.6	22.1	0.0	19.4	24.2	0.0	0.0
Incr Delay (d2), s/veh	3.6	2.1	0.5	2.5	0.0	3.2	1.5	0.0	0.1	1.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.2	1.6	0.4	0.0	4.2	3.2	0.0	0.6	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.1	21.2	17.6	29.9	0.0	23.8	23.6	0.0	19.5	25.8	0.0	0.0
LnGrp LOS	C	C	B	C	A	C	C	A	B	C	A	A
Approach Vol, veh/h		618			376			334			146	
Approach Delay, s/veh		21.5			24.3			22.9			25.8	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.3	19.3		17.1	6.6	21.1		13.0				
Change Period (Y+Rc), s	4.6	5.4		5.8	4.6	5.4		5.8				
Max Green Setting (Gmax), s	13.4	26.6		27.2	10.4	29.6		32.2				
Max Q Clear Time (g_c+I1), s	4.7	12.3		10.5	3.0	12.5		6.8				
Green Ext Time (p_c), s	0.1	1.6		0.9	0.0	2.4		0.5				

Intersection Summary	
HCM 6th Ctrl Delay	23.0
HCM 6th LOS	C

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	175	72	177	109	0	0	0	0	279	5	72
Future Vol, veh/h	0	175	72	177	109	0	0	0	0	279	5	72
Peak Hour Factor	0.73	0.73	0.73	0.88	0.88	0.88	0.92	0.92	0.92	0.89	0.89	0.89
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	240	99	201	124	0	0	0	0	313	6	81
Number of Lanes	0	1	0	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	19.4	12	14.1
HCM LOS	C	B	B

Lane	EBLn1	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	100%	56%
Vol Thru, %	71%	0%	100%	100%	0%	3%
Vol Right, %	29%	0%	0%	0%	0%	41%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	247	177	55	55	181	175
LT Vol	0	177	0	0	181	98
Through Vol	175	0	55	55	0	5
RT Vol	72	0	0	0	0	72
Lane Flow Rate	338	201	62	62	204	196
Geometry Grp	8	7	7	7	8	8
Degree of Util (X)	0.616	0.385	0.11	0.079	0.408	0.365
Departure Headway (Hd)	6.556	6.883	6.374	4.609	7.203	6.688
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	548	521	560	771	497	536
Service Time	4.329	4.652	4.143	2.376	4.973	4.458
HCM Lane V/C Ratio	0.617	0.386	0.111	0.08	0.41	0.366
HCM Control Delay	19.4	13.9	9.9	7.8	14.9	13.3
HCM Lane LOS	C	B	A	A	B	B
HCM 95th-tile Q	4.2	1.8	0.4	0.3	2	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	76	320	150	48	374	65	206	59	86	62	53	65
Future Volume (veh/h)	76	320	150	48	374	65	206	59	86	62	53	65
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	80	337	158	54	420	73	219	63	91	67	58	71
Peak Hour Factor	0.95	0.95	0.95	0.89	0.89	0.89	0.94	0.94	0.94	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	103	596	505	82	476	83	267	77	303	85	73	90
Arrive On Green	0.06	0.32	0.32	0.05	0.31	0.31	0.19	0.19	0.19	0.14	0.14	0.14
Sat Flow, veh/h	1781	1870	1585	1781	1552	270	1398	402	1585	591	511	626
Grp Volume(v), veh/h	80	337	158	54	0	493	282	0	91	196	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1822	1800	0	1585	1728	0	0
Q Serve(g_s), s	3.2	10.7	5.4	2.1	0.0	18.4	10.8	0.0	3.5	7.9	0.0	0.0
Cycle Q Clear(g_c), s	3.2	10.7	5.4	2.1	0.0	18.4	10.8	0.0	3.5	7.9	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.15	0.78		1.00	0.34		0.36
Lane Grp Cap(c), veh/h	103	596	505	82	0	558	344	0	303	247	0	0
V/C Ratio(X)	0.77	0.57	0.31	0.66	0.00	0.88	0.82	0.00	0.30	0.79	0.00	0.00
Avail Cap(c_a), veh/h	333	773	655	259	0	676	683	0	602	777	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	33.3	20.3	18.5	33.6	0.0	23.6	27.8	0.0	24.9	29.7	0.0	0.0
Incr Delay (d2), s/veh	4.6	0.8	0.4	3.3	0.0	11.5	1.9	0.0	0.2	2.2	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.3	1.8	0.9	0.0	8.8	4.4	0.0	1.2	3.1	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	37.9	21.1	18.8	37.0	0.0	35.1	29.7	0.0	25.1	31.9	0.0	0.0
LnGrp LOS	D	C	B	D	A	D	C	A	C	C	A	A
Approach Vol, veh/h		575			547			373			196	
Approach Delay, s/veh		22.8			35.3			28.6			31.9	
Approach LOS		C			D			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	8.8	27.4		19.5	7.9	28.2		16.1				
Change Period (Y+Rc), s	4.6	5.4		5.8	4.6	5.4		5.8				
Max Green Setting (Gmax), s	13.4	26.6		27.2	10.4	29.6		32.2				
Max Q Clear Time (g_c+I1), s	5.2	20.4		12.8	4.1	12.7		9.9				
Green Ext Time (p_c), s	0.0	1.5		0.9	0.0	2.2		0.6				

Intersection Summary	
HCM 6th Ctrl Delay	29.2
HCM 6th LOS	C

Intersection	
Intersection Delay, s/veh	14
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	155	70	175	163	0	0	0	0	270	3	81
Future Vol, veh/h	0	155	70	175	163	0	0	0	0	270	3	81
Peak Hour Factor	0.78	0.78	0.78	0.83	0.83	0.83	0.92	0.92	0.92	0.88	0.88	0.88
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	199	90	211	196	0	0	0	0	307	3	92
Number of Lanes	0	1	0	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	17	11.7	14.1
HCM LOS	C	B	B

Lane	EBLn1	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	100%	51%
Vol Thru, %	69%	0%	100%	100%	0%	2%
Vol Right, %	31%	0%	0%	0%	0%	47%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	225	175	82	82	181	173
LT Vol	0	175	0	0	181	89
Through Vol	155	0	82	82	0	3
RT Vol	70	0	0	0	0	81
Lane Flow Rate	288	211	98	98	206	197
Geometry Grp	8	7	7	7	8	8
Degree of Util (X)	0.536	0.399	0.172	0.124	0.412	0.363
Departure Headway (Hd)	6.689	6.817	6.309	4.546	7.218	6.642
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	537	527	567	783	497	539
Service Time	4.463	4.581	4.072	2.308	4.985	4.408
HCM Lane V/C Ratio	0.536	0.4	0.173	0.125	0.414	0.365
HCM Control Delay	17	14.1	10.4	8	15	13.2
HCM Lane LOS	C	B	B	A	B	B
HCM 95th-tile Q	3.1	1.9	0.6	0.4	2	1.6

Appendix F – Cumulative Conditions Intersections Level of Service Worksheets

Intersection	
Intersection Delay, s/veh	41.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	317	181	34	270	46	270	41	64	37	17	68
Future Vol, veh/h	87	317	181	34	270	46	270	41	64	37	17	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	345	197	37	293	50	293	45	70	40	18	74
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	26.5	67.9	48.8	19.1
HCM LOS	D	F	E	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	87%	0%	100%	0%	0%	10%	30%
Vol Thru, %	13%	0%	0%	100%	0%	77%	14%
Vol Right, %	0%	100%	0%	0%	100%	13%	56%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	311	64	87	317	181	350	122
LT Vol	270	0	87	0	0	34	37
Through Vol	41	0	0	317	0	270	17
RT Vol	0	64	0	0	181	46	68
Lane Flow Rate	338	70	95	345	197	380	133
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.899	0.162	0.231	0.791	0.412	0.965	0.378
Departure Headway (Hd)	9.572	8.396	8.787	8.269	7.544	9.135	10.255
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	379	425	407	434	474	396	353
Service Time	7.366	6.189	6.58	6.061	5.336	6.933	7.955
HCM Lane V/C Ratio	0.892	0.165	0.233	0.795	0.416	0.96	0.377
HCM Control Delay	56.2	12.8	14.2	36.1	15.6	67.9	19.1
HCM Lane LOS	F	B	B	E	C	F	C
HCM 95th-tile Q	9.1	0.6	0.9	7	2	11.1	1.7

Intersection												
Int Delay, s/veh	2.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	54	366	0	0	266	342	10	0	219	0	0	0
Future Vol, veh/h	54	366	0	0	266	342	10	0	219	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	59	398	0	0	289	372	11	0	238	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	661	0	-	-	-	0	991	1177	199
Stage 1	-	-	-	-	-	-	516	516	-
Stage 2	-	-	-	-	-	-	475	661	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	925	-	0	0	-	-	257	190	809
Stage 1	-	-	0	0	-	-	565	533	-
Stage 2	-	-	0	0	-	-	625	459	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	925	-	-	-	-	-	241	0	809
Mov Cap-2 Maneuver	-	-	-	-	-	-	241	0	-
Stage 1	-	-	-	-	-	-	529	0	-
Stage 2	-	-	-	-	-	-	625	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.2	0	11.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	241	809	925	-	-	-
HCM Lane V/C Ratio	0.045	0.294	0.063	-	-	-
HCM Control Delay (s)	20.6	11.3	9.2	-	-	-
HCM Lane LOS	C	B	A	-	-	-
HCM 95th %tile Q(veh)	0.1	1.2	0.2	-	-	-

Intersection	
Int Delay, s/veh	14.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	106	20	200	76	0	0	0	0	314	6	51
Future Vol, veh/h	0	106	20	200	76	0	0	0	0	314	6	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	115	22	217	83	0	0	0	0	341	7	55

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	137	0	0	643	654	42
Stage 1	-	-	-	-	-	-	517	517	-
Stage 2	-	-	-	-	-	-	126	137	-
Critical Hdwy	-	-	-	4.13	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1446	-	0	422	385	1020
Stage 1	0	-	-	-	-	0	564	533	-
Stage 2	0	-	-	-	-	0	899	783	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1446	-	-	359	0	1020
Mov Cap-2 Maneuver	-	-	-	-	-	-	359	0	-
Stage 1	-	-	-	-	-	-	564	0	-
Stage 2	-	-	-	-	-	-	764	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.7	25.2
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1446	-	359	456
HCM Lane V/C Ratio	-	-	0.15	-	0.634	0.385
HCM Control Delay (s)	-	-	7.9	-	30.9	17.8
HCM Lane LOS	-	-	A	-	D	C
HCM 95th %tile Q(veh)	-	-	0.5	-	4.1	1.8

Intersection	
Int Delay, s/veh	4.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	93	34	56	79	47	42
Future Vol, veh/h	93	34	56	79	47	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	101	37	61	86	51	46

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	252	104	0	0	147	0
Stage 1	104	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	737	951	-	-	1435	-
Stage 1	920	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	710	951	-	-	1435	-
Mov Cap-2 Maneuver	710	-	-	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	848	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.4	0	4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	710	951	1435	-
HCM Lane V/C Ratio	-	-	0.142	0.039	0.036	-
HCM Control Delay (s)	-	-	10.9	8.9	7.6	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.1	0.1	-

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	9	11	55	50	18
Future Vol, veh/h	14	9	11	55	50	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	14	33	18	15	33
Mvmt Flow	15	10	12	60	54	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	148	64	74	0	-	0
Stage 1	64	-	-	-	-	-
Stage 2	84	-	-	-	-	-
Critical Hdwy	6.57	6.34	4.43	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.426	2.497	-	-	-
Pot Cap-1 Maneuver	810	968	1350	-	-	-
Stage 1	922	-	-	-	-	-
Stage 2	903	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	803	968	1350	-	-	-
Mov Cap-2 Maneuver	803	-	-	-	-	-
Stage 1	914	-	-	-	-	-
Stage 2	903	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.3	1.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1350	-	860	-	-
HCM Lane V/C Ratio	0.009	-	0.029	-	-
HCM Control Delay (s)	7.7	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Intersection Delay, s/veh	161
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	95	365	210	67	404	80	290	82	121	75	74	75
Future Vol, veh/h	95	365	210	67	404	80	290	82	121	75	74	75
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	397	228	73	439	87	315	89	132	82	80	82
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	58.2	371	118.2	46.4
HCM LOS	F	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	78%	0%	100%	0%	0%	12%	33%
Vol Thru, %	22%	0%	0%	100%	0%	73%	33%
Vol Right, %	0%	100%	0%	0%	100%	15%	33%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	372	121	95	365	210	551	224
LT Vol	290	0	95	0	0	67	75
Through Vol	82	0	0	365	0	404	74
RT Vol	0	121	0	0	210	80	75
Lane Flow Rate	404	132	103	397	228	599	243
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	1.19	0.347	0.278	1.012	0.538	1.739	0.741
Departure Headway (Hd)	12.491	11.329	11.677	11.147	10.404	11.194	13.368
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	295	320	310	329	349	329	273
Service Time	10.191	9.029	9.377	8.847	8.104	8.894	11.068
HCM Lane V/C Ratio	1.369	0.412	0.332	1.207	0.653	1.821	0.89
HCM Control Delay	150.2	19.9	18.8	87.8	24.6	371	46.4
HCM Lane LOS	F	C	C	F	C	F	E
HCM 95th-tile Q	15.3	1.5	1.1	11.3	3	35.6	5.3

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	48	414	0	0	284	485	50	7	257	0	0	0
Future Vol, veh/h	48	414	0	0	284	485	50	7	257	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	52	450	0	0	309	527	54	8	279	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	836	0	-	-	-	0	1127	1390	225
Stage 1	-	-	-	-	-	-	554	554	-
Stage 2	-	-	-	-	-	-	573	836	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	796	-	0	0	-	-	212	142	779
Stage 1	-	-	0	0	-	-	540	513	-
Stage 2	-	-	0	0	-	-	563	381	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	796	-	-	-	-	-	198	0	779
Mov Cap-2 Maneuver	-	-	-	-	-	-	198	0	-
Stage 1	-	-	-	-	-	-	505	0	-
Stage 2	-	-	-	-	-	-	563	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1	0	15.7
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	198	779	796	-	-	-
HCM Lane V/C Ratio	0.313	0.359	0.066	-	-	-
HCM Control Delay (s)	31.3	12.2	9.8	-	-	-
HCM Lane LOS	D	B	A	-	-	-
HCM 95th %tile Q(veh)	1.3	1.6	0.2	-	-	-

Intersection	
Int Delay, s/veh	18.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	112	50	199	135	0	0	0	0	350	4	53
Future Vol, veh/h	0	112	50	199	135	0	0	0	0	350	4	53
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	122	54	216	147	0	0	0	0	380	4	58

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	176	0	0	728	755	74
Stage 1	-	-	-	-	-	-	579	579	-
Stage 2	-	-	-	-	-	-	149	176	-
Critical Hdwy	-	-	-	4.13	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1399	-	0	~ 374	337	973
Stage 1	0	-	-	-	-	0	525	500	-
Stage 2	0	-	-	-	-	0	878	753	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1399	-	-	~ 316	0	973
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 316	0	-
Stage 1	-	-	-	-	-	-	525	0	-
Stage 2	-	-	-	-	-	-	743	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.8	38
HCM LOS			E

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1399	-	316	400
HCM Lane V/C Ratio	-	-	0.155	-	0.803	0.472
HCM Control Delay (s)	-	-	8	-	50	21.8
HCM Lane LOS	-	-	A	-	F	C
HCM 95th %tile Q(veh)	-	-	0.5	-	6.6	2.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	4.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	67	121	158	74	88	67
Future Vol, veh/h	67	121	158	74	88	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	73	132	172	80	96	73

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	477	212	0	0	252	0
Stage 1	212	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	547	828	-	-	1313	-
Stage 1	823	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	505	828	-	-	1313	-
Mov Cap-2 Maneuver	505	-	-	-	-	-
Stage 1	823	-	-	-	-	-
Stage 2	720	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.3	0	4.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	505	828	1313	-
HCM Lane V/C Ratio	-	-	0.144	0.159	0.073	-
HCM Control Delay (s)	-	-	13.3	10.2	8	0
HCM Lane LOS	-	-	B	B	A	A
HCM 95th %tile Q(veh)	-	-	0.5	0.6	0.2	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	12	15	15	227	109	9
Future Vol, veh/h	12	15	15	227	109	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	4	5	2
Mvmt Flow	13	16	16	247	118	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	402	123	128	0	-	0
Stage 1	123	-	-	-	-	-
Stage 2	279	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	604	928	1458	-	-	-
Stage 1	902	-	-	-	-	-
Stage 2	768	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	596	928	1458	-	-	-
Mov Cap-2 Maneuver	596	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	768	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	0.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1458	-	744	-	-
HCM Lane V/C Ratio	0.011	-	0.039	-	-
HCM Control Delay (s)	7.5	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Appendix G – Cumulative plus Project Conditions Intersections Level of Service Worksheets

Intersection	
Intersection Delay, s/veh	49.4
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	87	340	181	34	291	46	270	41	64	37	17	68
Future Vol, veh/h	87	340	181	34	291	46	270	41	64	37	17	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	95	370	197	37	316	50	293	45	70	40	18	74
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	31	88.5	50.4	19.4
HCM LOS	D	F	F	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	87%	0%	100%	0%	0%	9%	30%
Vol Thru, %	13%	0%	0%	100%	0%	78%	14%
Vol Right, %	0%	100%	0%	0%	100%	12%	56%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	311	64	87	340	181	371	122
LT Vol	270	0	87	0	0	34	37
Through Vol	41	0	0	340	0	291	17
RT Vol	0	64	0	0	181	46	68
Lane Flow Rate	338	70	95	370	197	403	133
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	0.905	0.163	0.231	0.848	0.412	1.043	0.376
Departure Headway (Hd)	9.88	8.701	9.007	8.488	7.761	9.314	10.522
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	368	415	401	429	466	391	345
Service Time	7.58	6.401	6.707	6.188	5.461	7.014	8.222
HCM Lane V/C Ratio	0.918	0.169	0.237	0.862	0.423	1.031	0.386
HCM Control Delay	58.1	13.1	14.4	43.4	15.8	88.5	19.4
HCM Lane LOS	F	B	B	E	C	F	C
HCM 95th-tile Q	9.2	0.6	0.9	8.3	2	13.4	1.7

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	389	0	0	287	342	28	0	219	0	0	0
Future Vol, veh/h	73	389	0	0	287	342	28	0	219	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	79	423	0	0	312	372	30	0	238	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	684	0	-	-	-	0	1079	1265	212
Stage 1	-	-	-	-	-	-	581	581	-
Stage 2	-	-	-	-	-	-	498	684	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	907	-	0	0	-	-	227	169	794
Stage 1	-	-	0	0	-	-	523	499	-
Stage 2	-	-	0	0	-	-	610	448	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	907	-	-	-	-	-	207	0	794
Mov Cap-2 Maneuver	-	-	-	-	-	-	207	0	-
Stage 1	-	-	-	-	-	-	477	0	-
Stage 2	-	-	-	-	-	-	610	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.5	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	207	794	907	-	-	-
HCM Lane V/C Ratio	0.147	0.3	0.087	-	-	-
HCM Control Delay (s)	25.4	11.5	9.3	-	-	-
HCM Lane LOS	D	B	A	-	-	-
HCM 95th %tile Q(veh)	0.5	1.3	0.3	-	-	-

Intersection	
Int Delay, s/veh	16.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	148	39	200	115	0	0	0	0	314	6	69
Future Vol, veh/h	0	148	39	200	115	0	0	0	0	314	6	69
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	161	42	217	125	0	0	0	0	341	7	75

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	203	0	0	741	762	63
Stage 1	-	-	-	-	-	-	559	559	-
Stage 2	-	-	-	-	-	-	182	203	-
Critical Hdwy	-	-	-	4.13	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1367	-	0	367	334	989
Stage 1	0	-	-	-	-	0	537	510	-
Stage 2	0	-	-	-	-	0	849	733	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1367	-	-	~ 309	0	989
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 309	0	-
Stage 1	-	-	-	-	-	-	537	0	-
Stage 2	-	-	-	-	-	-	714	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.2	32.7
HCM LOS			D

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1367	-	309	425
HCM Lane V/C Ratio	-	-	0.159	-	0.736	0.46
HCM Control Delay (s)	-	-	8.1	-	43.2	20.5
HCM Lane LOS	-	-	A	-	E	C
HCM 95th %tile Q(veh)	-	-	0.6	-	5.5	2.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	150	34	56	140	47	42
Future Vol, veh/h	150	34	56	140	47	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	163	37	61	152	51	46

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	285	137	0	0	213	0
Stage 1	137	-	-	-	-	-
Stage 2	148	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	705	911	-	-	1357	-
Stage 1	890	-	-	-	-	-
Stage 2	880	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	678	911	-	-	1357	-
Mov Cap-2 Maneuver	678	-	-	-	-	-
Stage 1	890	-	-	-	-	-
Stage 2	846	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	4.1
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	678	911	1357	-
HCM Lane V/C Ratio	-	-	0.24	0.041	0.038	-
HCM Control Delay (s)	-	-	12	9.1	7.8	0
HCM Lane LOS	-	-	B	A	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.1	0.1	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	75	12	14	55	50	75
Future Vol, veh/h	75	12	14	55	50	75
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	17	14	33	18	15	33
Mvmt Flow	82	13	15	60	54	82

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	185	95	136	0	-	0
Stage 1	95	-	-	-	-	-
Stage 2	90	-	-	-	-	-
Critical Hdwy	6.57	6.34	4.43	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.426	2.497	-	-	-
Pot Cap-1 Maneuver	771	930	1278	-	-	-
Stage 1	892	-	-	-	-	-
Stage 2	897	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	762	930	1278	-	-	-
Mov Cap-2 Maneuver	762	-	-	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	897	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.2	1.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1278	-	781	-	-
HCM Lane V/C Ratio	0.012	-	0.121	-	-
HCM Control Delay (s)	7.9	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	60	0	24	65	0	37
Future Vol, veh/h	60	0	24	65	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	0	26	71	0	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	65	0	188	65
Stage 1	-	-	-	-	65	-
Stage 2	-	-	-	-	123	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1537	-	801	999
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	902	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1537	-	787	999
Mov Cap-2 Maneuver	-	-	-	-	787	-
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	886	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	999	-	-	1537	-
HCM Lane V/C Ratio	0.04	-	-	0.017	-
HCM Control Delay (s)	8.8	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	4.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	21	0	36	29	0	39
Future Vol, veh/h	21	0	36	29	0	39
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	0	39	32	0	42

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	23	0	133	23
Stage 1	-	-	-	-	23	-
Stage 2	-	-	-	-	110	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1592	-	861	1054
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	915	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1592	-	839	1054
Mov Cap-2 Maneuver	-	-	-	-	839	-
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	892	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.1	8.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1054	-	-	1592	-
HCM Lane V/C Ratio	0.04	-	-	0.025	-
HCM Control Delay (s)	8.6	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	180.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	95	397	210	67	431	80	290	82	121	75	74	75
Future Vol, veh/h	95	397	210	67	431	80	290	82	121	75	74	75
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	103	432	228	73	468	87	315	89	132	82	80	82
Number of Lanes	1	1	1	0	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	3	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	3	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	1	3
HCM Control Delay	75.3	410.5	120.1	47
HCM LOS	F	F	F	E

Lane	NBLn1	NBLn2	EBLn1	EBLn2	EBLn3	WBLn1	SBLn1
Vol Left, %	78%	0%	100%	0%	0%	12%	33%
Vol Thru, %	22%	0%	0%	100%	0%	75%	33%
Vol Right, %	0%	100%	0%	0%	100%	14%	33%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	372	121	95	397	210	578	224
LT Vol	290	0	95	0	0	67	75
Through Vol	82	0	0	397	0	431	74
RT Vol	0	121	0	0	210	80	75
Lane Flow Rate	404	132	103	432	228	628	243
Geometry Grp	8	8	7	7	7	8	8
Degree of Util (X)	1.193	0.348	0.278	1.102	0.539	1.829	0.738
Departure Headway (Hd)	12.789	11.623	11.849	11.318	10.574	11.313	13.703
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	287	312	306	324	345	327	265
Service Time	10.489	9.323	9.549	9.018	8.274	9.013	11.403
HCM Lane V/C Ratio	1.408	0.423	0.337	1.333	0.661	1.92	0.917
HCM Control Delay	152.5	20.4	19	115.3	25	410.5	47
HCM Lane LOS	F	C	C	F	C	F	E
HCM 95th-tile Q	15.1	1.5	1.1	13.7	3	38.6	5.2

Intersection	
Int Delay, s/veh	5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	76	446	0	0	311	485	73	7	257	0	0	0
Future Vol, veh/h	76	446	0	0	311	485	73	7	257	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	630	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	83	485	0	0	338	527	79	8	279	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	865	0	-	-	-	0	1253	1516	243
Stage 1	-	-	-	-	-	-	651	651	-
Stage 2	-	-	-	-	-	-	602	865	-
Critical Hdwy	4.13	-	-	-	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	2.219	-	-	-	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	776	-	0	0	-	-	177	119	758
Stage 1	-	-	0	0	-	-	482	464	-
Stage 2	-	-	0	0	-	-	546	370	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	776	-	-	-	-	-	158	0	758
Mov Cap-2 Maneuver	-	-	-	-	-	-	158	0	-
Stage 1	-	-	-	-	-	-	430	0	-
Stage 2	-	-	-	-	-	-	546	0	-

Approach	EB	WB	NB
HCM Control Delay, s	1.5	0	22
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	158	758	776	-	-	-
HCM Lane V/C Ratio	0.55	0.369	0.106	-	-	-
HCM Control Delay (s)	52.6	12.5	10.2	-	-	-
HCM Lane LOS	F	B	B	-	-	-
HCM 95th %tile Q(veh)	2.8	1.7	0.4	-	-	-

Intersection	
Int Delay, s/veh	27.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↱		↰	↑↑					↰	↔	
Traffic Vol, veh/h	0	172	78	199	185	0	0	0	0	350	4	76
Future Vol, veh/h	0	172	78	199	185	0	0	0	0	350	4	76
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	0	-	-	-	-	-	0	-	520
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	187	85	216	201	0	0	0	0	380	4	83

Major/Minor	Major1			Major2			Minor2		
Conflicting Flow All	-	0	0	272	0	0	863	905	101
Stage 1	-	-	-	-	-	-	633	633	-
Stage 2	-	-	-	-	-	-	230	272	-
Critical Hdwy	-	-	-	4.13	-	-	6.63	6.53	6.93
Critical Hdwy Stg 1	-	-	-	-	-	-	5.83	5.53	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.43	5.53	-
Follow-up Hdwy	-	-	-	2.219	-	-	3.519	4.019	3.319
Pot Cap-1 Maneuver	0	-	-	1290	-	0	~ 309	276	935
Stage 1	0	-	-	-	-	0	492	472	-
Stage 2	0	-	-	-	-	0	807	684	-
Platoon blocked, %		-	-		-				
Mov Cap-1 Maneuver	-	-	-	1290	-	-	~ 257	0	935
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 257	0	-
Stage 1	-	-	-	-	-	-	492	0	-
Stage 2	-	-	-	-	-	-	672	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.3	64.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1290	-	257	360
HCM Lane V/C Ratio	-	-	0.168	-	0.987	0.594
HCM Control Delay (s)	-	-	8.4	-	95	28.6
HCM Lane LOS	-	-	A	-	F	D
HCM 95th %tile Q(veh)	-	-	0.6	-	9.5	3.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	124	121	158	162	88	67
Future Vol, veh/h	124	121	158	162	88	67
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	135	132	172	176	96	73

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	525	260	0	0	348	0
Stage 1	260	-	-	-	-	-
Stage 2	265	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	513	779	-	-	1211	-
Stage 1	783	-	-	-	-	-
Stage 2	779	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	470	779	-	-	1211	-
Mov Cap-2 Maneuver	470	-	-	-	-	-
Stage 1	783	-	-	-	-	-
Stage 2	714	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.2	0	4.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	470	779	1211	-
HCM Lane V/C Ratio	-	-	0.287	0.169	0.079	-
HCM Control Delay (s)	-	-	15.7	10.6	8.2	0
HCM Lane LOS	-	-	C	B	A	A
HCM 95th %tile Q(veh)	-	-	1.2	0.6	0.3	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	100	20	19	227	109	82
Future Vol, veh/h	100	20	19	227	109	82
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	4	5	2
Mvmt Flow	109	22	21	247	118	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	452	163	207	0	-	0
Stage 1	163	-	-	-	-	-
Stage 2	289	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	565	882	1364	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	760	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	555	882	1364	-	-	-
Mov Cap-2 Maneuver	555	-	-	-	-	-
Stage 1	850	-	-	-	-	-
Stage 2	760	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.8	0.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1364	-	592	-	-
HCM Lane V/C Ratio	0.015	-	0.22	-	-
HCM Control Delay (s)	7.7	0	12.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.8	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	83	0	30	71	0	37
Future Vol, veh/h	83	0	30	71	0	37
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	0	33	77	0	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	90	0	233	90
Stage 1	-	-	-	-	90	-
Stage 2	-	-	-	-	143	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1505	-	755	968
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	884	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1505	-	738	968
Mov Cap-2 Maneuver	-	-	-	-	738	-
Stage 1	-	-	-	-	934	-
Stage 2	-	-	-	-	864	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	8.9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	968	-	-	1505	-
HCM Lane V/C Ratio	0.042	-	-	0.022	-
HCM Control Delay (s)	8.9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	5.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	27	0	47	24	0	56
Future Vol, veh/h	27	0	47	24	0	56
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	0	51	26	0	61

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	29	0	157	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	-	-	128	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1584	-	834	1046
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	898	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1584	-	806	1046
Mov Cap-2 Maneuver	-	-	-	-	806	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	868	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4.9	8.7
HCM LOS			A

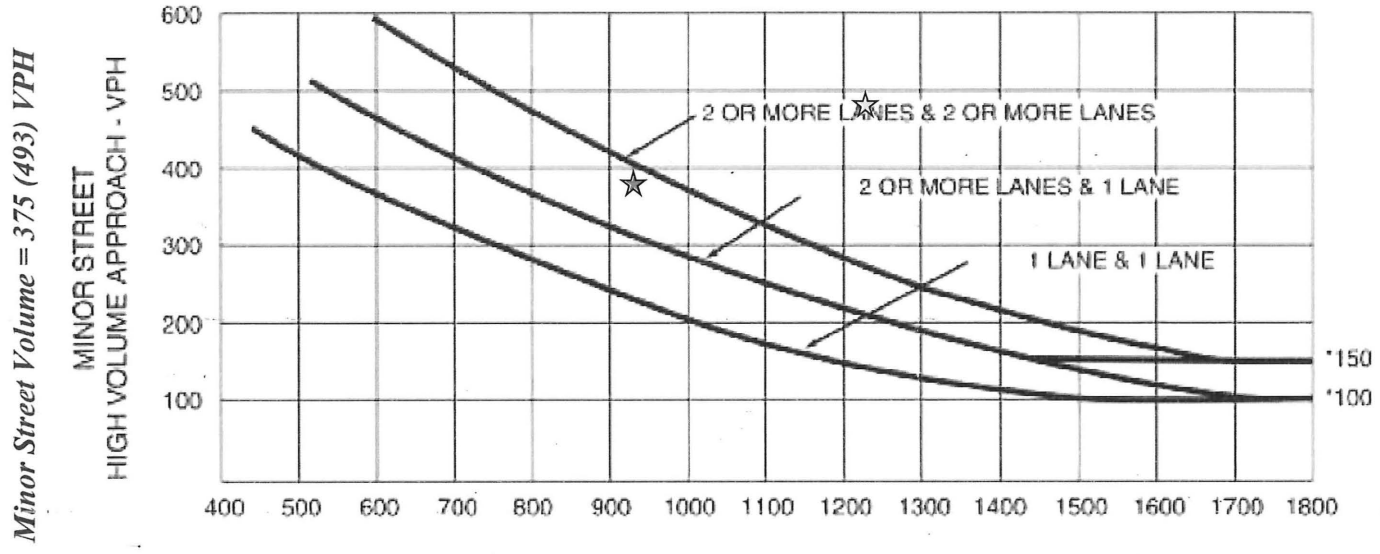
Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	1046	-	-	1584	-
HCM Lane V/C Ratio	0.058	-	-	0.032	-
HCM Control Delay (s)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0.1	-

Appendix H – Peak Hour Signal Warrants and Cumulative plus Project Conditions with Mitigations Intersections Level of Service Worksheets

Peak Hour Warrant (Urban Areas)

Intersection #1: Roth Rd. & S. Harlan Rd., San Joaquin County, CA
Scenario: Cumulative Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 935 (1221) VPH

★ ***AM Peak Hour***

☆ ***PM Peak Hour***

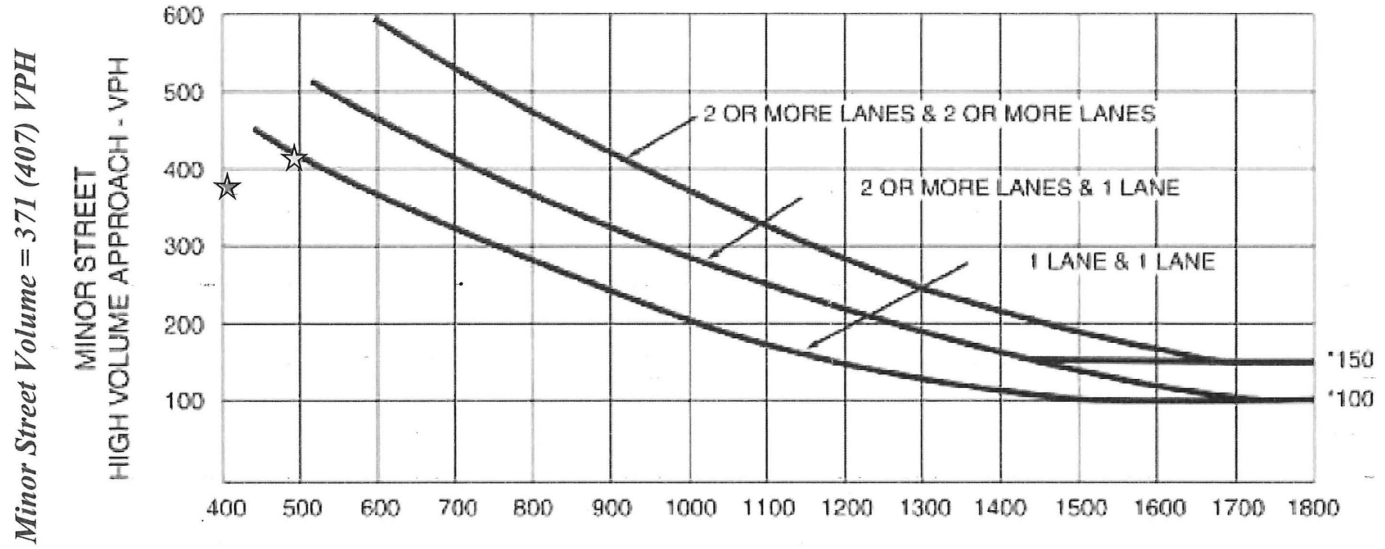
A signal is WARRANTED in the a.m. Peak Hour
A signal is WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Peak Hour Warrant (Urban Areas)

Intersection #3: Roth Rd. & I-5 Southbound Ramps, San Joaquin County, CA
Scenario: Cumulative Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 402 (496) VPH

★ ***AM Peak Hour***

☆ ***PM Peak Hour***

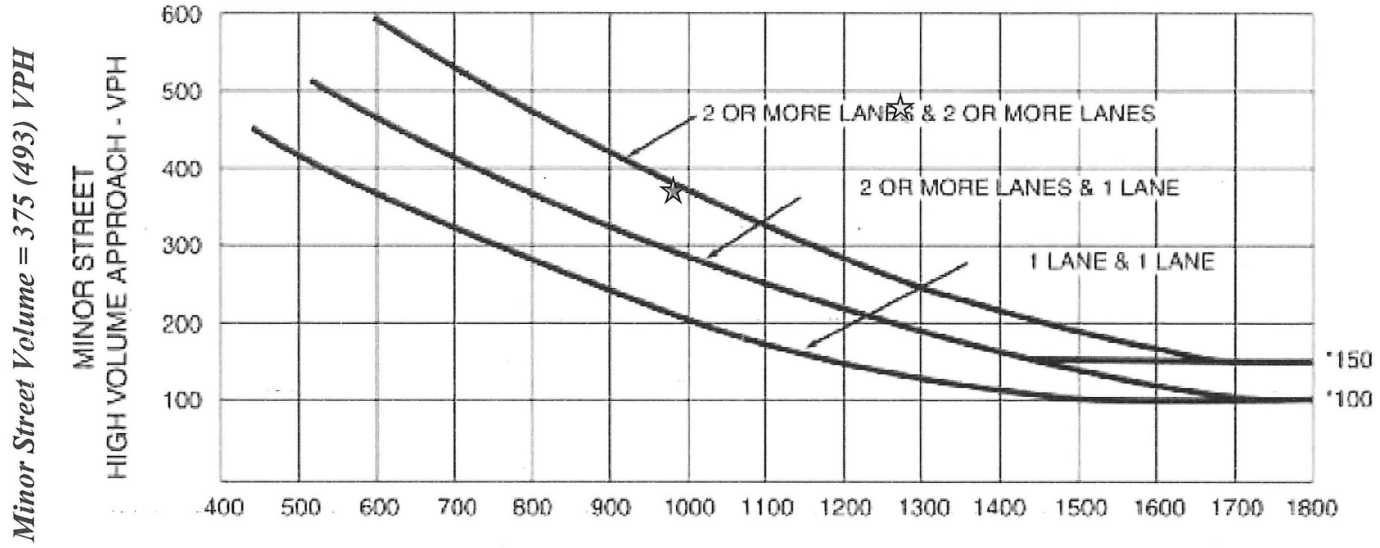
A signal is NOT WARRANTED in the a.m. Peak Hour
A signal is NOT WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Peak Hour Warrant (Urban Areas)

Intersection #1: Roth Rd. & S. Harlan Rd., San Joaquin County, CA
Scenario: Cumulative plus Project Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 979 (1280) VPH

☆ *AM Peak Hour*

☆ *PM Peak Hour*

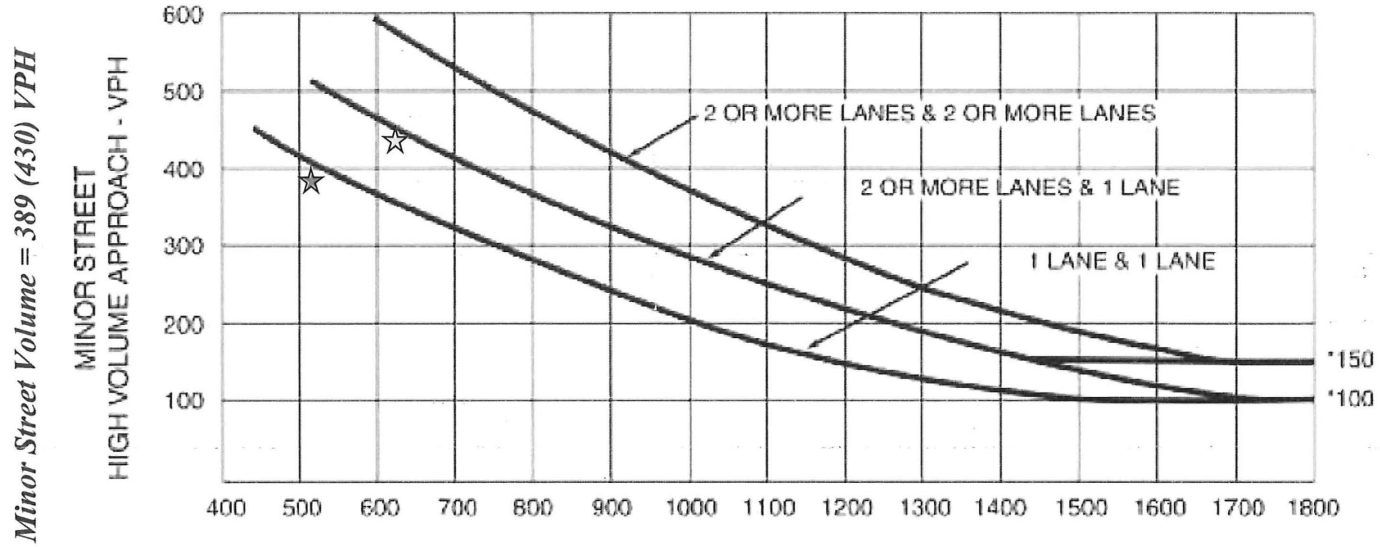
A signal is WARRANTED in the a.m. Peak Hour
A signal is WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Peak Hour Warrant (Urban Areas)

Intersection #3: Roth Rd. & I-5 Southbound Ramps, San Joaquin County, CA
Scenario: Cumulative plus Project Conditions

Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Major Street Volume = 502 (634) VPH

☆ ***AM Peak Hour***

☆ ***PM Peak Hour***

A signal is NOT WARRANTED in the a.m. Peak Hour
A signal is NOT WARRANTED in the p.m. Peak Hour

Source: CA MUTCD 2014, Chapter 4C – Traffic Control Signal Needs Studies, Part 4 - Highway Traffic Signals, Figure 4C-3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	87	340	181	34	291	46	270	41	64	37	17	68
Future Volume (veh/h)	87	340	181	34	291	46	270	41	64	37	17	68
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	95	370	197	37	316	50	293	45	70	40	18	74
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	123	520	440	67	389	62	354	54	361	58	26	107
Arrive On Green	0.07	0.28	0.28	0.04	0.25	0.25	0.23	0.23	0.23	0.11	0.11	0.11
Sat Flow, veh/h	1781	1870	1585	1781	1576	249	1554	239	1585	508	229	939
Grp Volume(v), veh/h	95	370	197	37	0	366	338	0	70	132	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1825	1793	0	1585	1676	0	0
Q Serve(g_s), s	3.3	11.2	6.5	1.3	0.0	11.9	11.3	0.0	2.3	4.8	0.0	0.0
Cycle Q Clear(g_c), s	3.3	11.2	6.5	1.3	0.0	11.9	11.3	0.0	2.3	4.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.14	0.87		1.00	0.30		0.56
Lane Grp Cap(c), veh/h	123	520	440	67	0	450	409	0	361	191	0	0
V/C Ratio(X)	0.77	0.71	0.45	0.55	0.00	0.81	0.83	0.00	0.19	0.69	0.00	0.00
Avail Cap(c_a), veh/h	378	877	743	293	0	769	772	0	683	855	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	28.9	20.5	18.8	29.8	0.0	22.4	23.2	0.0	19.7	26.9	0.0	0.0
Incr Delay (d2), s/veh	3.9	1.8	0.7	2.6	0.0	3.6	1.7	0.0	0.1	1.7	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.5	2.2	0.6	0.0	5.0	4.3	0.0	0.7	1.8	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	32.8	22.3	19.5	32.4	0.0	26.0	24.8	0.0	19.8	28.5	0.0	0.0
LnGrp LOS	C	C	B	C	A	C	C	A	B	C	A	A
Approach Vol, veh/h		662			403			408			132	
Approach Delay, s/veh		23.0			26.6			24.0			28.5	
Approach LOS		C			C			C			C	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	9.0	21.0		20.2	7.0	22.9		13.0				
Change Period (Y+Rc), s	4.6	5.4		5.8	4.6	5.4		5.8				
Max Green Setting (Gmax), s	13.4	26.6		27.2	10.4	29.6		32.2				
Max Q Clear Time (g_c+I1), s	5.3	13.9		13.3	3.3	13.2		6.8				
Green Ext Time (p_c), s	0.1	1.6		1.1	0.0	2.5		0.4				

Intersection Summary	
HCM 6th Ctrl Delay	24.6
HCM 6th LOS	C

Intersection	
Intersection Delay, s/veh	12.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	148	39	200	115	0	0	0	0	314	6	69
Future Vol, veh/h	0	148	39	200	115	0	0	0	0	314	6	69
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	161	42	217	125	0	0	0	0	341	7	75
Number of Lanes	0	1	0	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	13.4	12	13.4
HCM LOS	B	B	B

Lane	EBLn1	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	100%	61%
Vol Thru, %	79%	0%	100%	100%	0%	3%
Vol Right, %	21%	0%	0%	0%	0%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	187	200	58	58	198	191
LT Vol	0	200	0	0	198	116
Through Vol	148	0	58	58	0	6
RT Vol	39	0	0	0	0	69
Lane Flow Rate	203	217	62	62	215	208
Geometry Grp	8	7	7	7	8	8
Degree of Util (X)	0.376	0.403	0.107	0.077	0.406	0.366
Departure Headway (Hd)	6.652	6.681	6.174	4.415	6.8	6.348
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	541	539	580	808	529	565
Service Time	4.406	4.427	3.919	2.159	4.546	4.093
HCM Lane V/C Ratio	0.375	0.403	0.107	0.077	0.406	0.368
HCM Control Delay	13.4	13.9	9.7	7.5	14.1	12.7
HCM Lane LOS	B	B	A	A	B	B
HCM 95th-tile Q	1.7	1.9	0.4	0.2	2	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	95	397	210	67	431	80	290	82	121	75	74	75
Future Volume (veh/h)	95	397	210	67	431	80	290	82	121	75	74	75
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h	103	432	228	73	468	87	315	89	132	82	80	82
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	130	607	514	94	467	87	343	97	388	95	93	95
Arrive On Green	0.07	0.32	0.32	0.05	0.30	0.30	0.24	0.24	0.24	0.16	0.16	0.16
Sat Flow, veh/h	1781	1870	1585	1781	1534	285	1404	397	1585	583	569	583
Grp Volume(v), veh/h	103	432	228	73	0	555	404	0	132	244	0	0
Grp Sat Flow(s),veh/h/ln	1781	1870	1585	1781	0	1819	1800	0	1585	1736	0	0
Q Serve(g_s), s	5.7	20.4	11.4	4.1	0.0	30.6	22.0	0.0	6.9	13.8	0.0	0.0
Cycle Q Clear(g_c), s	5.7	20.4	11.4	4.1	0.0	30.6	22.0	0.0	6.9	13.8	0.0	0.0
Prop In Lane	1.00		1.00	1.00		0.16	0.78		1.00	0.34		0.34
Lane Grp Cap(c), veh/h	130	607	514	94	0	553	440	0	388	284	0	0
V/C Ratio(X)	0.79	0.71	0.44	0.78	0.00	1.00	0.92	0.00	0.34	0.86	0.00	0.00
Avail Cap(c_a), veh/h	237	607	514	237	0	553	487	0	429	556	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	45.9	29.8	26.8	47.0	0.0	35.0	37.0	0.0	31.3	40.9	0.0	0.0
Incr Delay (d2), s/veh	4.1	3.9	0.6	5.1	0.0	38.9	20.3	0.0	0.2	3.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	9.4	4.2	1.9	0.0	18.8	11.6	0.0	2.5	5.9	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	50.0	33.8	27.4	52.1	0.0	73.9	57.3	0.0	31.5	43.9	0.0	0.0
LnGrp LOS	D	C	C	D	A	F	E	A	C	D	A	A
Approach Vol, veh/h		763			628			536			244	
Approach Delay, s/veh		34.0			71.4			50.9			43.9	
Approach LOS		C			E			D			D	

Timer - Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	11.9	36.0		30.4	9.9	38.0		22.2				
Change Period (Y+Rc), s	4.6	5.4		5.8	4.6	5.4		5.8				
Max Green Setting (Gmax), s	13.4	30.6		27.2	13.4	30.6		32.2				
Max Q Clear Time (g_c+I1), s	7.7	32.6		24.0	6.1	22.4		15.8				
Green Ext Time (p_c), s	0.0	0.0		0.6	0.0	2.1		0.7				

Intersection Summary												
HCM 6th Ctrl Delay			50.1									
HCM 6th LOS			D									

Intersection	
Intersection Delay, s/veh	14.8
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	172	78	199	185	0	0	0	0	350	4	76
Future Vol, veh/h	0	172	78	199	185	0	0	0	0	350	4	76
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	187	85	216	201	0	0	0	0	380	4	83
Number of Lanes	0	1	0	1	2	0	0	0	0	1	1	0

Approach	EB	WB	SB
Opposing Approach	WB	EB	
Opposing Lanes	3	1	0
Conflicting Approach Left	SB		WB
Conflicting Lanes Left	2	0	3
Conflicting Approach Right		SB	EB
Conflicting Lanes Right	0	2	1
HCM Control Delay	17.2	12.2	15.7
HCM LOS	C	B	C

Lane	EBLn1	WBLn1	WBLn2	WBLn3	SBLn1	SBLn2
Vol Left, %	0%	100%	0%	0%	100%	62%
Vol Thru, %	69%	0%	100%	100%	0%	2%
Vol Right, %	31%	0%	0%	0%	0%	36%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	250	199	93	93	221	210
LT Vol	0	199	0	0	221	130
Through Vol	172	0	93	93	0	4
RT Vol	78	0	0	0	0	76
Lane Flow Rate	272	216	101	101	240	228
Geometry Grp	8	7	7	7	8	8
Degree of Util (X)	0.524	0.421	0.182	0.132	0.482	0.43
Departure Headway (Hd)	6.944	7.013	6.504	4.738	7.246	6.796
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	516	510	549	750	496	528
Service Time	4.731	4.785	4.276	2.509	5.019	4.569
HCM Lane V/C Ratio	0.527	0.424	0.184	0.135	0.484	0.432
HCM Control Delay	17.2	14.8	10.7	8.2	16.6	14.7
HCM Lane LOS	C	B	B	A	C	B
HCM 95th-tile Q	3	2.1	0.7	0.5	2.6	2.1