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: Gurudwara Sahib Tracy c/o Michael Hakeem of The Law Offices of Hakeem, Marengo, Ellis, and Ramirez, Stockton, CA

PROJECT TITLE/FILE NUMBER(S): PA-1900085

PROJECT DESCRIPTION: A Conditional Use Permit for a religious assembly to be constructed in 2 phases over 5 years. Phase 1 of the project is to include construction of a single story, 43,770 square foot multipurpose building to include an assembly hall, a covered courtyard, a dining hall and kitchen, an office, meeting rooms, restrooms, shoe room storage rooms, lobby and wedding rooms. Phase 2 includes the construction of a 13,818 square foot addition to the multipurpose building to contain a classroom, prayer hall, office, guest room, and a priest room. The building height is 28.6 feet. The structure will have a dome with a maximum height of 52 feet.

The project will utilize private, on site services: Well, septic system, and storm water retention pond. Three water tanks for fire will be installed. On site parking for 365 vehicles will be provided. Two, 2-way driveways are proposed – one off of Naglee Road and one off of Larch Road. An 8-foot high solid wall is proposed for the south property line adjacent to Auto Plaza Drive. There will be no access from Auto Plaza Drive.

The operating hours for the assembly will be 10:00 a.m. to 7:00 p.m., 7 days per week, with a maximum of 15 employees. The classrooms will be utilized on Sundays only and will accommodate a maximum of 50 students. Also proposed are 4 annual special events with a maximum attendance of 700 people. These events are considered accessory to the main use. (Use Type: Assembly - Religious).

The project site is located on the southeast corner of W. Larch Road and S. Naglee Road, in Tracy.

ASSESSORS PARCEL NO(S).: 212-050-01

ACRES: 8.49 acres

GENERAL PLAN: A/UR

ZONING: AL-10

POTENTIAL POPULATION, NUMBER OF DWELLING UNITS, OR SQUARE FOOTAGE OF USE(S):
Square footage totaling 57,588 for use as religious assembly.

SURROUNDING LAND USES:

NORTH: Agricultural with scattered residences; W. Larch Road
SOUTH: City of Tracy; commercial; Auto Plaza Way; Interstate 205
EAST: Low density residential; City of Tracy
WEST: City of Tracy; S. Naglee Road

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 (note date); 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 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: **City of Tracy**

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.

Alisa Goulart
Signature

11-26-2024
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.

	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 publically accessible vantage points). 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) San Joaquin County is set within the greater San Joaquin Valley, with the delta and large expanses of generally flat, agricultural lands and urban development framed by the foothills of the Diablo Range to the west and the foothills of the Sierra Nevada to the east. According to the County's General Plan, scenic resources within the County include waterways, hilltops, and oak groves (County of San Joaquin 2035).

The project site is located on S. Naglee Road in Tracy and borders the city limits of Tracy on 2 sides. Thus, the area is heavily developed to the west and south with commercial and industrial uses. To the north of the property, the area is relatively flat, with agricultural uses and scattered residences. Because the site is at the edge of existing development, and because any scenic vista would be north of this area, the project's impact on scenic vista is expected to be less-than-significant.

b) There are two officially designated state scenic highways in San Joaquin County: I-580 and I-5 (County of San Joaquin 2035). I-580 is located approximately 0.5 miles south of the project site. I-5 is located approximately 6.5 miles east of the project site. Due to distance, the project site is not visible from 1-580 or I-5. Interstate 205 is located approximately one-half mile south of the project site however, it is not a designated scenic highway.

In addition, the County has designated 26 roadways within the County as local scenic routes (County of San Joaquin 2035). The nearest locally designated scenic route is a section of Corral Hollow Road, located approximately 5.5 miles south of the project site, which, due to distance, does not have a view of the project site. Therefore, the project would have a less-than-significant impact associated with scenic resources within a state- or locally-designated scenic highway.

c) The project site is located in the urban Tracy Community and does not conflict with applicable zoning or other regulations. The area is generally flat and there are no particular vantage points. The site is surrounded by agricultural uses and scattered residences to the north and a commercial area of the City of Tracy to the south. Therefore, the project would have a less-than-significant impact associated with the existing visual quality or character of the site or its surroundings.

d) The existing lighting and glare conditions in the project area are typical of a rural agricultural area to the north and an urban commercial center to the south. New lighting for the project would include outdoor building lighting and parking lot lighting. Parking lot lighting standards stipulate that all lighting be designed to confine direct rays to the premises,

with no spillover beyond the property line except onto public thoroughfares, provided that such light does not cause a hazard to motorists (Development Title Section 9-403.050[d]). Therefore, the project is expected to have a less than significant impact from new sources of light or glare on day or nighttime views in the area.

II. AGRICULTURE AND FORESTRY RESOURCES.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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 a 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) The Rural Land Mapping Project, prepared by the California Department of Conservation as part of the Farmland Mapping and Monitoring Program, characterizes conversions affecting agricultural land that are not due to urbanization. According to the 2006 Rural Land Mapping Project of San Joaquin County, the site is designated as Rural Residential Land Urban and Built-up Land which is defined as residential areas of 1 to 5 structures per 10 acres. Because this category is not a prime farmland category, the project will not convert prime farmland from an agriculture to a non-agriculture use.

b) The Williamson Act is State legislation that preserves agricultural land through a program that permits contracts between landowners and local government that keep contracted land in agricultural use in exchange for a lower property tax assessment. The project parcel is not under a Williamson Act contract. Additionally, the zoning of the project parcel is Limited Agriculture with a 10-acre minimum (AL-10) and the project will not change the zoning of surrounding parcels.

Therefore, the project will not conflict with existing zoning for agricultural use, nor will it conflict with a Williamson Act contract.

c-d) There are no forest resources or zoning for forestlands or timberland, as defined by Public Resources Code and Government Code, located on or near the project site, therefore, the project will have no impact on corresponding zoning or conversion of such land.

e) The project will not involve conversion of Farmland, as described in a) above. The proposed improvements would not serve any areas that are currently not planned for development. Therefore, impacts related to indirect conversion of Farmland would be less than significant. As the project site contains no designated forest lands, the project would have no impact on indirect conversion of forest lands.

	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) The proposed project is a religious assembly. The project site is located within the San Joaquin Valley Air Basin which lies within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). SJVAPCD is the local agency established by the State to regulate air quality sources and minimize air pollution.

The project was referred to SJVAPCD for review on May 24, 2019. SJVAPCD issued a response dated June 6, 2019 stating that, having reviewed the project, the agency had determined the project specific annual emissions of criteria pollutants are not expected to exceed any of the following District significance thresholds: 100 tons per year of carbon monoxide (CO), 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), 27 tons per year of oxides of sulfur (Sox), 15 tons per year of particulate matter of 10 microns or less in size (PA10), or 15 tons per year of particulate matter of 2.5 microns or less in size (PM2.5).

To demonstrate that SJVAPCD's 2019 expectations are still valid in 2024, the applicant engaged Base Camp Environmental Inc. to run models using the California Emissions Estimator Model (CalEEMod) to estimate construction and operational emissions of the project. Base Camp Environmental Inc. submitted a memo dated August 13, 2024, detailing results from their July 2024 modeling which confirmed the SJVAPCD's expectations regarding maximum emissions from construction and operation of the project would not exceed CEQA significance thresholds for criteria pollutants.

District Rule 9510 is intended to mitigate a project's impact on air quality by encouraging incorporation of clean air design elements into development projects; if clean air design elements are insufficient to meet the targeted emission reductions, the rule requires developers to pay a fee used to fund projects to achieve off-site emissions reductions. Pursuant to the SJVAPCD, this project has been determined to be subject to District Rule 9510. When subject to the rule, an Air Impact Assessment (AIA) application is required. In August of 2024, the applicant submitted a complete AIA application to SJVAPCD and the district responded in a letter dated September 24, 2004, that the project complies with the emission reduction requirements of District Rule 9510 based on the project construction details provided with the application and the project is exempt from fees. To maintain the exemption, the applicant will comply with the following mitigation measures:

Lastly, the APCD offered recommendations that project proponents with construction-related exhaust emissions and activities resulting in less than significant impact on air quality utilize the cleanest reasonably available off-road construction fleets and practices (i.e. eliminating unnecessary idling) to further reduce impacts from construction-related exhaust emissions and activities.

With implementation of the District Rules' requirements and implementation of recommends, the project's impact on air quality is expected to be less than significant.

IV. BIOLOGICAL RESOURCES.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
Would the project:					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and 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) The San Joaquin County Multi-Species Open Space and Habitat Conservation Plan (SJMSCP) is a comprehensive plan for assessing and mitigating the biological impacts of converting open space or biologically sensitive lands to urban development in San Joaquin County and its incorporated cities. For the conversion of open space to non-open space uses that affect covered plant, fish, and wildlife species, the SJMSCP provides three compensation methods: preservation of existing sensitive lands, creation of new comparable habitat on the project site, or payment of fees that would be used to secure preserve lands outside the project site. In addition to fee payments, the SJMSCP identifies Incidental Take Minimization Measures - protection measures that avoid direct impacts of development on special-status species - with which projects are required to comply (SJCOG 2000). The San Joaquin Council of Governments (SJCOG) implements the SJMSCP on a project by-project basis. Pursuant to the Final EIR/EIS for 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.

SJCOG responded to this project re-referral in a letter dated December 28, 2023, that the project is subject to the SJMSCP. The applicant has confirmed that he will participate in SJMSCP. With the applicant's participation, the proposed project is consistent with the SJMSCP and any impacts to biological resources resulting from the proposed project will be reduced 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) The proposed project is a religious assembly on the perimeter of the City of Tracy. A search of the Office of Historical Preservation's list of California Historical Resources uncovered several historical sites in the Tracy area, the nearest being the Site of Completion of the Pacific Railroad, First Transcontinental Railroad, located on the north bank of the San Joaquin River, 2 miles north of the project site. Due to distance, the potential for the project to cause a substantial adverse change of a historical resource is less than significant.

b-c) As with most projects in California that involve ground-disturbing activities, there is the potential for discovery of a previously unknown paleontological, archaeological, cultural, and historical resource or human remains. If any resources are found during construction, all operations within the project area shall halt until and assessment can be made regarding the potential for adverse impacts on these resources. In the event an human remains are encountered during any portion of the project, California state law requires that there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county has determined manner and cause of death, and the recommendations concerning the treatment and disposition of the human remains have been made to the person responsible for the excavation (California Health and Safety Code - Section 7050.5). At the time development, if Human burials are found to be of Native American origin, the developer shall follow the procedures pursuant to Title 14, Division 6, Chapter 3, Article 5, Section 15064.5(e) of the California State Code of Regulations.

In this way, the project would have a less-than-significant impact with regard adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5.

	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) 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. The code includes energy conservation standards applicable to most buildings throughout California. These requirements will be applicable 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 preventing any conflict with state or local plans for energy efficiency and renewable energy.

VII. GEOLOGY AND SOILS.	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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) According to the California Department of Conservation's California Geological Survey, the project site is not located within an earthquake fault zone. However, similar to other areas located in seismically active Northern California, the project area is susceptible to strong ground shaking during an earthquake, although the site would not be affected by ground shaking more than any other area in the region.

The Project would be required to comply with the most recent version of the California Building Code (CBC), which contains universal standards related to seismic load requirements and is codified within the San Joaquin County Ordinance Code under Section 8-1000. In addition, a soils report is required pursuant to CBC § 1803 for foundations and CBC appendix § J104 for grading. All recommendations of the Soils Report will be incorporated into the construction drawings. As a result, impacts associated with seismic ground shaking or possible ground liquefaction are expected to be less than significant.

The project site is located in an area that is relatively flat and does not contain any slopes that could result in landslides. Therefore, impacts associated with landslides are expected to be less than significant.

b) The project would not result in substantial soil erosion or the loss of topsoil because the project will require a grading permit in conjunction with a building permit. Therefore, the grading will be done under permit and inspection by the San Joaquin County Community Development Department's Building Division. As a result, impacts to soil erosion or loss of topsoil will be less than significant.

c) As part of the project design process, a soils report will be required for grading and foundations and all recommendations from a soils report must be incorporated into the construction plans. As a result of these grading recommendations, which are required by the California Building Code (CBC), the project would not be susceptible to the effects of any potential lateral spreading, subsidence, or liquefaction. Compliance with the CBC and the engineering recommendations in the site-specific soils report would ensure structural integrity in the event that seismic-related issues are experienced at the project site. Therefore, impacts associated with unstable geologic units are expected to be less than significant.

d) Expansive soils are characterized by their potential shrink/swell behavior. The Soil Survey of San Joaquin County classifies the project site soil as having a high expansive potential. As mentioned above, a soils report will be required for grading and foundations and all recommendations from a soils report must be incorporated into the construction plans. These recommendations will include measures to counter any effects resulting from low to moderately expansive soil. As a result of these recommendations, which are required by the California Building Code (CBC), the project's likelihood of project buildings being impacted by the effects of expansive soil is expected to be less than significant.

e) The project will be served by an onsite septic system for the disposal of wastewater. The Environmental Health Department is requiring a soil suitability/nitrate loading study to determine the appropriate system and design prior to issuance of building permit(s). The sewage disposal system shall comply with the onsite wastewater treatment systems standards of San Joaquin County. A percolation test that meets absorption rates of the manual of septic tank practice or E.P.A. Design Manual for onsite wastewater treatment and disposal systems is required for each parcel. With these standards in place, only soils capable of adequately supporting the use of septic tanks will be approved for the septic system. As a result, impacts to soils from wastewater are expected to be less than significant.

f) The project area has not been determined to contain significant historic or prehistoric archeological artifacts that could be disturbed by project construction, therefore, damage to unique paleontological resources or sites or geologic features 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) Emissions of GHGs 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 proposed 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 proposed 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 greenhouse gas emissions 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 such, the analysis herein is limited to discussion of long-term operational GHG emissions.

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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.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code 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-c) The proposed project is a religious assembly. Pursuant to the Hazardous Materials Disclosure Survey submitted with the application, there will not be any storage of hazardous materials on site. Regulations related to the storage of hazardous materials require the owner/operator to report the use or storage of these hazardous materials to the California Environmental Reporting System (CERS) and must comply with all applicable federal, state, and local regulations pertaining to the storage of hazardous materials. In this way, impacts related to the use, transport, or disposal of hazardous materials are expected to be less than significant.

d) The project site is not listed as a hazardous materials site on the California Department of Toxic Substances Control EnviroStor database map, compiled pursuant to Government Code 65962.5 and, therefore, will not result in creating a significant hazard to the public or the environment.

e) The project site is not located within an airport land use plan or within two miles of a public airport or public use airport. The nearest airport is the Byron Airport located 9 miles to the west. Therefore, the project is not expected to result in a

safety hazard or in excessive noise for people residing or working in the project area. Therefore, the project's risk of exposing people residing or working in the project area to safety hazards or excessive noise is less than significant.

g) The County of San Joaquin Emergency Operations Plan is an all-hazards document describing the County's incident management structure, compliance with relevant legal statutes, other relevant guidelines, whole community engagement, continuity of government focus, and critical components of the incident management structure. According to the Emergency Operations Plan, major transportation routes in the County, including I-580 and I-205, would be possible evacuation routes in the event of an emergency. The Project would not affect these routes, and moreover, the Project would not affect the County's ability to implement its Emergency Operations Plan in the event of an emergency. In addition, the City of Tracy has adopted a Comprehensive Emergency Management Plan. However, there are no specific routes identified in the Comprehensive Emergency Management Plan. Notwithstanding, the Project would not impede access to any public route that might be needed as an evacuation route. As a result, the Project's impact on emergency response or evacuation activities is expected to be less than significant.

h) The project location is not identified as a Community at Risk from Wildfire by Cal Fire's "Fire Risk Assessment Program". Communities at Risk from Wildfire are those places within 1.5 miles of areas of High or Very High wildfire threat as determined from CDF-FRAP fuels and hazard data. Therefore, the impact of wildfires on the project are expected to be less than significant.

X. HYDROLOGY AND WATER QUALITY.	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
Would the project:					
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	☐	☐	☒	☐	☐
i) result in 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) The proposed project's impact on hydrology and water is expected to be less than significant. The project will be served by an onsite well and septic system. Construction of an individual domestic water well will be under permit and inspection by the Environmental Health Department. The sewage disposal system must comply with the onsite wastewater treatment systems standards of San Joaquin County.

For stormwater discharges associated with construction activity in the State of California, the State Water Resources Control Board (SWRCB) has adopted the General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Construction General Permit) to avoid and minimize water quality impacts attributable to such activities. The Construction General Permit applies to all projects in which construction activity disturbs 1 acre or more of soil. Because land disturbance for this project would exceed one acre, the project applicant would be required to obtain coverage under the Construction General Permit issued by the SWRCB prior to the start of construction. The Construction General Permit requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP), which would include and specify water quality Best Management Practices (BMPs) designed to prevent pollutants from contacting stormwater and keep all products of erosion from moving off site into receiving waters.

Routine inspection of all BMPs is required under the provisions of the Construction General Permit, and the SWPPP must be prepared and implemented by qualified individuals as defined by the State Water Resources Control Board (SWRCB).

During project operation, stormwater quality is regulated by the Stormwater Quality Control Criteria Plan (SWQCCP), which sets standards that apply to all new development. As part of the project, a new engineered stormwater drainage system would be designed and constructed to collect and treat all on-site stormwater in a method that meets the requirements of the SWQCCP.

In summary, project construction would be completed in accordance with an NPDES-mandated SWPPP, which would include standard BMPs to reduce potential off-site water quality impacts related to erosion and incidental spills and hazardous substances from equipment. Surface water runoff during project operations would be managed through an engineered stormwater drainage system, as required by the SWQCCP. Therefore, impacts associated with water quality standards, waste discharge requirements, and surface water or groundwater quality are expected to be less than significant.

b) The proposed project, a religious assembly, proposes developing the majority of the 8.5 acre parcel with structures and paved parking for 331 vehicles. However, the applicant has proposed using the parking area as a comprehensive pavement-based stormwater management system. The site will be graded to direct all water flow to the parking lot and the system will be capable of capturing 100% of the water from a 100-year, 24-hour storm. Therefore, although develop of the site will create impervious areas equal to half of the site, with the proposed stormwater system, the project's impact on the depletion of sustainable groundwater is expected to be less than significant.

c) The construction of the proposed project would result in grading and soil-disturbing activities and the installation of new impervious surfaces. A grading permit will be required which requires plans and grading calculations, including a statement of the estimated quantities of excavation and fill, prepared by a Registered Design Professional. The grading plan must show the existing grade and finished grade in contour intervals of sufficient clarity to indicate the nature and extent of the work and show in detail that it complies with the requirements of the California Building Code (CBC). The plans must also show the existing grade on adjoining properties in sufficient detail to identify how grade changes will conform to the requirements of the CDC. Additionally, the developer shall provide drainage facilities in accordance with the San Joaquin County Development Standards. Storm water capture capacity must be calculated and submitted along with a drainage plan for review and approval, prior to release of a building permit. In this way, any impacts to the existing drainage pattern of the site will be less than significant.

d) The flood zone information contained on the San Joaquin County Flood Information viewer is provided using the Digital Flood Insurance Rate Map date received from the US Department of Homeland Security, Federal Emergency Management Agency (FEMA). Pursuant this information, the project site is located in Special Flood Hazard Area - Zone AE. Special Flood Hazard Areas are defined as the area that will be inundated by the flood event having a 1% chance of being equaled or exceeded in any given year. The 1% annual chance flood is also referred to as the base flood or 100-year flood. Zone AE is assigned to areas subject to flood depths generally greater than 3 feet in the 100-year flood. Development of this project will require compliance with Development Title Section 9-703 regarding flood hazards. With the requirements for building above the flood depth, the risk of release of pollutants due to inundation of the project site is expected to be less than significant. The project site is not located in a tsunami nor a seiche zone.

e) The applicant will apply for permits from the Central Valley Regional Water Quality Control Board (CVRWQCB) to protect surface and groundwater on site and to ensure that the project doesn't conflict or obstruct a water quality control plan or sustainable groundwater management plan.

XI. LAND USE AND PLANNING.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
Would the project:					
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) This proposed project is a religious assembly with a maximum seating capacity for 300 people. The project does not include construction of any feature that would impair mobility within an existing community nor does it include removal of a means of access between a community and outlying area. The project site is not used as a connection between established communities. Instead, connectivity with the area surrounding the project is facilitated via local roadways. Therefore, the project will not result in dividing an established community.

b) The project site has a General Plan Designation of A/U (Urban Agriculture) and is zoned AL-10 (Limited Agriculture, 10-acre minimum) which is an implanting zone of the A/U designation. A Religious Assembly is a permitted use in the AL-10 zone with an approved Conditional Use Permit. The proposed project is consistent with all land use policies and regulations of the County Development Code and 2035 General Plan, therefore, the project's impact on the environment due to land use conflict is 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
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) Pursuant to the San Joaquin County General Plan Background Report, Chapter 10 - Natural Resources, the primary extractive resource in San Joaquin County is sand and gravel, with the principal areas of sand and gravel extraction located in the southwestern part of the county and along the Mokelumne, Calaveras, and Stanislaus rivers in the eastern portion of the county. The project site is located in the southwestern part of the county, however, pursuant to the California Geological Survey (CGS), the project site is classified as Mineral Resource Zone 1, defined as where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence. Therefore, the project's impact on the loss of important minerals is expected to be less than significant.

XIII. NOISE.	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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) The project site is located on S. Naglee Road, on the northern boundary of the City of Tracy. The project will result in a temporary increase in ambient noise level associated with project construction activities to include grading and use of heavy machinery and equipment. However, pursuant to Development Title Section 9-1025.9(c)(3), noise sources associated with construction, provided such activities do not take place before 9:00 a.m. or after 9:00 p.m. on any day, are exempt from the county noise ordinance.

The parcels to the north and west of the project site are in agricultural production, with scattered residences, and, to the east is low density residential development. To the south is the commercial development of the City of Tracy. All regular activities of the religious assembly will take place indoors and aren't expected to exceed noise levels contained the noise ordinance. The religious assembly does propose 4 special events annually with a large attendance. Noise standards contained in Development Title Table 9-404.040 states that the maximum sound level for stationary noise sources during the daytime is 70 dB and 65dB for nighttime. Daytime hours are 7:00 a.m. – 10:00 p.m. Nighttime hours are 10:00 p.m. – 7:00 a.m. This applies to outdoor activity areas of the receiving use or applies at the lot line if no activity area is known. The proposed project would be subject to these Development Title standards. Therefore, noise impacts from the proposed project are expected to be less than significant.

b) The project does not include any operations that would result in excessive ground-borne vibrations or other noise levels therefore, the project will not have any impact on vibrations or other noise levels.

c) The project site is not located within the vicinity of an airport land use plan or air strip, therefore, the potential for exposing future workers at the project site to excess noise levels and impacts resulting from airport noise levels to people residing or working in the project area 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) The project site is located in unincorporated San Joaquin County, north of the City of Tracy. The proposed project is a Religious Assembly that proposes, among other details, residential housing for priests. No other residential development is planned. The project will not induce substantial population growth in the area either directly or indirectly because the project is not anticipated to result in an increase in the number of jobs available. The proposed project would not displace substantial numbers of people or existing housing, necessitating the construction of replacement housing elsewhere because, although one residence on the project site will be removed, no other residences will be removed and the zoning will remain the same if the project is approved. Therefore, the project would have no impact on population and housing.

XV. PUBLIC SERVICES.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
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) The project site is located in unincorporated San Joaquin County north of the City of Tracy. The South County Fire Authority provides fire protection and paramedic services to the City of Tracy and the surrounding unincorporated areas that include the communities of Banta, Lammersville, and Vernalis. The Authority's district services over 120,000 residents out of 7 fire stations. Police protection services are provided to the project site by the San Joaquin County Sheriff's Office. The Sheriff's Office employs over 800 sworn and support personnel. The project site is located within the Tracy Unified School District. The school district is comprised of 3 comprehensive high schools, 2 alternative education high schools, one community school, 2 middle schools, 4 K-8 schools and 7 K-5 schools. The district serves approximately 16,000 students. There are no public recreation facilities near the project site.

The public service agencies listed above were provided with the project proposal and invited to respond with any project concerns or conditions. Comments were received from South County Fire Authority, with requirements to satisfy the California Fire Code including providing a water source for fire, including sprinklers in buildings, and providing adequate fire vehicle access to the site. The comment letter did not voice concerns regarding significant impacts to fire protection abilities resulting from the project and no other agencies responded with concerns. Therefore, the project is not expected to have a significant impact on the ability of these service providers to maintain current levels of service.

	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) The project, a Religious Assembly, is not expected to result in a large number of employees nor is there any residential development as part of the project. Therefore, the project is not expected to result in an increase in demand for neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated, because the project will not generate any new residential units and the project, an expansion of an existing winery, is not expected to result in an increased demand for recreational facilities. Therefore, the project will have no impact on recreation facilities.

	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) The project site is located on S. Naglee Road, just north of Auto Parkway, at the city limits of Tracy in unincorporated San Joaquin County. The main access to the project site is proposed from Auto Plaza Drive, which is in the City of Tracy's jurisdiction. A second access is proposed from Larch Road, which is in the County's jurisdiction. Regional access to the site is provided by Interstate 205, an east-west roadway. Naglee Road and Larch Road are local roads that provide access to the project site.

The Development Title requires a Traffic Study for a development project when traffic caused by the development project is expected to exceed 50 vehicles during any hour or violate a Level of Service (LOS) standard established in the General Plan (Development Title Section 9-608.050[a]). A traffic study was completed by transportation engineers Advanced Mobility Group. The study, dated May 5, 2022, concluded that the addition of project trips would not have a significant impact on the operation of, or the safety of, the roads providing access to the site as the Level of Service at the 2 study intersections would remain at an acceptable level with the addition of the project during peak hours and during special events.

However, in November 2023, the applicant revised the project site plan which originally had the driveway access off of Auto Plaza Drive and relocated access driveways to Larch Road and Naglee Road. As a result, Advanced Mobility Group provided an updated Traffic Study analyzing the new site access. The updated study, dated August 12, 2024, concluded that the Project will generate approximately 10 weekday PM peak hour and 223 peak hour trips during weekends. The 4 annual special events to include 500 attendees are estimated will generate approximately 445 peak hour trips.

The intersection of Naglee Road and W. Larch Road will require an improvement to an All Way Stop Control due to the increased traffic volumes. Further monitoring could determine if additional traffic control might be necessary in the long-term as the intersection meets a signal warrant with the even heavier traffic during peak hours and late Sunday morning. The applicant will be financially responsible for these intersection improvements.

In the project vicinity, due to the rural nature of the area, most of the roadways lack sidewalks and crosswalks. Sidewalks exists on Naglee Road south of Auto Plaza Drive and on the south side of Auto Plaza Drive. There are no sidewalks on Naglee Road north of the Auto Plaza Drive and on Larch Road. Bicycle facilities do not currently exist in the project vicinity. There is no transit service within the project vicinity.

To conclude, with the required intersection improvement, impacts from the project on the circulation system, including transit, roadways, bicycle, and pedestrian facilities is expected to be less than significant.

b) The OPR Technical Advisory presents a series of VMT screening criteria for several land development project categories, including small projects. The small projects criteria would be applicable to the current project. The Technical Advisory notes that projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact.

A Vehicle Miles Traveled Analysis was performed by KD Anderson and Associates and dated March 29, 2023, used the above criteria when analyzing VMT. The report estimated the number of trips generated by the project to be 1) 96 vehicle trips per day on an average weekday; 2) 106 vehicle trips per day on an annual average day including weekends, but not special events; and, 3) 108 vehicle trips per day on an annual average day including weekends and special events. The OPR Technical Advisory does not specify whether the 110 trips per day criteria applies to: 1) an average weekday; 2) an annual average day including weekends, but not special events; or, 3) an annual average day including weekends and special events. Each of these values is less than 110 trips per day. Therefore, based on the screening criteria described earlier in this report, this project is considered to have a less than significant impact on VMT.

c) The applicant will be required to improve the driveway approach in accordance with the requirements of San Joaquin County Improvement Standards Drawing No. R-13 providing return radii for truck-trailer egress designed to prevent encroachment onto opposing lanes of traffic. Additionally, Public Works is requiring the conversion of the nearest intersection that currently has one stop sign to a three-way stop. With these improvements, the project's impact on transportation hazards is expected to be less than significant.

The use is development of a religious facility. The project location is zoned Limited Agriculture which permits this use; therefore the zoning and use will be compatible with the area. The use will result in an increase in traffic at certain times on certain days and the site and access have been reviewed for safety by the Department of Public Works.

d) The project site would be accessed from both W. Larch Road and S. Naglee Road. It is required to provide a driveway and circulation route that meets the San Joaquin County Fire Chiefs' Association guidelines for providing fire apparatus access as required by the California Fire Code (CFC). Therefore, site access will provide adequate space for fire trucks and emergency vehicles to enter and turn around, and the project's impact on emergency access is 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
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)

i) The project site currently has one residence and other accessory structures. No buildings on the site are listed on the State Office of Historic Preservation California Register or the National Register of Historic Places. Therefore, the project will not result in a substantial adverse change in the significance of a historical resource as defined by CEQA.

ii) The project proposes a religious assembly. At the time development, if Human burials are found to be of Native American origin, the developer shall follow the procedures pursuant to Title 14, Division 6, Chapter 3, Article 5, Section 15064.5(e) of the California State Code of Regulations. If human remains are encountered, all work shall halt in the vicinity and the County Coroner shall be notified immediately. At the same time, a qualified archaeologist shall be contacted to evaluate the finds. If Human burials are found to be of Native American origin, steps shall be taken pursuant to Section 15064.5(e) of Guidelines for California Environmental Quality Act.

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
XIX. UTILITIES AND SERVICE SYSTEMS.					
Would the project:					
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐	☐
c) Result in a determination by the 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) The proposed project is a religious assembly, located in a rural area north of the City of Tracy. The project proposes utilizing a private well and onsite wastewater treatment system. Retention ponds will be utilized for stormwater drainage. Therefore, the project will be served by private, onsite services and will not require relocation of existing facilities or require new facilities.

b) The project will utilize an individual domestic water well which will be constructed under permit and inspection by the San Joaquin County Environmental Health Department at the time of development.

c) The project will utilize an onsite sewage disposal system constructed under permit from the Environmental Health Department and subject to the onsite wastewater treatment system regulations that will comply with the standards of San Joaquin County.

d-e) The project site is currently within the boundaries of Waste Mangement Services, one of five solid waste collectors providing service under franchise to San Joaquin County. The San Joaquin County Code requires that solid waste be collected from residential generators a minimum of once a week, and at least twice a week for commercial and industrial generators (San Joaquin County 2016a). Solid waste is transported and disposed of primarily at three active sanitary landfills in San Joaquin County. The North County Landfill on East Harney Lane has available capacity to 2048, and the Foothill Sanitary Landfill on North Waverly Road has available capacity to 2082 (CalRecycle 2021). The Forward Landfill on Austin Road near Stockton was to have reached its capacity in 2020; however, the County Board of Supervisors recently approved an expansion of Forward Landfill that would extend its life to 2036 (Crunden 2020). California Senate Bill 1383 (SB 1383) requires jurisdictions in California to recycle organic waste, including paper, cardboard, yard materials, food scraps, and food-soiled paper with a goal of diverting 75% of organics from reaching the landfill by 2025. San Joaquin County passed SB 1383 Organic Waste Diversion Ordinance in February of 2022 mandating that business must comply with SB 1383 mandates by 1) subscribing to a SB 1383 compliant waste

collection system through a licensed collector; 2) qualifying for a waiver; or, 3) utilizing acceptable alternative compliance methods. In this way, the project is expected to be compliant with federal, state, and local management and reduction statutes and regulations related to solid waste.

	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:

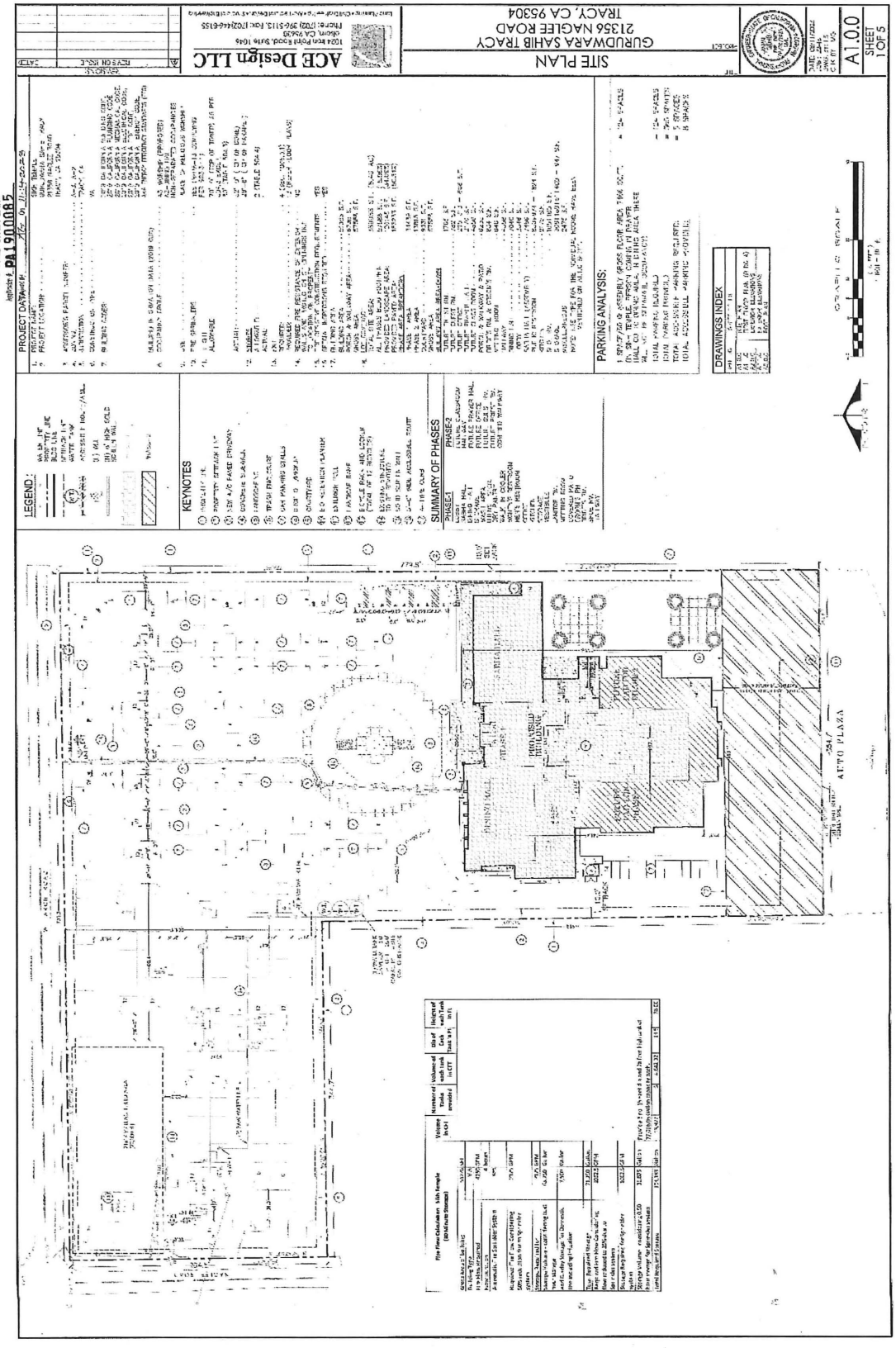
a-d) The project location is in a rural, agricultural area north of the City of Tracy, CA, and is not identified as a Community at Risk from Wildfire by Cal Fire's "Fire Risk Assessment Program". Communities at Risk from Wildfire are those places within 1.5 miles of areas of High or Very High wildfire threat as determined from CDF-FRAP fuels and hazard data. Therefore, the impact of wildfires on the project are expected to be less than significant.

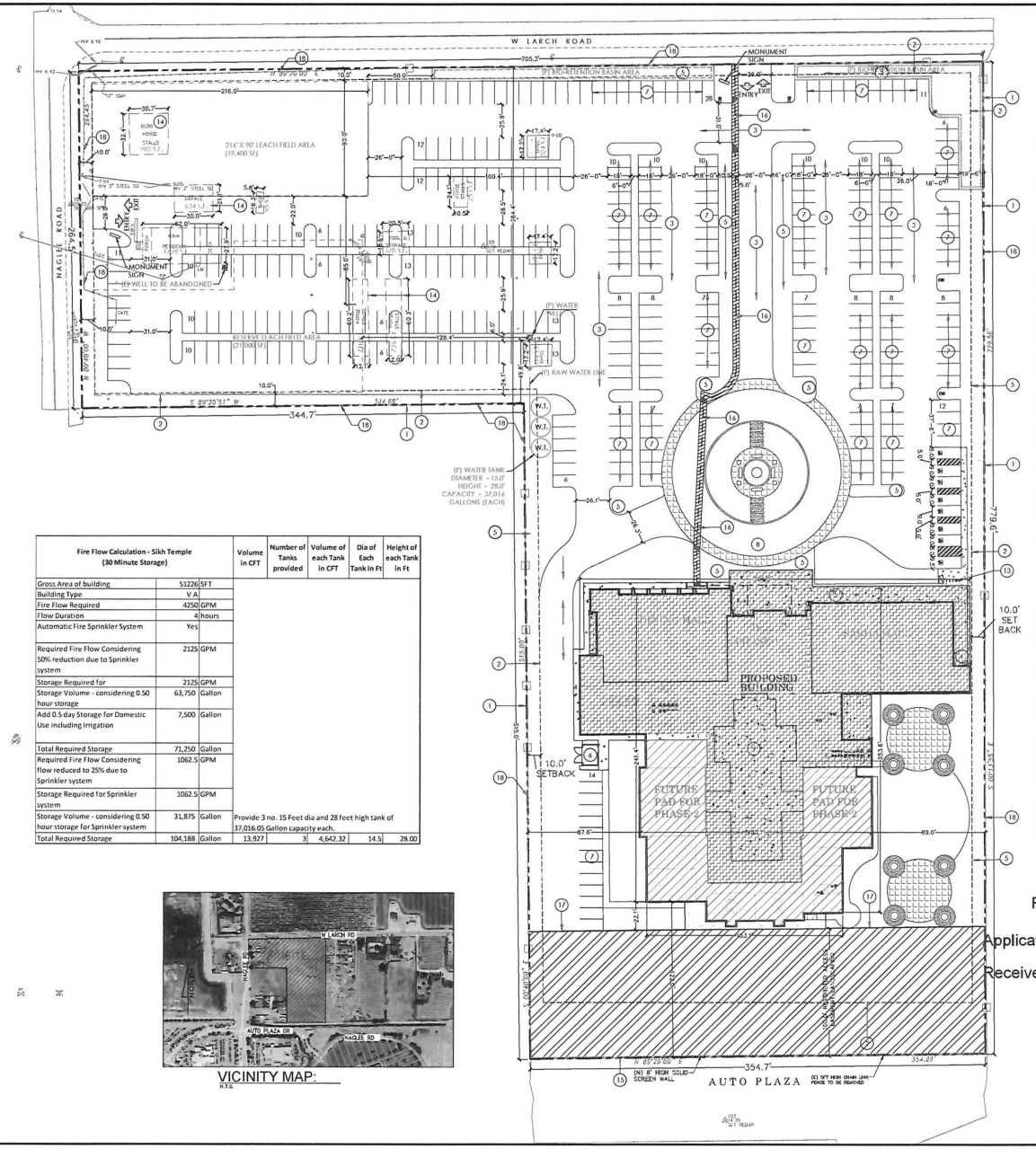
	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Analyzed In The Prior EIR
XXI. MANDATORY FINDINGS OF SIGNIFICANCE.					
a) Does the project have the potential to substantially degrade the quality of the environment, substantially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

Impact Discussion:

a-c) Review of this project has not indicated any features which might significantly impact the environmental quality of the site and/or surrounding area. Mitigation measures have been identified in areas where a potentially significant impact has been identified and these measures, included as conditions of approval, will reduce these impacts to a less than significant level.

ATTACHMENT: SITE PLAN; SJVAPCD AIA APPLICATION APPROVAL; TRAFFIC IMPACT ANALYSIS 2022; TRAFFIC IMPACT ANALYSIS 2024; VEHICLE MILES TRAVELED ASSESSMENT





Fire Flow Calculation - Sikh Temple (30 Minute Storage)			Volume in CFT	Number of Tanks provided	Volume of each Tank in CFT	Dia of Each Tank in Ft	Height of each Tank in Ft
Gross Area of building	51226	SFT					
Building Type	V-A						
Fire Flow Required	4250	GPM					
Flow Duration	4	hours					
Automatic Fire Sprinkler System	Yes						
Required Fire Flow Considering 50% reduction due to Sprinkler system	2125	GPM					
Storage Required for	2125	GPM					
Storage Volume - considering 0.50 hour storage	63,750	Gallon					
Add 0.5 day Storage for Domestic Use including Irrigation	7,500	Gallon					
Total Required Storage	71,250	Gallon					
Required Fire Flow Considering flow reduced to 25% due to Sprinkler system	1062.5	GPM					
Storage Required for Sprinkler system	1062.5	GPM					
Storage Volume - considering 0.50 hour storage for Sprinkler system	31,875	Gallon	Provide 3 no. 15 Feet dia and 28 Feet high tank of 37,016.05 Gallon capacity each.				
Total Required Storage	104,188	Gallon	13,927	3	4,642.32	14.5	28.00

VICINITY MAP:
N.T.S.

LEGEND :

- PROPERTY LINE
- BLDG LINE
- SETBACK LINE
- W.T. WATER TANK
- ACCESSIBLE ROUTE/AISLE
- (E) WELL
- (N) 8' HIGH SOLID SCREEN WALL
- PHASE-1
- PHASE-2
- BIO-RETENTION AREA
- LEACH FIELD AREA
- W WATER LINE

KEYNOTES

1. PROPERTY LINE
2. PROPERTY SETBACK LINE
3. NEW A/C PAVED DRIVEWAY
4. CONCRETE SIDEWALK
5. LANDSCAPING
6. TRASH ENCLOSURE
7. CAR PARKING STALLS
8. DROP OFF/PICKUP
9. COURTYARD
10. BIO RETENTION PLANTER
11. EXTERIOR POLE
12. HANDICAP RAMP
13. BICYCLE RACK AND LOCKER (TOTAL OF 12 BICYCLES)
14. EXISTING STRUCTURE TO BE REMOVED
15. SOLID SCREEN WALL
16. 5'-0" WIDE ACCESSIBLE ROUTE
17. A-TYPE CURB
18. (E) 5FT HIGH CHAIN LINK FENCE

SUMMARY OF PHASES

PHASE-1	PHASE-2
LOBBY	FUTURE CLASSROOM
SABHA HALL	HALLWAY
DINING HALL	FUTURE PRAYER HALL
STORAGE	FUTURE OFFICE
WASH AREA	FUTURE GUEST RM.
UTENSIL STOR.	FUTURE PRIEST RM.
DRY PANTRY	COVERED WALKWAY
WALK-IN COOLER	
WOMEN'S RESTROOM	
MEN'S RESTROOM	
OFFICE	
KITCHEN	
STORAGE	
VESTIBULE	
JANITOR RM.	
MEETING ROOM	
COVERED PATIO	
GROOM'S RM.	
BRIDE'S RM.	
SHOE RM.	
HALLWAY	

REVISED SITE PLAN

Application # PA-1900085

Received By AG On 11/27/2024

PROJECT DATA

1.	PROJECT NAME:	SIKH TEMPLE
2.	PROJECT LOCATION:	GURUDWARA SAHIB TRACY 21356 NAGLEE ROAD TRACY, CA 95304
3.	ASSESSOR'S PARCEL NUMBER:	212-050-01
4.	ZONING:	RE (RESIDENTIAL ESTATE ZONE)
5.	LAND USE DESCRIPTION	RURAL RESIDENCE-1
6.	JURISDICTION	TRACY, CA
7.	CONSTRUCTION TYPE	VA
8.	BUILDING CODES:	2022 CALIFORNIA BUILDING CODE, 2022 CALIFORNIA PLUMBING CODE, 2022 CALIFORNIA MECHANICAL CODE, 2022 CALIFORNIA ELECTRICAL CODE, 2022 CALIFORNIA FIRE CODE, 2022 CALIFORNIA ENERGY CODE, AKA ENERGY EFFICIENCY STANDARDS (EES)
	BUILDING INFORMATION DATA (2022 CBC)	
9.	OCCUPANCY GROUP	A3-WORSHIP (PROPOSED) A2-DINING HALL NON-SEPARATED OCCUPANCIES
10.	USE	PLACE OF RELIGIOUS WORSHIP
11.	FIRE SPRINKLERS	YES (NFPA-13 COMPLYING PER 903.3.1.1)
12.	HEIGHT ALLOWABLE: ACTUAL:	70'-0" (TOP OF TOWER) AS PER 504.3 EXCEP. 50' (TABLE 504.3) 52'-0" (TOP OF DOME) 28'-6" (TOP OF PARAPET)
13.	STORIES ALLOWABLE: ACTUAL:	2 (TABLE 504.4) 1
14.	EXIT REQUIRED: PROVIDED:	4 (SEC. 1006.3.1) 13 (REFER FLOOR PLANS)
15.	REQUIRED FIRE RESISTANCE OF EXTERIOR WALLS AND PROTECTION OF OPENINGS DUE TO LOCATION ON PROPERTY	NO
16.	FIRE RESISTIVE CONSTRUCTION REQUIREMENTS	YES
17.	SPECIAL INSPECTIONS REQUIRED:	YES
18.	BUILDING AREA BUILDING AREA PORCH & WALKWAY AREA GROSS AREA	51353 S.F. 6235 S.F. 57588 S.F.
19.	LOT COVERAGE TOTAL SITE AREA: ALL PHASES BLDG FOOTPRINT PROVIDED LANDSCAPE AREA: PROVIDED PAVED AREA: PHASE AREA BREAKDOWN PHASE 1 AREA PHASE 2 AREA COURTYARD GROSS AREA BUILDING AREA BREAKDOWN FUTURE PRIEST RM. FUTURE GUEST RM. FUTURE OFFICE FUTURE PRAYER HALL FUTURE CLASS ROOM PORCH & WALKWAY & PATIO BRIDE'S RM. & GROOM'S RM. MEETING ROOM HALLWAY DINING HALL LOBBY SABHA HALL (ASSEMBLY) PUBLIC RESTROOM KITCHEN SHOE RM. STORAGE MISCELLANEOUS NOTE: USE TYPE FOR THE INDIVIDUAL ROOMS HAVE BEEN MENTIONED ON A1.1.0 SHEET.	369966 S.F. (8.49 AC) 57588 S.F. (15.56%) 126145 S.F. (34.09%) 186233 S.F. (50.34%) 34439 S.F. 13818 S.F. 9331 S.F. 57588 S.F. 1765 S.F. 782 S.F. 295+313 = 608 S.F. 2170 S.F. 4856 S.F. 6235 S.F. 834 S.F. 646 S.F. 4558 S.F. 7040 S.F. 3546 S.F. 7466 S.F. 850+974 = 1824 S.F. 2175 S.F. 165+165 S.F. 308+188+514+400 = 947 S.F. 2475 S.F.

PARKING ANALYSIS:

1 SPACE/60 @ ASSEMBLY GROSS FLOOR AREA 7466 SQ.FT. (IN SIKH TEMPLE, PERSON COMING IN PRAYER HALL GO TO DINING AREA. IN DINING AREA THERE WILL NOT BE SEPARATE OCCUPANCY)	= 124 SPACES
TOTAL PARKING REQUIRED	= 124 SPACES
TOTAL PARKING PROVIDED	= 365 SPACES
TOTAL ACCESSIBLE PARKING REQUIRED:	= 5 SPACES
TOTAL ACCESSIBLE PARKING PROVIDED:	= 8 SPACES

DRAWINGS INDEX

SHEET NO.	SHEET TITLES
A1.0.0	SITE PLAN
A1.1.0	FIRST FLOOR PLAN (BLDG A)
A2.0.0	EXTERIOR ELEVATIONS
A2.1.0	EXTERIOR ELEVATIONS
A5.0.0	ROOF PLAN
LANDSCAPE	
L1.0.0	LANDSCAPE PLAN

NORTH

GRAPHIC SCALE

-10 0 5 10 20 40

(IN FEET)
1 INCH = 10 ft.

REVISIONS:

NO.	REVISION ISSUE	DATED

ACE Design LLC
1024 Iron Point Road, Suite 1046
Folsom, CA 95630
Phone: (702) 396-5113, Fax: (702)446-8155
Land Planning • Civil Engineering • Architectural Design • Structural Engineering

TITLE: SITE PLAN

PROJECT: GURUDWARA SAHIB TRACY
21356 NAGLEE ROAD
TRACY, CA 95304

PROFESSIONAL ENGINEER-STATE OF CALIFORNIA
JAGPAL S. SIDHU
No. 56924
CIVIL
06/30/2025

DATE: 10/23/2023
JOB : 22-46
DWG. BY: HS
CHK. BY: MG

A1.0.0

SHEET 1 OF 5

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

HEALTHY AIR LIVING™

September 25, 2024

Santokh Judge
Gurudwara Sahib Tracy
21356 S. Naglee Road
Tracy, CA 95304

Re: Air Impact Assessment (AIA) Application Approval
ISR Project Number: C-20240396
Land Use Agency: County of San Joaquin
Land Use Agency ID Number: PA-1900085, Conditional Use Permit

Dear Mr. Judge:

The San Joaquin Valley Air Pollution Control District (District) has approved your Air Impact Assessment (AIA) for the Gurudwara Sahib Temple project, located at 21356 S. Naglee Road in Tracy, California. The project consists of the construction of a religious assembly building of 48,257 square feet. The District has determined that the mitigated baseline emissions for construction and operation will be less than two tons NOx per year and two tons PM10 per year. Pursuant to District Rule 9510 Section 4.3, this project is exempt from the requirements of Section 6.0 (General Mitigation Requirements) and Section 7.0 (Off-site Emission Reduction Fee Calculations and Fee Schedules) of the rule. As such, the District has determined that this project complies with the emission reduction requirements of District Rule 9510 and is not subject to payment of off-site fees. The determination is based on the project construction details provided with the application. Changes in the construction details may result in increased project related emissions and loss of this exemption.

Pursuant to District Rule 9510, Section 8.4, the District is providing you with the following information:

- A notification of AIA approval (this letter)
- A statement of tentative rule compliance (this letter)
- An approved Monitoring and Reporting Schedule

In addition, to maintain this exemption you must comply with all mitigation measures identified in the enclosed Monitoring and Reporting Schedule. Please notify the District of any changes to the project as identified in the approved Air Impact Assessment for this project.

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

Change in Developer Form

If all or a portion of the project changes ownership, a completed Change in Developer form must be submitted to the District within thirty (30) days following the date of transfer.

Additional Requirements

- Dust Control Plan. Please be aware that you may be required to submit a Construction Notification Form or submit and receive approval of a Dust Control Plan prior to commencing any earthmoving activities as described in District Rule 8021 – *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities.*

- Asbestos Requirements for Demolitions. If demolition is involved, a Certified Asbestos Consultant will need to perform an asbestos survey prior to the demolition of a regulated facility. Following the completion of an asbestos survey; the asbestos survey, Asbestos Notification, Demolition Permit Release, and the proper fees are to be submitted to the District 10 working days prior to the removal of the Regulated Asbestos Containing Material and/or the demolition when no asbestos is present.

- Permits. Per District Rule 2010 (Permits Required), you may be required to obtain a District Authority to Construct prior to installation of equipment that controls or may emit air contaminants, including but not limited to emergency internal combustion engines, boilers, and baghouses.

To identify other District rules or regulations that apply to this project or to obtain information about District rules and permit requirements, the applicant is strongly encouraged to visit www.valleyair.org or contact the District's Small Business Assistance office nearest you:

Fresno office:	(559) 230-5888
Modesto office:	(209) 557-6446
Bakersfield office:	(661) 392-5665

Thank you for your cooperation in this matter. Please note the District also issued a letter to the land-use agency notifying the agency of this AIA approval. If you have any questions, please contact Mr. Ryan Grossman by telephone at (559) 230-6569 or by email at ryan.grossman@valleyair.org.

Sincerely,

Tom Jordan
Director of Policy and Government Affairs

For: Mark Montelongo
Program Manager

Enclosures

cc: Charlie Simpson
Basecamp Environmental, Inc.
802 W. Lodi Avenue
Lodi, CA 95240
csimpson@basecampenv.com

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

Project Name:	**GURUDWARA SAHIB TEMPLE**
Applicant Name:	**Gurudwara Sahib Tracy**
Project Location:	**21356 S. NAGLEE ROAD LARCH ROAD, NAGLEE ROAD APN: 212-050-01**
Project Description:	**LAND USE: Educational Facilities - 34439 Square Feet - Place of Worship Educational Facilities - 34439 Square Feet - Place of Worship Educational Facilities - 34439 Square Feet - Place of Worship Educational Facilities - 34439 Square Feet - Place of Worship Educational Facilities - 13818 Square Feet - Day-Care Center Educational Facilities - 13818 Square Feet - Place of Worship Educational Facilities - 13818 Square Feet - Place of Worship Educational Facilities - 13818 Square Feet - Place of Worship ACREAGE: 8.50**
ISR Project ID Number:	**C-20240396**
Applicant ID Number:	**C-303993**
Permitting Public Agency:	**COUNTY OF SAN JOAQUIN**
Public Agency Permit No:	**PA-1900085, CONDITIONAL USE PERMIT**

Existing Emission Reduction Measures

There are no Existing Measures for this project

Non-District Enforced Emission Reduction Measures

Enforcing Agency	Measure	Specific Condition	Source of Requirements
SAN JOAQUIN COUNTY	Install Electric Vehicle (EV) Chargers	Install electric vehicle chargers with 2 outlets total	2022 California Green Building Standards Code

Number of Non-District Enforced Measures: 1

District Enforced Emission Reduction Measures

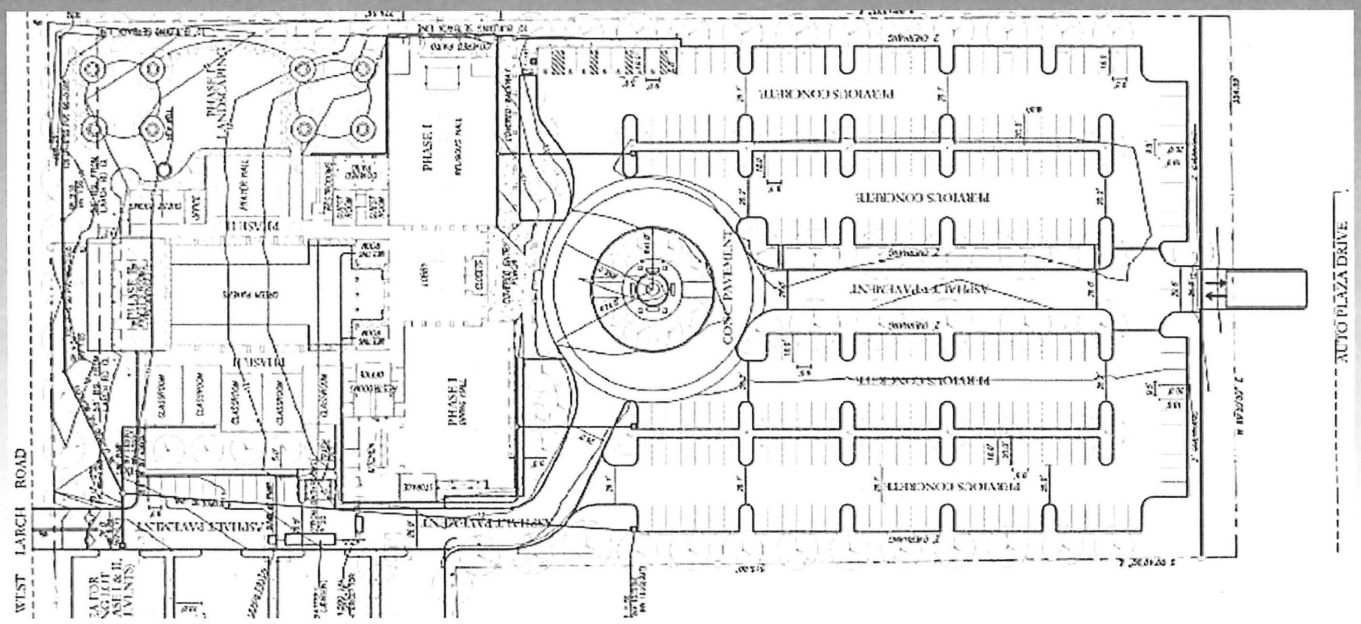
Enforcing Agency	Measure	Specific Condition
SJVAPCD	Construction and Operation - Recordkeeping	For each project phase, all records shall be maintained on site during construction and for a period of ten years following either the end of construction or the issuance of the first certificate of occupancy, whichever is later. Records shall be made available for District inspection upon request.
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.
SJVAPCD	Construction and Operation - Exempt from Off-site Fee	For each project phase, within 30-days of issuance of the first certificate of occupancy, if applicable, submit to the District a summary report of the construction start, and end dates, and the date of issuance of the first certificate of occupancy. Otherwise, submit to the District a summary report of the construction start and end dates within 30-days of the end of each phase of construction.

Number of District Enforced Measures: 3

Traffic Impact Analysis for the Proposed Gurudwara Sahib @ 21356 South Naglee Road, Tracy, CA

for San Joaquin County, CA

May 5, 2022



AMG ADVANCED MOBILITY GROUP

Traffic Impact Analysis for the Proposed Gurudwara Sahib Located @ 21356 South Naglee Road, Tracy, California

Final Report

Prepared for:
San Joaquin County

Prepared by:
Advanced Mobility Group

AMG ADVANCED MOBILITY GROUP

May 5, 2022

Table of Contents

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

1.0 INTRODUCTION AND EXECUTIVE SUMMARY

INTRODUCTION

The purpose of this report is to document results of a traffic impact study for the proposed Gurudwara Sahib located at 21356 South Naglee Road, Tracy. The Site Vicinity Map is shown in **Figure 1**.

SUMMARY

Based on the results of the analysis, the following is a summary of our findings:

Existing Traffic Conditions

The two study intersections operate at acceptable Level of Service (LOS) C or better indicating acceptable conditions.

Proposed Project Trip Generation

The Project is estimated to attract approximately 200 attendees during the weekday and 300 during the weekend worship events. It is estimated that the Project will generate approximately 20 weekday PM peak hour and 267 peak hour trips during weekends. Since the proposed project starts operation after 10 AM, it is expected there won't be any peak hour trips during the typical AM commute peak hours of 7-9 AM.

The religious assembly also proposes to have four (4) special events per year. The special event is assumed to include 700 attendees. It is estimated that the Project will generate approximately 623 peak hour trips.

Existing Plus Approved Projects (EPAP) Traffic Condition

Based on discussions with the County and City of Tracy staff, four approved projects in the vicinity of the proposed Project were included in the evaluation. Similar to the Existing scenario, it is estimated that both study intersections would operate acceptably at LOS C or better during peak hours and special events.

Existing Plus Approved Plus Project Traffic Condition

Similar to the Existing Plus Approved Projects scenario, it is estimated that both study intersections would operate acceptably at LOS C or better during peak hours and special events.

The proposed project site plan shows 258 parking stalls with six accessible and two van parking spaces. Including future 73 spaces reserve for parking overflow, the total parking provided would be 331 spaces.

The estimated parking demand based on average ITE rate and County parking requirements for both weekdays and weekend services could be adequately accommodated. However, estimated parking demand for special event would meet County minimums (including overflow spaces) but slightly short (5 spaces) based on ITE average parking demand rate.

It is recommended that paved shoulder should be provided on W. Larch Road to meet occasional high parking demand overflow during its busiest season which might exceed spaces reserved for parking overflow (such as important Sikh religious festivals, etc.).

Cumulative (No Project) Conditions

The scenario is similar to the Existing Conditions, but with a projected growth rate of one percent per year applied over 20 years to project traffic demands for the Year 2041.

Based on discussions with the City of Tracy staff, a signal might be planned for the intersection of Auto Plaza Drive and Naglee Road in the future. Therefore, a signal was assumed for the intersection of Auto Plaza Drive and Naglee Road. It is estimated that both study intersections would operate acceptably at LOS B or better during peak hours and special events.

Cumulative plus Project Conditions

It is estimated that both study intersections would operate acceptably at LOS B or better during peak hours and special events.

Project Fair Share Cost

The estimated total project fair share cost for the future signal at the intersection of Auto Plaza Drive and Naglee Road is approximately $106,076.

2.0 EXISTING SETTING

This section describes the existing transportation conditions in the vicinity of the study area, including descriptions of the existing street system and intersection operating conditions. The study area is shown in **Figure 1**.

EXISTING STREET SYSTEM

Important roadways adjacent to the Project site are discussed below:

Regional Roads

The Project site is located north of the City of Tracy, in an unincorporated part of San Joaquin County. The Project site is served regionally by Interstate 205 (I-205), located generally to the south.

I-205 provides access to Tracy and to I-580 to the west, which connects with the greater San Francisco Bay Area and Silicon Valley employment centers. It has six lanes in the vicinity of the project.

The *Interstate 205/Naglee Road interchange* is located between Corral Hollow Road to the east and Byron Road to the west. Currently, in the project vicinity Naglee Road is a six-lane divided roadway.

The latest available 2017 Caltrans traffic volume report indicates that the annual average daily traffic (ADT) volumes on I-205 is approximately 106,000 vehicles per day (vpd) west of Naglee Road.

Local Roads

These are key roadways that connects to I-205 to the south and the rest of the County.

Naglee Road is a six-lane north-south divided arterial roadway that forms the western boundary of the project. The Project is less than half a mile from the I-205 ramp to the south. The road extends from I-205 ramp in the south for nearly three miles to the north when it connects with Lammers Road. The ADT volume near the Project vicinity is approximately 3,000 vpd.

Auto Plaza Drive is generally an east-west road located to the south of the Project site. It forms the northern boundary of West Valley Mall. The road connects West Valley Mall to the Tracy Pavilion. Sidewalk is located on the south side of the road. The ADT volume near the Project vicinity is approximately 1,000 vpd.

West Larch Road is an east-west rural road that forms the northern boundary of the Project site. In the project area it connects to Naglee Road in the west and Corral Hollow Road to the east. The ADT volume near the Project vicinity is approximately 2,500 vpd.

EXISTING PEDESTRIAN FACILITIES

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 Project vicinity, due to the rural nature of the area, most of the roadways lack sidewalks and crosswalks. Sidewalks exists on Naglee Road south of Auto Plaza Drive and sidewalks on Auto Plaza Drive adjacent to the Project are located on the southside. Sidewalks do not exist on West Larch Road.

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 four classes:

1. Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
2. Class II – Provides 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.
3. Class III – Provides a route designated by signs or pavement markings and shared with motorists.
4. Class IV – A separated bikeway, often referred to as a cycle track or protected bike lane, is for the exclusive use of bicycles, physically separated from motor traffic with a vertical feature.

The area is primarily farmland and rural with two-lane rural roadways north of Auto Plaza Drive. Bicycle facilities do not currently exist in the Project vicinity. Class I bike path exists on Naglee Road, south of Auto Plaza Drive.

EXISTING TRANSIT FACILITIES

There is no transit service within the Project vicinity. There are no bus stops in the immediate vicinity of the Project site.

EXISTING PEAK HOUR VOLUMES

Intersection turning movement counts were collected for the two intersections on September 22 2021.
The study intersections and associated traffic controls are as follows:

1) Naglee Road and West Larch Road
2) Naglee Road and Auto Plaza Drive

Typically, peak hour counts are conducted during 6-8 AM and 4-6 PM to capture the typical commute peak hours. In addition, since the proposed Gurudwara Sahib peak is estimated to be on a Sunday around 11 AM, counts were also collected between 10 AM and 12 noon. Therefore, intersection turning movement counts were collected during both AM and PM peak periods as follows:

- 7 AM – 9 AM & 4 PM – 6 PM (to capture typical adjacent roadway peak)
- 10 AM – 12 noon on Sunday (to represent project adjacent roadway peak)

These counts were adjusted to pre-C19 condition.

PeMs Analysis for I-5

A very reliable source to check for Pre-C19 traffic condition is the Performance Measurement System (PeMS) Data Source provided by Caltrans. AMG checked PeMs for traffic volume comparison along I-205 close to the Project area. Based on discussions with the City[1], it was determined that traffic volumes would be adjusted up by seven (7) percent and two (2) percent to the 2021 collected data for the two

[1] *November 2, 2021, email with County staff*

study intersections respectively during the AM and PM peak hour to obtain normalized counts for the pre-C19 conditions.

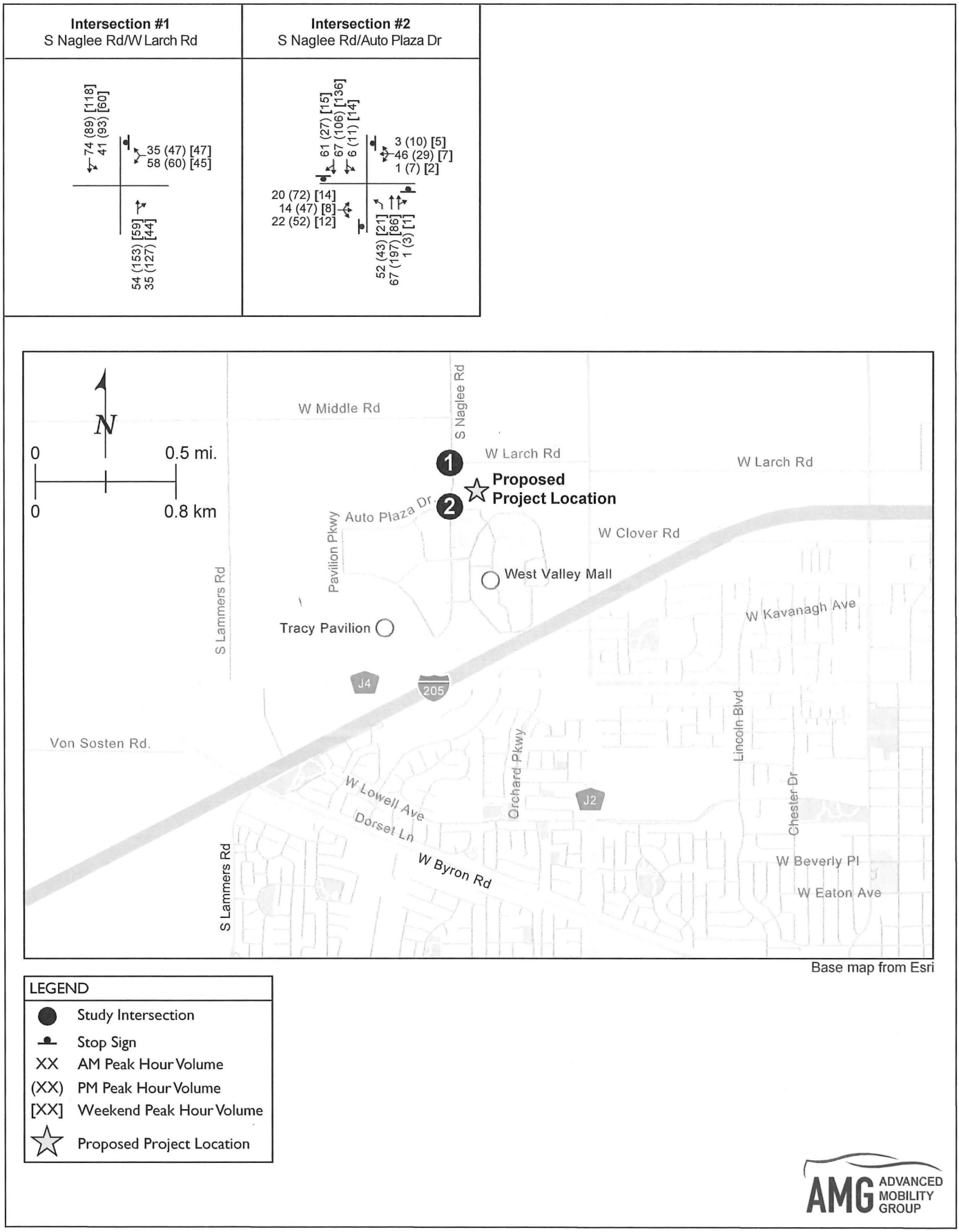
Appendix A includes all the data sheets for the collected intersection vehicle, bicycle and pedestrian counts. **Figure 1** shows the existing conditions peak hour traffic volumes and lane geometry and traffic control at the study intersections.

Based on input from County staff, the peak hour traffic conditions for the following five scenarios were analyzed:

i. Existing
ii. Existing plus Approved Projects
iii. Existing plus Approved Projects plus the Proposed Project
iv. Cumulative No Project
v. Cumulative plus the Proposed Project

Traffic Impact Analysis for the Proposed Gurdwara Sahib Located at 21356 South Naglee Road, Tracy, CA Figure

Project Vicinity & Existing Peak Hour Volumes, Lane Geometry and Controls 1



LEVEL OF SERVICE METHODOLOGY

Level of Service is a qualitative index of the performance of an element of the transportation system. Level of Service (LOS) is a rating scale running from A to F, with A indicating no congestion of any kind, and F indicating intolerable congestion and delays.

The 2010 Highway Capacity Manual (HCM) is the standard reference published by the Transportation Research Board and contains the specific criteria and methods to be used in assessing LOS. There are several software packages that have been developed to implement HCM. In this study, the Synchro software was used to calculate the LOS at the study intersections.

Table 1: Signalized Intersection LOS Criteria

LOS	Driver's Perception and Traffic Operation Description	Delay in Seconds
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	< 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 – 20
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20 - 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop, and individual cycle failures are noticeable.	> 35 – 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 - 80
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80

Signalized Intersections

The relationship between average control delay, driver's perception of traffic, and LOS for signalized intersections is summarized in **Table 1.**

Unsignalized Intersections

The method of unsignalized intersection capacity analysis used in this study is from Chapter 19, "Two-Way Stop-Controlled Intersections" of the Highway Capacity Manual. This method applies to two-way STOP sign or YIELD sign-controlled intersections (or one-way STOP sign or YIELD sign controlled intersections at three-way intersections). At such intersections, drivers on the minor street are forced to use judgment when selecting gaps in the major flow through which to execute crossings or turning maneuvers. Thus, the capacity of the controlled legs of an intersection is based on three factors:

1. The distribution of gaps in the major street traffic stream.
2. Driver judgment in selecting gaps through which to execute their desired maneuvers.
3. Follow-up time required to move into the front-of-queue position.

The level of service criterion for two-way STOP controlled intersections is somewhat different from the criterion used for signalized intersections. The primary reason for this is the difference that drivers expect a signalized intersection to carry higher traffic volumes than unsignalized intersections. Additionally, several driver behavior conditions combine to make delays at signalized intersections less onerous than at unsignalized intersections.

The HCM provides procedures for calculating LOS on the minor street approaches and individual movements. It does not specify how a local agency must utilize that information. Depending on the availability of gaps, the minor approach might be operating at LOS D, E, or F while the overall intersection operates at LOS C or better. A minor approach that operates at LOS D, E, or F does not automatically translate into a need for a traffic signal. A signal warrant would still need to be met. There are many instances where only a few vehicles are experiencing LOS D, E, or F on the minor approach while the whole intersection operates at an acceptable LOS. A signal is usually not warranted under such conditions.

Table 2 summarizes the relationship between delay and LOS for unsignalized intersections. At side-street stop-controlled intersections, the delay is calculated for each stop-controlled movement, the left-turn movement from the major street, as well as the intersection average. The intersection average delay and highest movement/approach delay are reported for side street stop-controlled intersections.

Table 2: Unsignalized Intersection LOS Criteria

LOS	Driver's Perception and Traffic Operation Description	Delay in Seconds
A	Little or no delays	< 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 with intersection capacity exceeded	> 50

SIGNIFICANCE CRITERIA

San Joaquin County

As per the San Joaquin County 2035, General Plan Draft Environmental Report dated October 2014, Congestion Management Program (CMP) Level of Service - The County is to maintain and enforce Level of Service (LOS) standards consistent with the San Joaquin Council of Governments (SJCOG) Congestion Management Program (CMP) for State highways and designated County roadways and intersections of regional significance. Per the CMP, all designated CMP roadways and intersections shall operate at LOS D or better except for roadways with "grandfathered" LOS. LOS for State highways shall be maintained in cooperation with Caltrans. The County LOS standards for intersections is LOS "D" or better on Minor Arterials and roadways of higher classification and LOS "C" or better on all other roads. The County shall maintain the following:

1. On State highways, LOS D or Caltrans standards whichever is stricter.
2. Within a city's sphere of influence, LOS D, or the city planned standards for that level of service.
3. On Mountain House Gateways, as defined in the Master Plan, LOS D, on all other roads, LOS C.

For State highways that are designated as part of SJCOG's CMP, both the Caltrans and CMP LOS standards shall apply. Where roadways are designated as part of SJCOG's CMP, both the County and CMP LOS standards shall apply. (Source: Existing GP, Transportation, Roadways, Policy 8, modified)
For CMP intersections or roadways currently operating or expected to operate at LOS E or F under No Project conditions, the Project would result in a significant impact if it would increase:

1. Average delay by 4 seconds or more (intersections); or
2. The volume-to-capacity (v/c) ratio by 1.0 or more.

3.0 EXISTING TRAFFIC CONDITION

This section presents the assessment of traffic conditions without the proposed Project.

INTERSECTION LEVEL OF SERVICE

To accurately model the traffic condition, AMG created a Synchro traffic analysis model to determine the intersection LOS. The Existing Conditions traffic operations were evaluated based on levels of service criteria using Synchro. Several intersection attributes (such as lane geometries, truck percentage, signal phasing and traffic control) were coded into the Synchro software model to evaluate the study intersections.

The results of the LOS analysis for the existing intersections are shown in **Table 3**. All the intersections operate at acceptable LOS C or better indicating acceptable conditions.

Table 3: Existing LOS of Study Intersections

ID	Intersection	Existing Control	Weekday				Weekend	
			A.M.		P.M.		Late A.M.	
			Delay	LOS	Delay	LOS	Delay	LOS
1	Naglee Rd/W Larch Rd	TWS	10.5	B	13.3	B	11.4	B
2	Naglee Rd/Auto Plaza Dr	TWS	13.0	B	16.2	C	11.1	B

Note:
TWS - Two Way Stop control

Detailed level of service worksheets is provided in **Appendix B.**

4.0 EXISTING PLUS APPROVED PROJECTS (NO PROJECT) TRAFFIC CONDITION

The Existing Plus Approved (No Project) Traffic Condition (EPAP) AM/PM condition is a near-term future background condition. This condition is referred to in this traffic impact study as EPAP No Project conditions. Development of land uses, and roadway improvements associated with previously approved projects are assumed in this condition.

Based on discussions with the County and City of Tracy, the following approved projects in the Project vicinity were provided.[2]

- Tracy Assisted Living and Memory Care
- 15K Sq-ft multi-tenant commercial at 3280 W. Grant Line Rd
- 100+ room motel at 3095 N. Corral Hollow Road
- 100+ room motel at Orchard Pkwy
- Southwinds Church (Phase 3)

[2] *September 21, 2021, email from County staff and September 23, 2021, email from City of Tracy staff*

Estimated trips were added to the study intersections. **Figure 2** shows the Existing plus Approved Projects (EPAP) Conditions peak hour turning movement volumes and lane geometry.

The results of the LOS are shown in **Table 4.** There is a slight increase in delays, but LOS remains at LOS C or better.

Table 4: Existing plus Approved Projects LOS of Study Intersections

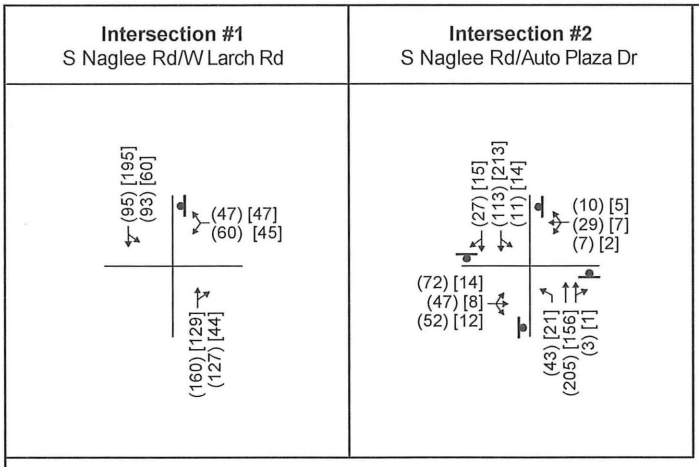
			Existing				EPAP			
			Weekday		Weekend		Weekday		Weekend	
ID	*Intersection*	*Existing Control*	*P.M.*		*Late A.M.*		*P.M.*		*Late A.M.*	
			Delay	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*
1	Naglee Rd/W Larch Rd	TWS	13.3	B	11.4	B	13.5	B	11.9	B
2	Naglee Rd/Auto Plaza Dr	TWS	16.2	C	11.1	B	16.5	C	11.9	B

Note:
TWS - Two Way Stop control

Traffic Impact Analysis for the Proposed Gurdwara Sahib Located at 21356 South Naglee Road, Tracy, CA

Existing Plus Approved Projects Peak Hour Volumes and Lane Configurations

Figure 2



Base map from Esri

LEGEND

- Study Intersection
- Stop Sign
- (XX) PM Peak Hour Volume
- [XX] Weekend Peak Hour Volume
- Proposed Project Location

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5.0 EXISTING PLUS APPROVED PLUS PROJECT TRAFFIC CONDITION

The proposed Gurudwara Sahib is located at 21356 South Naglee Road, Tracy, CA. The following are key attributes of the proposed religious assembly development:

- Maximum of 300 people to be completed in two (2) phases over four (4) years.
- On Sundays, the site is expected to have 200-300 people
- The religious assembly also proposes to have four (4) special events per year with an average of 700 attendees. These events are considered accessory to the main use, which is religious assembly.
- The operating hours for this project will be 10:00 a.m. through 7:00 p.m., seven (7) days per week, with a maximum of fifteen (15) employees.
- Phase One, to be completed in eighteen (18) months, includes the construction of 27,185 square foot building to be used for religious assembly, a dining hall, a kitchen, an office, guest rooms, and meeting rooms.
- Phase Two, to be completed in four (4) years, includes the construction of a 13,911 square foot addition to the original building to be used for classrooms, guest rooms, and residence rooms for priests.
- Access to the project will be from Auto Plaza Drive and Larch Road.
- Parking spaces provided: 258 spaces

The proposed project site plan is shown in **Figure 3**.

TRIP GENERATION

Trip generation is defined as the number of "vehicle trips" produced by a particular land use or project. A trip is defined as a one-direction vehicle movement. The total number of trips generated by each land use includes the inbound and outbound trips.

Based on the 2008 Traffic Study Guidelines, the peak hour trip generation for a project should be estimated based on the *Trip Generation, 10th Edition (most current)*, published by the Institute of Transportation Engineers (ITE) or based on trip generation from similar project.

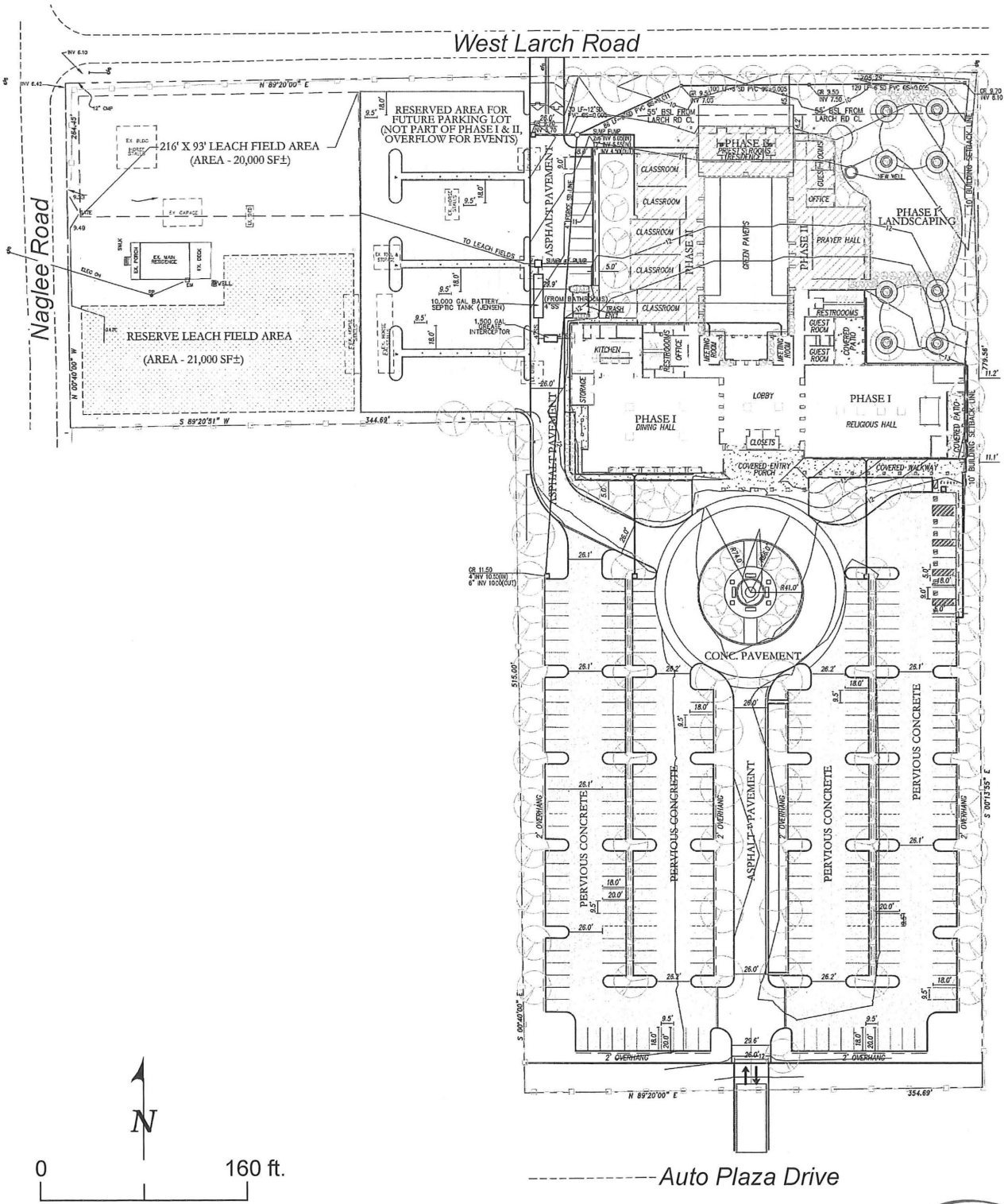
The trip generation rates for the proposed Project are based on a previously approved Gurudwara traffic impact study report in the County.[3] The trip generation rates were estimated based on driveway counts.

AMG used the driveway trip rates from the study to estimate potential trips for the proposed Project during weekday PM peak hour, weekends and special events. The Project is estimated to generate approximately 20 weekday PM peak hour, 267 weekends and 623 special events peak hour as shown in **Table 5**. Since the proposed project starts operation after 10 AM, it is expected there won't be any peak hour trips during the typical AM commute peak hours of 7-9 AM.

[3] *Traffic Impact Study for the Expansion of a Sikh Temple - Gurdwara Gur Nanak Parkash in San Joaquin County, July 25, 2011*

Figure 3

Proposed Project Site Plan



Base map from Sterling Consultants

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Table 5: Proposed Project Trip Generation

Land Use	Size		Weekday P.M. Peak [A]				Size		Weekend P.M. Peak [A]				Size		Special Events Peak [B]			
			Rate	In	Out	Total			Rate	In	Out	Total			Rate	In	Out	Total
Gurdwara Sahib	200	People	0.10	14	6	20	300	People	0.89	117	150	267	700	people	0.89	274	349	623

Note:
A -
Based on Sikh Temple - Gurdwara Gur Nanak Parkash report @ 16215 W. Grant Line Rd, February 2011
***B** - Special Events*

TRIP DISTRIBUTION

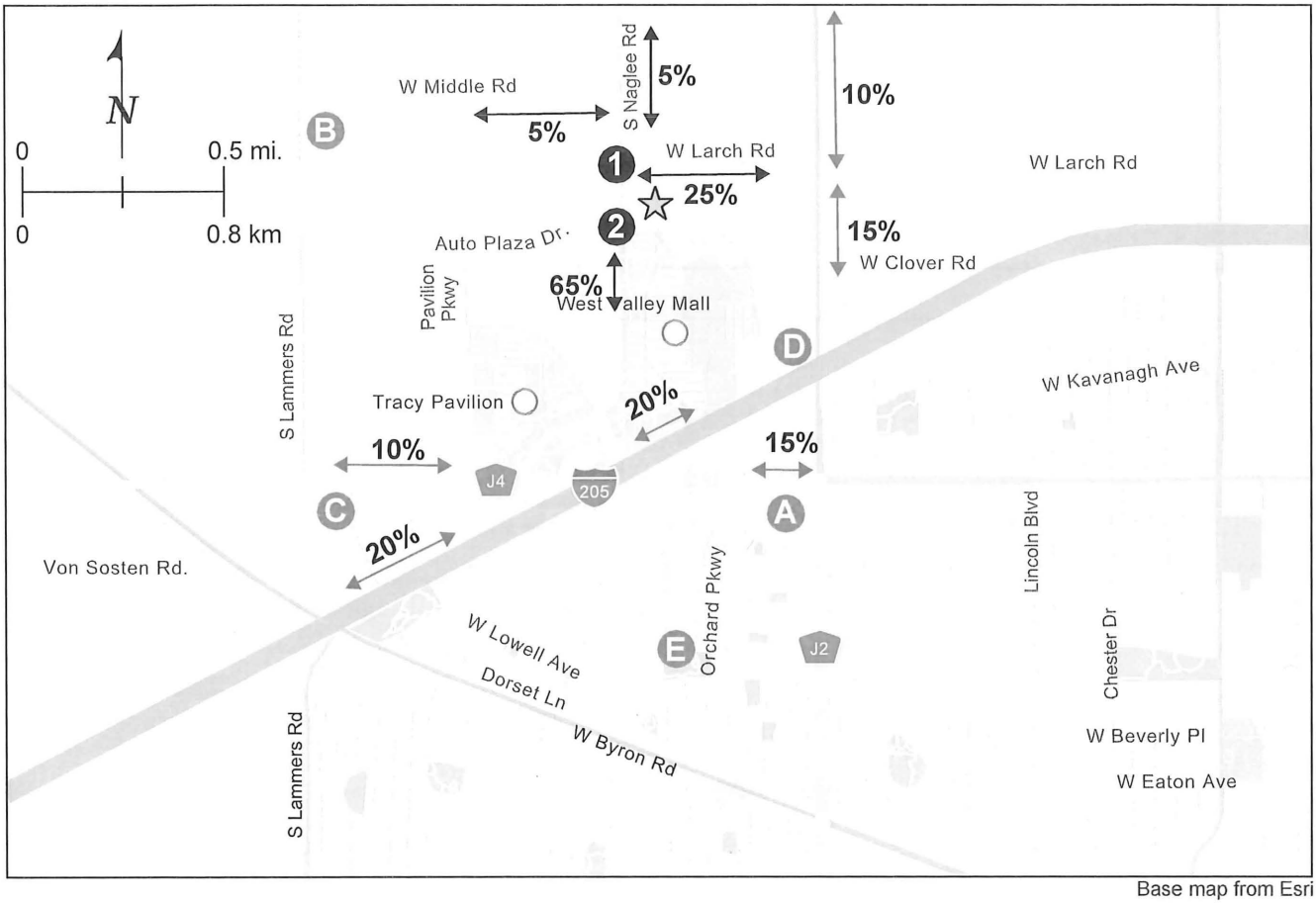
Trip distribution is a process that approximates the "proportion of vehicles" between a project site and various destinations outside the project study area. The trip assignment process determines the various routes that vehicles would take from the Project site to each destination using the estimated trip distribution.

The Project is expected to "generate" and "attract" trips throughout the County and from other locations throughout the area. Directional trip distribution for Project generated trips was estimated based on existing traffic flow patterns, geographic location of the Project site, and discussions with County staff.

Since it is a religious development, it is estimated that some visitor traffic might be accessing the Project site through I-205 freeway. The estimated trip distribution patterns are shown on **Figure 4** and Project only trips are shown on **Figure 5**.

Project Trip Distribution

Figure 4



Base map from Esri

LEGEND

- Study Intersection Location
- Primary Distribution
- Secondary Distribution
- Proposed Project Location

Approved Projects

- A Tracy Assisted Living and Memory Care
- B Southwinds Church (Phase3)
- C 15K sq. ft. Multitenant Commercial at 3280 W Grant Line Rd
- D 100+ Room Motel at 3095 N Corral Hollow Rd
- E 100+ Room Motel at Orchard Pkwy

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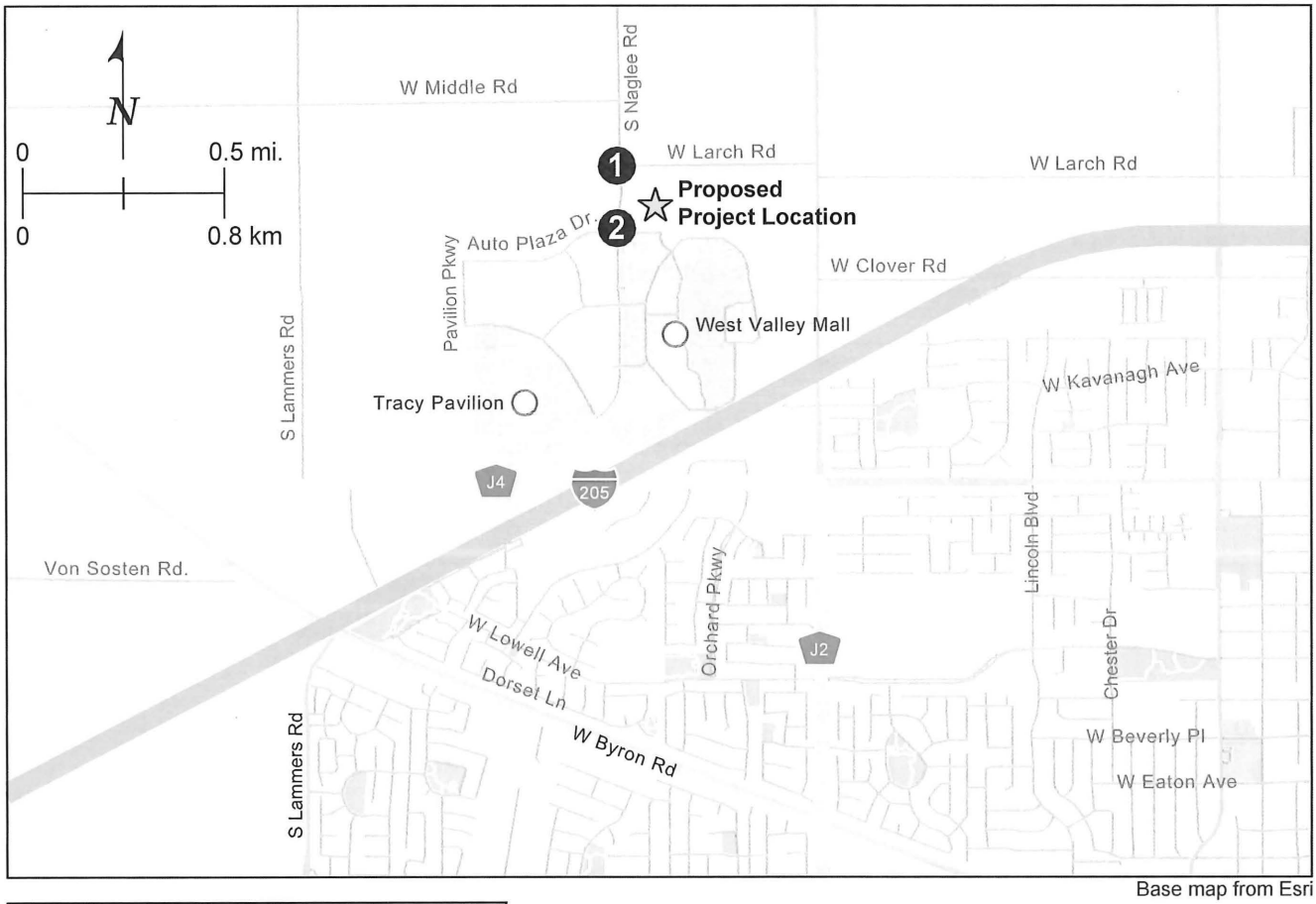
Project Only Peak Hour Turning Movements

Figure 5

Intersection #1 S Naglee Rd/W Larch Rd	**Intersection #2** S Naglee Rd/Auto Plaza Dr
(0) [0] 0 (1) [12] 27 (1) [15] 35 (0) [0] 0	(0) [0] 0 (0) [0] 0 (3) [83] 192 (0) [0] 0 (0) [0] 0 (8) [64] 151



Base map from Esri

LEGEND	
●	Study Intersection
⊸	Stop Sign
(XX)	Weekday PM Peak Hour Volume
[XX]	Weekend Peak Hour Volume
XX	Weekend Special Events Peak Hour Volume
☆	Proposed Project Location

AMG ADVANCED MOBILITY GROUP

INTERSECTION LEVEL OF SERVICE ANALYSIS

This section presents the assessment of potential transportation impacts of the proposed Project. **Figure 6** shows the Existing plus Approved plus Project (EPAPP) Conditions peak hour turning movement volumes and lane geometry.

Table 6 shows the LOS under EPAPP Conditions during the Peak Hour. Similar to the Existing scenario, all intersections operate acceptably at LOS C or better during PM and weekend peak hours, and special events. It should be noted that the weekend PM peak hour volumes were used to analyze LOS during the special events. This could be considered conservative or worst-case scenario since typically traffic volumes are lower during the off-peak. Detailed level of service worksheets is provided in **Appendix D.**

Table 6: EPAP plus Project (EPAPP) Peak Hour LOS

			EPAP				EPAP+Project					
			Weekday		Weekend		Weekday		Weekend		*Special Events* [A]	
ID	*Intersection*	*Existing Control*	*P.M.*		*Late A.M.*		*P.M.*		*Late A.M.*		*Weekend*	
			Delay	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*
1	Naglee Rd/W Larch Rd	TWS	13.3	B	11.9	B	13.5	B	11.8	B	11.9	B
2	Naglee Rd/Auto Plaza Dr	TWS	16.2	C	11.9	B	16.6	C	13.9	B	19.5	C

Note:
TWS - Two Way Stop control
[A] *- Special Events*

Existing Plus Approved Plus Project Peak Hour Volumes and Lane Configurations

Intersection #1 S Naglee Rd/W Larch Rd	Intersection #2 S Naglee Rd/Auto Plaza Dr
(95) [195] 195 (94) [72] 87 (48) [62] 82 (60) [45] 45 (160) [129] 129 (127) [44] 44	(27) [15] 15 (113) [213] 213 (11) [14] 14 (10) [5] 5 (29) [7] 7 (10) [85] 194 (72) [14] 14 (47) [8] 8 (52) [12] 12 (43) [21] 21 (214) [156] 156 (3) [65] 152

Base map from Esri

LEGEND	
●	Study Intersection
⊥	Stop Sign
(XX)	Weekday PM Peak Hour Volume
[XX]	Weekend Peak Hour Volume
XX	Weekend Special Events Peak Hour Volume
☆	Proposed Project Location

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PROPOSED ACCESS, PARKING AND CIRCULATION

Two driveway access are proposed for the site as shown in **Figure 3.** The main project driveway access is located on Auto Plaza Drive at approximately 500 feet to the east of the intersection of Naglee Road and Auto Plaza Drive as shown in **Exhibit 1.** The proposed secondary driveway on W. Larch Road is approximately 345 feet from Naglee Road.

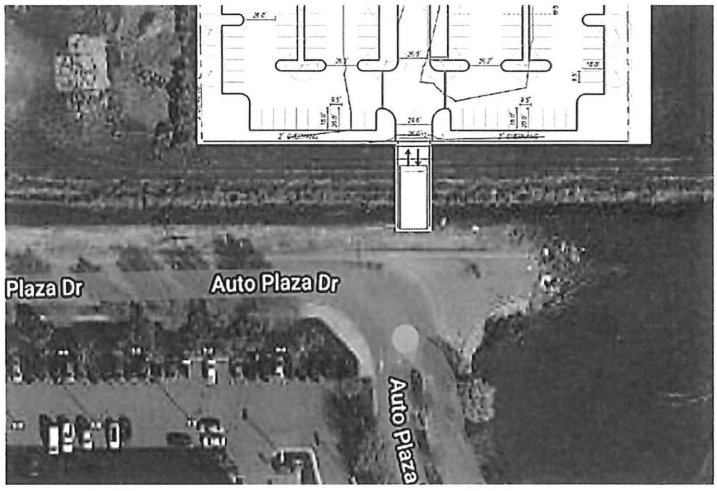


Exhibit 1: Main Access on Auto Plaza Drive

Both access driveways are expected to be stop control at the driveway.

The main entrance to the proposed project site is centrally located and would be aligned with the current intersection of Auto Plaza Drive as shown in **Exhibit 1.**

It is assumed that the prima facie speed in the Project vicinity along Auto Plaza Drive is 25 mph. Based on American Association of State Highway and Transportation Officials (AASHTO) guidelines, a stopping sight distance of 155 feet is required for a roadway with 25 mph speed. Based on field review, the existing driveway has a sight distance of more than 500 feet, which provides adequate line of sight for drivers exiting the site in both the southbound and the westbound directions. It is recommended that all project access driveways should have unobstructed views of the roadway, clear of any vegetation, landscaping and roadside objects, including project entry signage, in both directions. Adjacent to the project site W. Larch Road is rural farmland, so sight visibility is not an issue for the proposed secondary driveway located on that road.

Recommended Project Entrance Improvements

The proposed driveway on Auto Plaza Drive is approximately 26 feet wide as shown in **Exhibit 2.** This would be adequate to accommodate two-way traffic. The site plan showed the first access point to parking spaces on each side of the driveway entry is less than 20-feet beyond the driveway. To prevent any backups within this short area near the entrance, it is recommended that a longer driveway "throat" be created as shown in **Exhibit 2.** The longer distance will accommodate at least 4-5 vehicle queue and prevent queue overflow beyond the entrance onto Auto Plaza Drive.

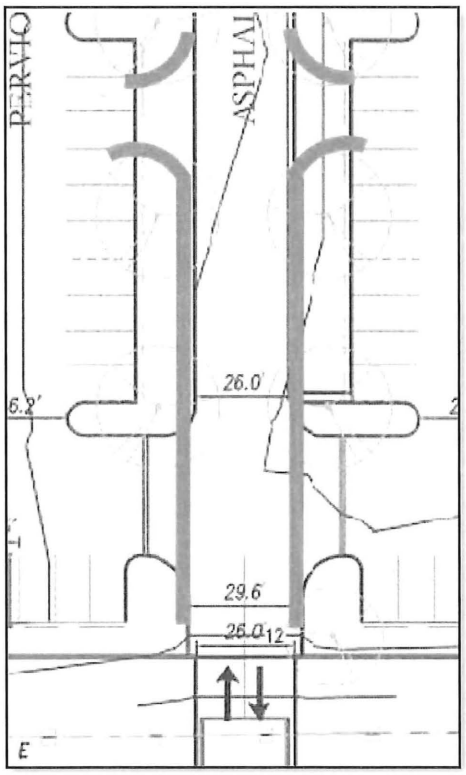


Exhibit 2: Recommended Driveway Improvement

At the Project driveway access on Auto Plaza Drive, it is recommended to provide a right-turn and through lane at the exit. For eastbound on Auto Plaza Drive, a left-turn and shared through-right turn lane are recommended. The northbound

approach should also provide a left-turn and shared through, right-turn lane configuration. An All Way Stop in the future will provide better traffic control if congestion is observed during weekend and special events. This would likely provide the best traffic control especially during the weekend and special events when 700 people (or nearly 620 vehicles) could be expected. However, the County will defer to City of Tracy decision on this intersection's controls and striping.

Parking Demand and Circulation Access

Based on the ITE Parking Generation Manual (5th Edition) rates for a religious facility (such as a church), an average peak period parking demand of 0.48 vehicles per attendee is expected. This seems reasonable considering that typically a family goes to a religious event together as opposed to driving individually and the previously approved Sikh Temple study indicated that "staff observed that the majority of the vehicles that arrived at these sites carried more than two persons in each car...[4]" It should be noted that the manual does not have parking survey data for a Sikh temple or a Hindu temple.

The following is the estimated parking demand based on the ITE Parking Generation Manual:

	Visitors	Parking Demand
Weekday	200	96
Weekend	300	144
Special Event	700	336

Based on the San Joaquin County Parking and Loading Manual, a religious assembly land use requires 0.33 parking spaces per seat. Based on this rate the following would be required:

	Visitors	Parking Demand
Weekday	200	66
Weekend	300	99
Special Event	700	231

In addition, per County requirements, a minimum of 7 accessible spaces should be provided for a parking lot with spaces in the range of 201 to 300 spaces.

The proposed Project site plan shows 258 stalls in a parking lot that includes six accessible and two van parking spaces. The project indicated 73 reserve future parking stalls. It was indicated as being reserved for parking overflow. Therefore, including future reserve for parking overflow, the total parking provided would be 331 spaces. Thus, the proposed site plan regular parking spaces provided appears to meet the minimum ITE and County parking requirements for both expected weekdays and weekend services. Parking spaces provided for special event (including overflow spaces) would meet County minimums but slightly short (5 spaces) based on ITE average parking demand rate.

In summary, the site provides more than adequate parking for all its operations apart from the few special events proposed. Per County's general policy, all overflow parking will be required to remain on site.

[4] *Traffic Impact Study for the Expansion of a Sikh Temple - Gurdwara Gur Nanak Parkash in San Joaquin County, July 25, 2011*

6.0 CUMULATIVE NO PROJECT CONDITIONS

This section details expected traffic conditions at the study intersections under Cumulative (No Project) Conditions. This analysis scenario is defined as Cumulative conditions without the proposed Project. The scenario is similar to the Existing Conditions, but with a projected growth rate of one percent per year applied over 20 years to project traffic demands for approximately the Year 2041.

Figure 7 shows projected turning movement volumes at the study intersection for the Cumulative No Project Conditions for AM and PM peak hours.

INTERSECTION LEVEL OF SERVICE - CUMULATIVE NO PROJECT CONDITIONS

Based on discussions with the City of Tracy staff, a signal might be planned for the intersection of Auto Plaza Drive and Naglee Road in the future[5]. Therefore, a signal is assumed for the intersection of Auto Plaza Drive and Naglee Road. The intersection LOS analysis results for Cumulative No Project Conditions are summarized in **Table 7**. Under this scenario, all intersections operate at acceptable LOS B or better.

Table 7: Cumulative (No Project) Peak Hour LOS

			Existing				Cumulative No Project				
			Weekday		Weekend			Weekday		Weekend	
ID	Intersection	Existing Control	P.M.		Late A.M.		Cumulative Control	P.M.		P.M.	
			Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
1	Naglee Rd/W Larch Rd	TWS	13.3	B	11.4	B	TWS	13.2	B	10.5	B
2	Naglee Rd/Auto Plaza Dr	TWS	16.2	C	11.1	B	Signal	5.5	A	4.1	A

Note:
TWS - Two Way Stop control
[A] *- Special Events*

Detailed calculation sheets for Cumulative no Project Conditions are contained in **Appendix E.**

[5] *September 23, 2021, email with City of Tracy staff*

Cumulative No Project Peak Hour Volumes and Lane Configurations

Figure 7

Intersection #1 S Naglee Rd/W Larch Rd	Intersection #2 S Naglee Rd/Auto Plaza Dr
(91) [121] (95) [62] (48) [48] (62) [46] (157) [61] (130) [45]	(28) [16] (109) [139] (12) [15] (11) [6] (30) [8] (8) [3] (74) [15] (48) [9] (54) [13] (44) [22] (201) [88] (4) [2]

Base map from Esri

LEGEND

- Study Intersection
- Stop Sign
- Traffic Signal
- (XX) Weekday PM Peak Hour Volume
- [XX] Weekend Peak Hour Volume
- XX Weekend Special Events Peak Hour Volume
- Proposed Project Location

AMG ADVANCED MOBILITY GROUP

7.0 CUMULATIVE PLUS PROJECT CONDITIONS

This scenario is identical to Cumulative Conditions, with the addition of projected traffic from the proposed development of the Project. Trip generation, distribution, and assignment for the proposed Project are identical to that assumed under Existing plus Approved plus Project Conditions. **Figure 8** shows projected turning movement volumes at the study intersection for Cumulative plus Project Conditions.

INTERSECTION LEVEL OF SERVICE ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

Similar to the Cumulative No Project Conditions, a signal is assumed for the intersection of Auto Plaza Drive and Naglee Road.

The intersection LOS analysis results for Cumulative plus Project Conditions are summarized in **Table 8.** All intersections are estimated to operate acceptably at LOS B or better during commute and weekend peak hours and special events.

Table 8: Cumulative Plus Project Peak Hour LOS

			Cumulative NP				Cumulative Plus Project					
			Weekday		Weekend		Weekday		Weekend		Special Events [A]	
ID	Intersection	Cumulative Control	P.M.		P.M.		P.M.		P.M.		Weekend	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1	Naglee Rd/W Larch Rd	TWS	13.2	B	10.5	B	13.2	B	10.6	B	11.0	B
2	Naglee Rd/Auto Plaza Dr	Signal	5.5	A	4.1	A	5.5	A	4.9	A	5.9	A

Note:
TWS - Two Way Stop control
[A] *- Special Events*

Detailed calculation sheets for Cumulative plus Project Conditions are contained in **Appendix F.**

PROJECT FAIR SHARE CALCULATION

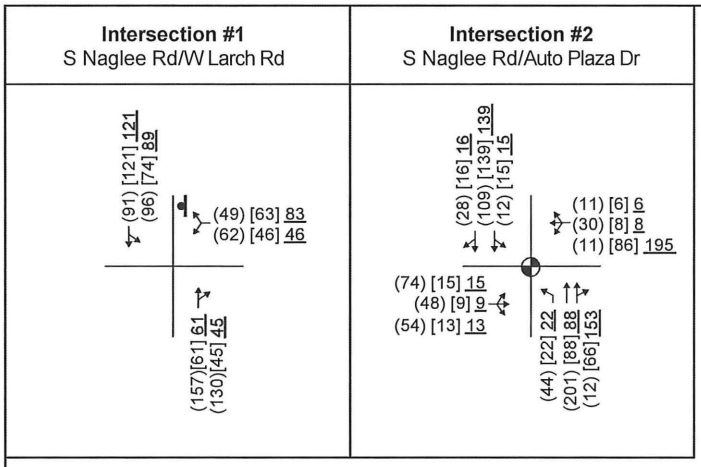
As indicated earlier a signal is planned for the intersection of Auto Plaza Drive and Naglee Road in the future. A project fair share contribution to build the signal was calculated. The fair share is calculated based on City of Tracy data[6] and County of San Joaquin Traffic Impact Study guidelines under Cumulative plus Project Conditions. As appropriate the Project sponsor might be required to pay a fair share contribution of the associated mitigation measure.

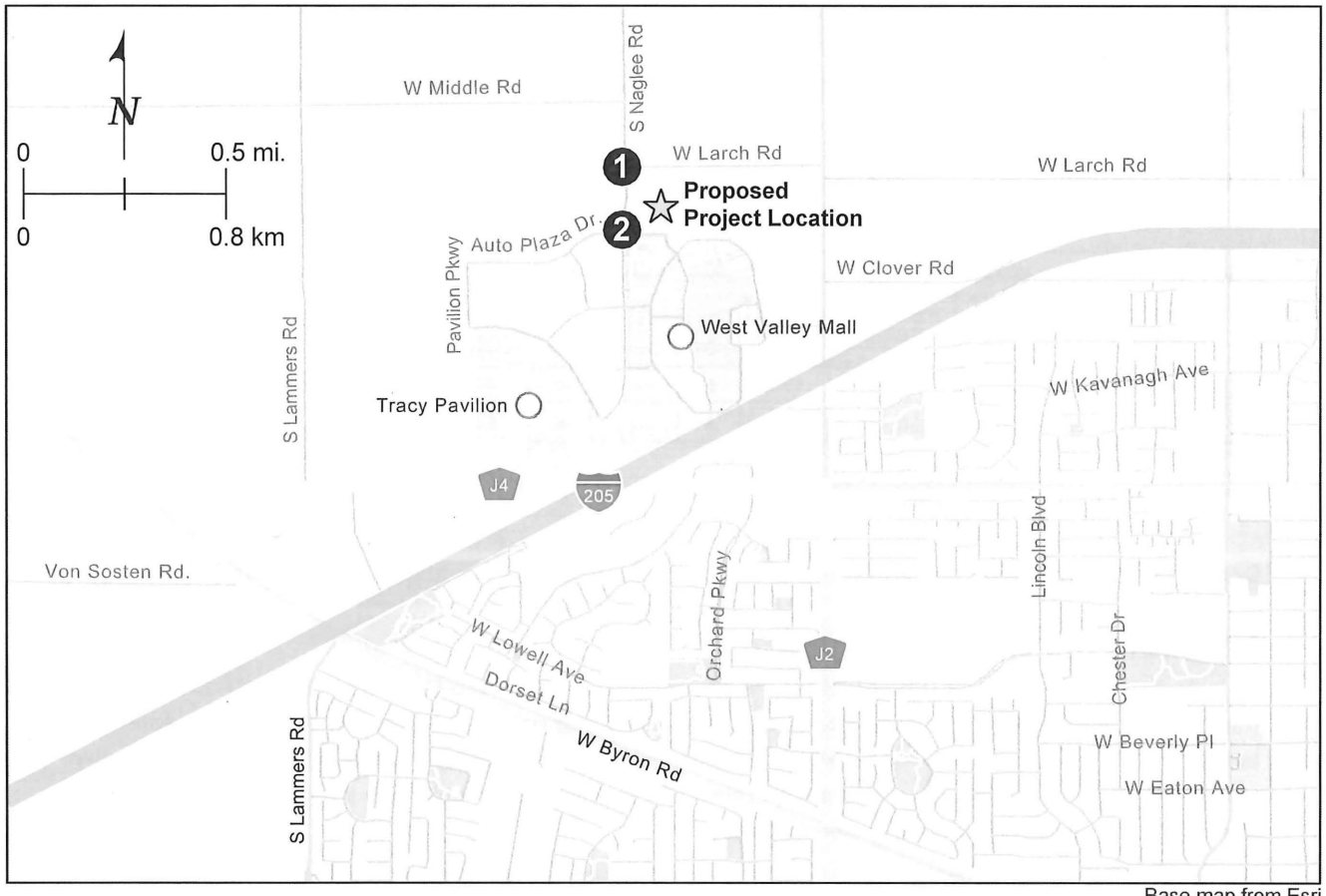
For fairshare analysis, the cumulative PM peak hour volumes for the intersection were obtained from the City of Tracy Transportation Master Plan[7]. The weekday PM cumulative peak hour volume was prorated to obtain the weekend cumulative peak hour volume. The estimated project traffic for the three analysis period are shown in **Table 9.**

[66] *City of Tracy Traffic Impact Analysis for Warehouse Development at 14800 W. Schulte Road: Final Report Comments, March 2021*
[7] *Transportation Master Plan, November 2012, Figure 4.14*

Cumulative Plus Project Peak Hour Volumes and Lane Configurations

Figure 8





Base map from Esri

LEGEND	
●	Study Intersection
▬●	Stop Sign
⊕	Traffic Signal
(XX)	Weekday PM Peak Hour Volume
[XX]	Weekend Peak Hour Volume
XX	Weekend Special Events Peak Hour Volume
☆	Proposed Project Location

AMG ADVANCED MOBILITY GROUP

Table 9: Cumulative Plus Project – Estimated Share of Project Traffic During Peak Periods

		P.M.				Weekend				Special Events				Average Equitable Share
Intersection	Existing Control	Proj Trips	2021 Ex Trips	Cum Build-Out + P Trips	Project Equitable Share	Proj Trips	2021 Ex Trips	Cum Build-Out + P Trips	Project Equitable Share	Proj Trips	2021 Ex Trips	Cum Build-Out + P Trips	Project Equitable Share	
S Naglee Rd/Auto Plaza Dr	TWS	11	604	870	4.1%	147	321	604	52.0%	343	321	800	71.7%	42.6%

Note:
Based on Equitable Share Responsibility Equation C-1 of the Caltrans' Guide for the Preparation of Traffic Impact Studies (Dec 2002)

It should be noted that only four Special Events per year which occur during the weekends. Therefore, the relative impact of the trips in a year (365 days) could be split assuming 4 events during the year, 100/365 weekends (52 weeks x 2 days – 4 events), and the remainder 261/365 for weekdays. The estimated project fairshare of the signal is shown in **Table 10.**

Table 10: Cumulative Plus Project – Estimated Project Fairshare

	Weekday	Weekend	Special Events	Total Fairshare
Traffic % Share	4.1%	52.0%	42.6%	
Assumed Impact Days (Year)	261	100	4	
% Share Days	71.5%	27.4%	1.1%	
Estimated Fairshare	*3%*	*14%*	*0.5%*	***17.7%***

AMG used the estimated cost of $600,000 for a new signal which is based on information from the City of Tracy as indicated earlier. The estimated project fair share cost is shown in **Table 11.**

Table 11: Project Fair Share Improvement Cost

Intersection	Signal Cost Estimate	Project Fairshare %	Project Fairshare Cost
S Naglee Rd/Auto Plaza Dr	$600,000	17.7%	$106,076

Note:
Signal cost based on City of Tracy TIA for Warehouse Development at 14800 W. Schulte Road: Final Report Comments, Mar 2021

The estimated total project fair share cost is approximately $106,076.

8.0 CONCLUSION

Based on the results of the analysis, the following is a summary of our findings:

Existing Traffic Conditions

The two study intersections operate at acceptable Level of Service (LOS) C or better indicating acceptable conditions.

Proposed Project Trip Generation

The Project is estimated to attract approximately 200 attendees during the weekday and 300 during the weekend worship events. It is estimated that the Project will generate approximately 20 weekday PM peak hour and 267 peak hour trips during weekends.

The religious assembly also proposes to have four (4) special events per year. The special event is assumed to include 700 attendees. It is estimated that the Project will generate approximately 623 peak hour trips.

Existing Plus Approved Projects (EPAP) Traffic Condition

Based on discussions with the County and City of Tracy staff, four approved projects in the vicinity of the proposed Project were included in the evaluation. Similar to the Existing scenario, it is estimated that both study intersections would operate acceptably at LOS C or better during peak hours and special events.

Existing Plus Approved Plus Project Traffic Condition

Similar to the Existing Plus Approved Projects scenario, it is estimated that both study intersections would operate acceptably at LOS C or better during peak hours and special events.

The proposed project site plan shows 258 parking stalls with six accessible and two van parking spaces. Including future 73 spaces reserve for parking overflow, the total parking provided would be 331 spaces.

The estimated parking demand based on average ITE rate and County parking requirements for both weekdays and weekend services could be adequately accommodated. However, estimated parking demand for special event would meet County minimums (including overflow spaces) but slightly short (5 spaces) based on ITE average parking demand rate.

It is recommended that paved shoulder should be provided on W. Larch Road to meet occasional high parking demand overflow during its busiest season which might exceed spaces reserved for parking overflow (such as important Sikh religious festivals, etc.).

Cumulative (No Project) Conditions

The scenario is similar to the Existing Conditions, but with a projected growth rate of one percent per year applied over 20 years to project traffic demands for the Year 2041.

Based on discussions with the City of Tracy staff, a signal might be planned for the intersection of Auto Plaza Drive and Naglee Road in the future. Therefore, a signal was assumed for the intersection of Auto Plaza Drive and Naglee Road. It is estimated that both study intersections would operate acceptably at LOS B or better during peak hours and special events.

Cumulative plus Project Conditions

It is estimated that both study intersections would operate acceptably at LOS B or better during peak hours and special events.

Project Fair Share Cost

The estimated total project fair share cost for the future signal at the intersection of Auto Plaza Drive and Naglee Road is approximately $106,076.

REFERENCES

1. *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE)
2. Performance Measurement System (PeMS) Data Source
3. *Traffic Impact Study for the Expansion of a Sikh Temple - Gurudwara Gur Nanak Parkash in San Joaquin County, July 25, 2011*

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Al Gali	City of Tracy

Appendix A **TRAFFIC VOLUME COUNTS**

Appendix B INTERSECTION LOS ANALYSIS: EXISTING CONDITIONS LOS CALCULATION SHEETS

Appendix C ANALYSIS: EXISTING PLUS APPROVED PROJECTS CONDITIONS

- LOS CALCULATION SHEETS

Appendix D ANALYSIS: EXISTING PLUS APPROVED PLUS PROJECT CONDITIONS

- LOS CALCULATION SHEETS

Appendix E ANALYSIS: CUMULATIVE NO PROJECT CONDITIONS

- LOS CALCULATION SHEETS

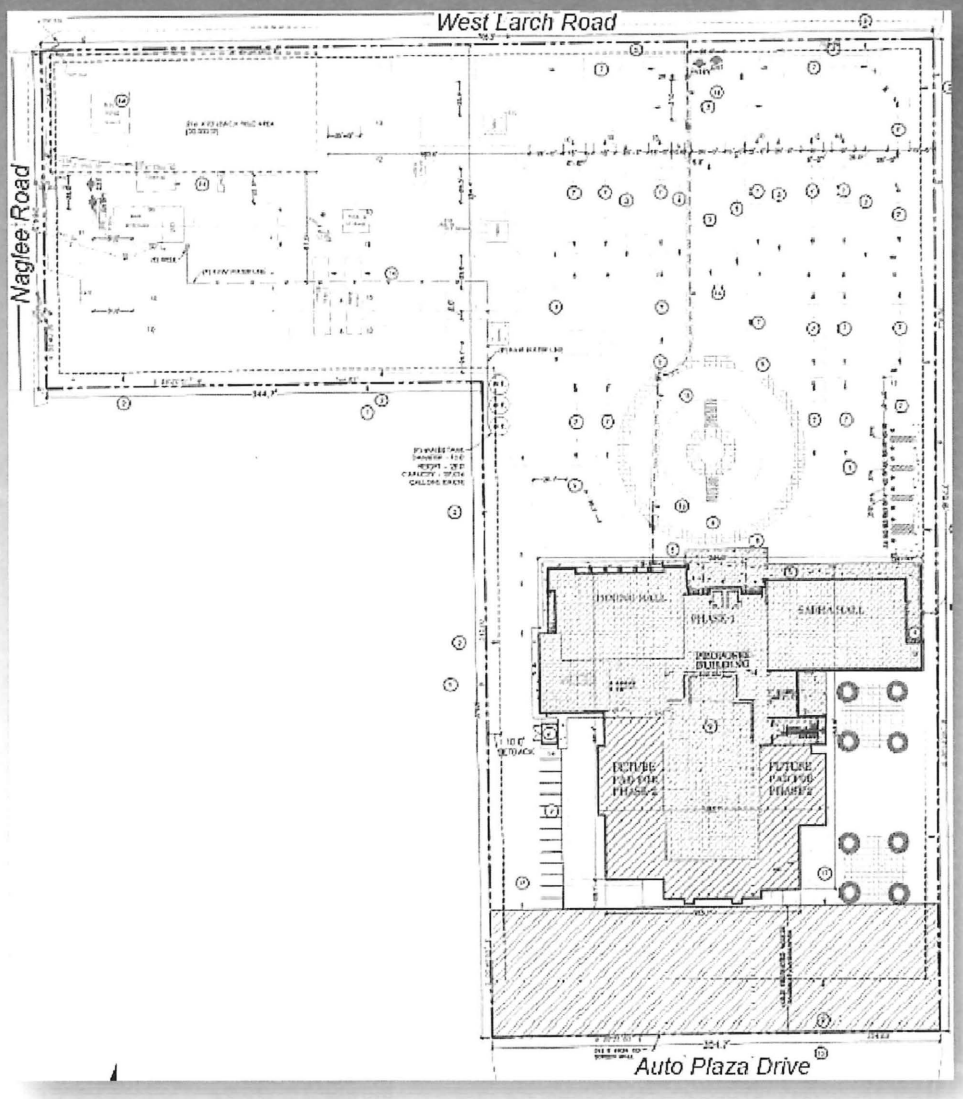
Appendix F ANALYSIS: CUMULATIVE PLUS PROJECT CONDITIONS

- LOS CALCULATION SHEETS

Traffic Impact Analysis for the Proposed Gurudwara Sahib @ 21356 South Naglee Road, Tracy, CA

for San Joaquin County, CA

August 12, 2024



AMG ADVANCED MOBILITY GROUP

Traffic Impact Analysis for the Proposed Gurudwara Sahib Located @ 21356 South Naglee Road, Tracy, California

Final Report

Prepared for:
San Joaquin County

Prepared by:
Advanced Mobility Group

AMG ADVANCED MOBILITY GROUP

August 12, 2024

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1.0 INTRODUCTION AND EXECUTIVE SUMMARY

INTRODUCTION

The purpose of this report is to document the results of a traffic impact study for the proposed Gurudwara Sahib located at 21356 South Naglee Road, Tracy. The project is located on the southeast corner at the intersection of Naglee Road and West Larch Road. The proposed project will consist of a single-story building that will include a worship area, a dining hall, and several meeting rooms. The approximate building area is 51,353 square feet (sf).

SUMMARY

Based on the results of the analysis, the following is a summary of our findings:

Existing Traffic Conditions

Two of the intersections operate at acceptable LOS C or better indicating acceptable conditions. The T-intersection of Naglee Road and W Larch Road is estimated to operate at LOS E during late Sunday morning. Peak hour signal warrant evaluated for the intersection of is not met.

Proposed Project Trip Generation

The Project is estimated to attract approximately 100 attendees during the weekday and 250 during the weekend worship events. It is estimated that the Project will generate approximately 10 weekday PM peak hour and 223 peak hour trips during weekends.

The religious assembly also proposes to have four (4) special events per year. The special event is assumed to include 500 attendees. It is estimated that the Project will generate approximately 445 peak hour trips during special events.

Existing Plus Approved Projects (EPAP) Traffic Condition

Based on discussions with the County and City of Tracy staff, four approved projects in the vicinity of the proposed Project were included in the evaluation. Two of the intersections operate at acceptable LOS C or better indicating acceptable conditions. However, the intersection of Naglee Road and W Larch Road is estimated to deteriorate from LOS E to LOS F during late Sunday AM hours.

It is estimated that the intersection will operate at LOS C if it is converted to All Way Stop Control.

Existing Plus Approved Plus Project Traffic Condition

Similar to the Existing Plus Approved Projects scenario, it is estimated that two study intersections would operate acceptably at LOS C or better during peak hours and special events. Also, as in the EPAP scenario, the intersection of Naglee Road and W Larch Road is estimated to operate at LOS F during late Sunday morning. Due to increased traffic volumes and an uptick of collisions since 2019, use of All Way Stop Control (AWSC) would be appropriate. A peak hour signal warrant for the intersection of Naglee Road and W Larch Road is met during late Sunday morning and during special events so having an AWSC might be a good interim measure. This would also provide for further traffic monitoring of the AWSC operation.

The proposed Project site plan shows 365 parking stalls and eight ADA parking spaces. Therefore, the estimated parking demand based on the average ITE rate and County parking requirements for both weekdays and weekend services could be adequately accommodated.

It is estimated that a significant amount of traffic would be using this driveway to enter the site. To prevent any slowing or backups that could block northbound through traffic, a right-turn deceleration lane should be provided.

Cumulative (No Project) Condition

The scenario is similar to the Existing Conditions, but with a projected growth rate of one percent per year applied over 20 years to project traffic demands for the Year 2044.

It is estimated that two study intersections (Naglee Road/W Larch Road and Naglee Road/Auto Plaza Drive) would operate unacceptably at LOS E/F for one of the peak hours. A peak hour signal warrant for the intersection of Naglee Road and W Larch Road is met during late Sunday morning. As indicated under Existing Plus Approved Plus Project scenario, due to increased traffic volumes and an uptick of collisions since 2019 at the intersection of Naglee Road and W Larch Road, use of All Way Stop Control (AWSC) would be appropriate interim measure. Further monitoring could determine if additional traffic control might be necessary in the long-term.

Cumulative plus Project Condition

Similar to the Cumulative No Project Condition, it is estimated that two study intersections (Naglee Road/W Larch Road and Naglee Road/Auto Plaza Drive) would operate unacceptably at LOS E/F during the peak hours and during special events. A peak hour signal warrant for the intersection of Naglee Road and W Larch Road is met during late Sunday morning and special events. As indicated under Existing Plus Approved Plus Project scenario, due to increased traffic volumes and an uptick of collisions since 2019 at the intersection of Naglee Road and W Larch Road, use of All Way Stop Control (AWSC) would be appropriate interim measure. Further monitoring could determine if additional traffic control might be necessary in the long-term. If a signal is installed, the LOS would operate at LOS D or better.

2.0 PURPOSE OF PROJECT AND STUDY APPROACH

PROJECT OBJECTIVES DESCRIPTION

The purpose of this traffic impact study is to evaluate potential traffic impacts of the proposed Gurudwara Sahib. The construction of the Gurudwara Sahib will include two project phases. Phase 1 will include a single-story building that will include a worship area, a dining hall, several meeting rooms, and a large outdoor courtyard. Phase 2 will consist of several future pads surrounding that courtyard. The approximate Phase 1 building area is 51,353 square feet (sf). The Site Vicinity Map is shown in **Figure 1**.

STUDY APPROACH

The following are key steps of the study approach:

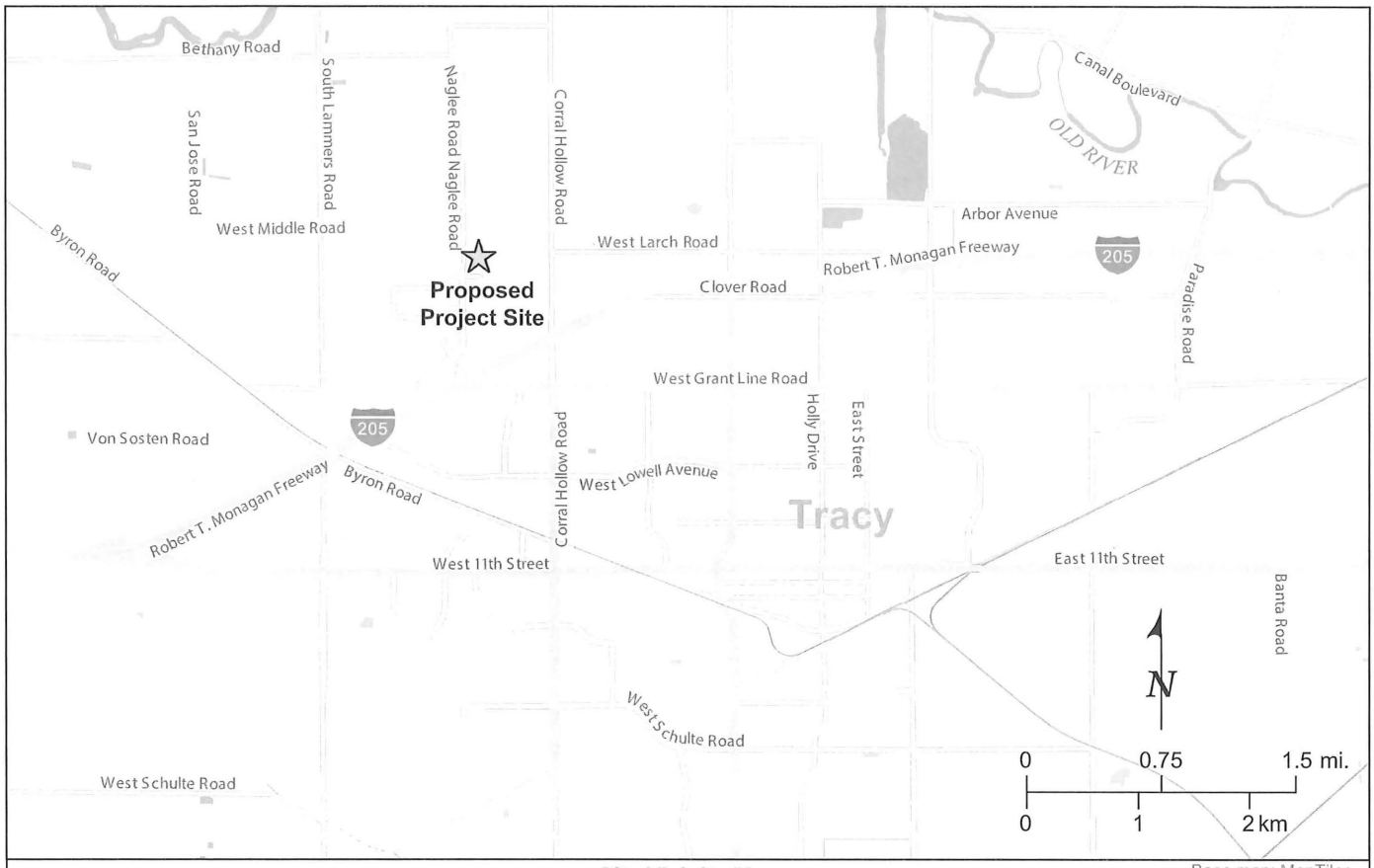
- Conduct traffic counts to establish baseline traffic conditions
- Conduct trip generation and distribution of project trips
- Determine traffic condition for the following scenarios[1]:
  - Existing Traffic Condition
  - Existing + Approved Projects (EPAP) Traffic Condition
  - Existing + Approved Projects + Project Traffic Condition
  - Cumulative (No Project) Traffic Condition
  - Cumulative Plus Project Traffic Condition
- Determine LOS and VMT impact of project trips based on established Significance Criteria

[1] Based on input by County Staff

Traffic Impact Analysis for the Proposed Gurdwara Sahib Located at 21356 South Naglee Road, Tracy, CA

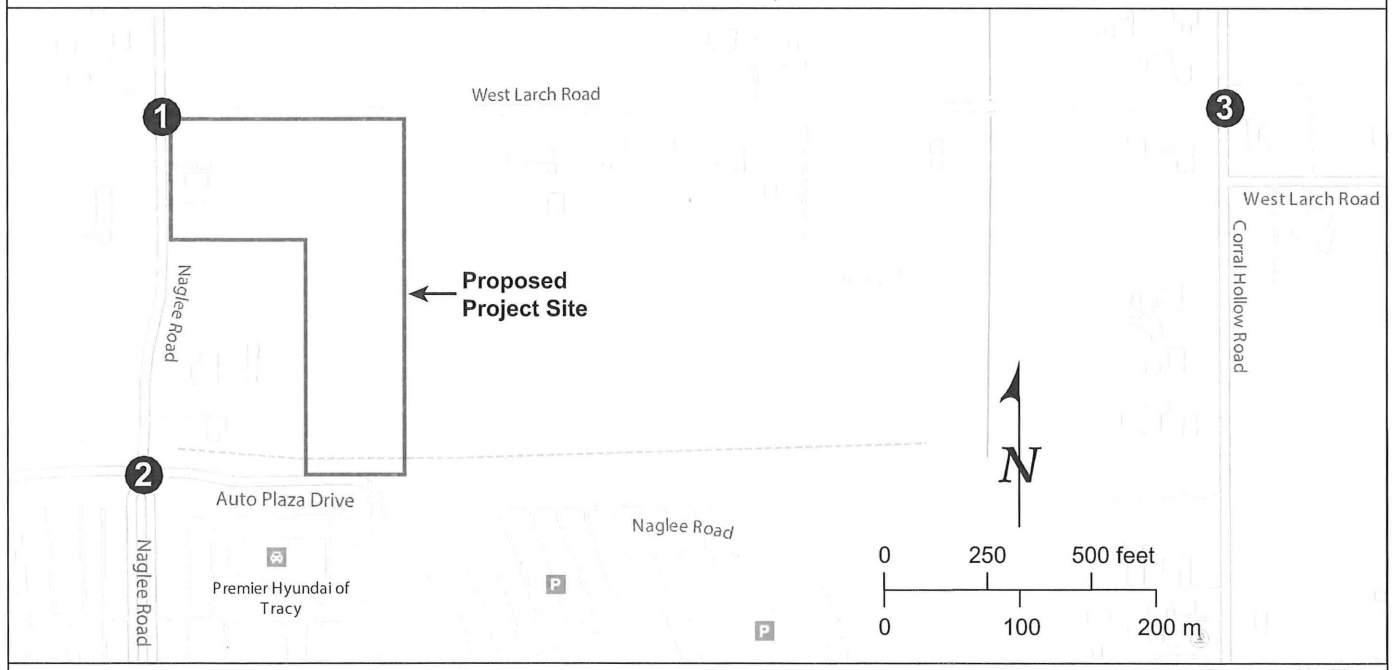
Figure 1

Site Vicinity & Study Intersections



Site Vicinity Map

Base map: MapTiler



Study Intersections

Base map: MapTiler

No.	Intersection
1	Naglee Rd & W Larch Rd
2	Naglee Rd & Auto Plaza Dr
3	Corral Hollow Rd & W Larch Rd

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3.0 EXISTING SETTING

This section describes the existing transportation conditions in the vicinity of the study area, including descriptions of the existing street system and intersection operating conditions. The study area is shown in **Figure 1**.

EXISTING STREET SYSTEM

Important roadways adjacent to the Project site are discussed below:

Regional Roads

The Project site is located north of the City of Tracy, in an unincorporated part of San Joaquin County. The Project site is served regionally by Interstate 205 (I-205), located generally to the south.

I-205 provides access to Tracy and to I-580 to the west, which connects with the greater San Francisco Bay Area and Silicon Valley employment centers. It has six lanes in the vicinity of the project.

The *Interstate 205/Naglee Road interchange* is located between Corral Hollow Road to the east and Byron Road to the west. Currently, in the project vicinity Naglee Road is a two-lane roadway.

The latest available 2017 Caltrans traffic volume report indicates that the annual average daily traffic (ADT) volumes on I-205 is approximately 106,000 vehicles per day (vpd) west of Naglee Road.

Local Roads

These are key roadways that connect I-205 to the south and the rest of the County.

Naglee Road is a two-lane north-south roadway that forms the western boundary of the project. The Project is less than half a mile from the I-205 ramp to the south. The road extends from I-205 ramp in the south for nearly three miles to the north when it connects with Lammers Road. The ADT volume near the Project vicinity is approximately 5,270 vpd.[2]

Auto Plaza Drive is generally an east-west road located to the south of the Project site. It forms the northern boundary of West Valley Mall. The road connects West Valley Mall to the Tracy Pavilion. Sidewalk is located on the south side of the road. The ADT volume near the Project vicinity is less than 1,000 vpd.

West Larch Road is an east-west rural road that forms the northern boundary of the Project site. In the project area it connects Naglee Road in the west and Corral Hollow Road to the east. The ADT volume near the Project vicinity is approximately 3,860 vpd.[3]

Corral Hollow Road is a two-to-six-lane north-south major arterial roadway serving Tracy, that extends from I-580 in the south to northern Tracy city limits. Near the project vicinity it is a two-lane roadway, and the speed limit is 35 mph. The ADT volume near the project vicinity is less than 1,000 vpd.

[2] *ADT counts conducted on February 29, 2024*
[3] *ADT counts conducted on February 29, 2024*

EXISTING PEDESTRIAN FACILITIES

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 Project vicinity, due to the rural nature of the area, most of the roadways lack sidewalks and crosswalks. Sidewalks exists on Naglee Road south of Auto Plaza Drive and sidewalks on Auto Plaza Drive adjacent to the Project are located on the southside. Sidewalks do not exist on West Larch Road.

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 four classes:

1. Class I – Provides a completely separated facility designed for the exclusive use of bicyclists and pedestrians with crossing points minimized.
2. Class II – Provides 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.
3. Class III – Provides a route designated by signs or pavement markings and shared with motorists.
4. Class IV – A separated bikeway, often referred to as a cycle track or protected bike lane, is for the exclusive use of bicycles, physically separated from motor traffic with a vertical feature.

The area is primarily farmland and rural with two-lane rural roadways north of Auto Plaza Drive. Bicycle facilities do not currently exist in the Project vicinity. Class I bike path exists on Naglee Road, south of Auto Plaza Drive.

EXISTING TRANSIT FACILITIES

There is limited transit service near the Project vicinity. Tracer Route A serves the West Valley Mall just to the south, and Route B has a stop at the West Valley Mall and the DMV office about 0.4 mile west.

TRAFFIC DATA COLLECTION

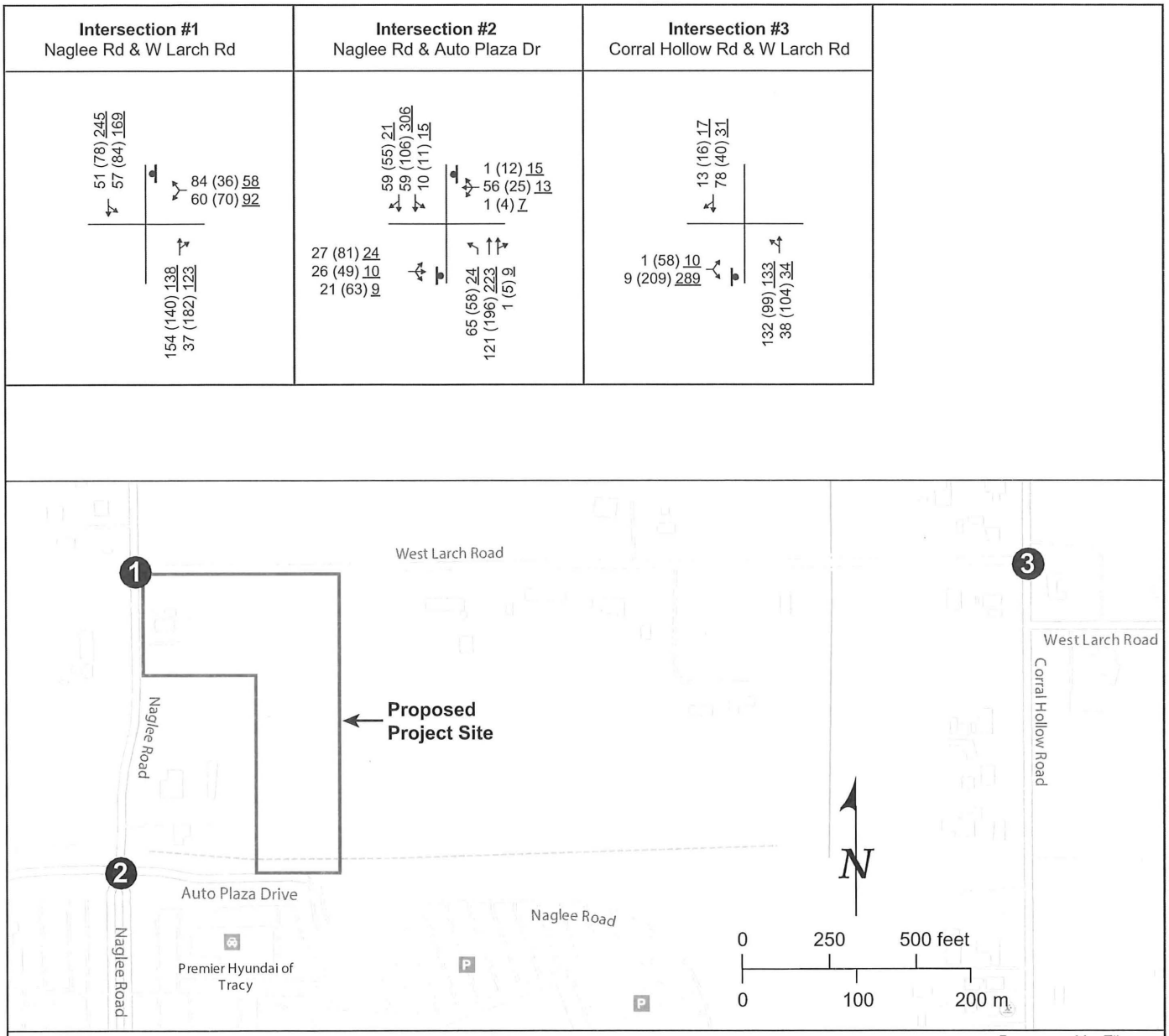
Based on location of the project and our experience of the area, the following three study intersections as shown in **Exhibit 1** were selected for analysis:

1) Naglee Road and West Larch Road
2) Naglee Road and Auto Plaza Drive
3) Corral Hallow Road and Larch Road

AMG collected Weekday A.M., Weekday P.M., and Weekend Late A.M. intersection turning movement counts for the three intersections on February 28-29, and March 3, 2024. **Figure 2** shows the existing conditions peak hour traffic volumes and lane geometry and traffic control at the study intersections. Average Daily Traffic (ADT) volume was collected on Naglee Road between Auto Drive Plaza and W Larch Road and on W Larch Road between Naglee Road and Corral Hollow Drive. **Appendix A** includes all the data sheets for the collected intersection vehicle, bicycle and pedestrian counts.

Figure 2

Existing Peak Hour Volumes, Lane Geometry, and Controls



Study Intersections

No.	Intersection
1	Naglee Rd & W Larch Rd
2	Naglee Rd & Auto Plaza Dr
3	Corral Hollow Rd & W Larch Rd

Legend

1	Study Intersection
	Stop Sign
XX	Weekday AM Peak Hour Volume
(XX)	Weekday PM Peak Hour Volume
XX	Weekend Late AM Peak Hour Volume

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LEVEL OF SERVICE METHODOLOGY

Level of Service is a qualitative index of the performance of an element of the transportation system. Level of Service (LOS) is a rating scale running from A to F, with A indicating no congestion of any kind, and F indicating intolerable congestion and delays.

The 2010 Highway Capacity Manual (HCM) is the standard reference published by the Transportation Research Board and contains the specific criteria and methods to be used in assessing LOS. There are several software packages that have been developed to implement HCM. In this study, the Synchro software was used to calculate the LOS at the study intersections.

Table 1: Signalized Intersection LOS Criteria

LOS	Driver's Perception and Traffic Operation Description	Delay in Seconds
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	< 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 – 20
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20 - 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high volume-to-capacity (V/C) ratios. Many vehicles stop, and individual cycle failures are noticeable.	> 35 – 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 - 80
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80

Signalized Intersections

The relationship between average control delay, driver's perception of traffic, and LOS for signalized intersections is summarized in **Table 1.**

Unsignalized Intersections

The method of unsignalized intersection capacity analysis used in this study is from Chapter 19, "Two-Way Stop-Controlled Intersections" of the Highway Capacity Manual. This method applies to two-way STOP sign or YIELD sign-controlled intersections (or one-way STOP sign or YIELD sign controlled intersections at three-way intersections). At such intersections, drivers on the minor street are forced to use judgment when selecting gaps in the major flow through which to execute crossings or turning maneuvers. Thus, the capacity of the controlled legs of an intersection is based on three factors:

1. The distribution of gaps in the major street traffic stream.
2. Driver judgment in selecting gaps through which to execute their desired maneuvers.
3. Follow-up time required to move into the front-of-queue position.

The level of service criterion for two-way STOP controlled intersections is somewhat different from the criterion used for signalized intersections. The primary reason for this is the difference that drivers expect a signalized intersection to carry higher traffic volumes than unsignalized intersections. Additionally, several driver behavior conditions combine to make delays at signalized intersections less onerous than at unsignalized intersections.

The HCM provides procedures for calculating LOS on the minor street approaches and individual movements. It does not specify how a local agency must utilize that information. Depending on the availability of gaps, the minor approach might be operating at LOS D, E, or F while the overall intersection operates at LOS C or better. A minor approach that operates at LOS D, E, or F does not automatically translate into a need for a traffic signal. A signal warrant would still need to be met. There are many instances where only a few vehicles are experiencing LOS D, E, or F on the minor approach while the whole intersection operates at an acceptable LOS. A signal is usually not warranted under such conditions.

Table 2 summarizes the relationship between delay and LOS for unsignalized intersections. At side-street stop-controlled intersections, the delay is calculated for each stop-controlled movement, the left-turn movement from the major street, as well as the intersection average. The intersection average delay and highest movement/approach delay are reported for side street stop-controlled intersections.

Table 2: Unsignalized Intersection LOS Criteria

LOS	Driver's Perception and Traffic Operation Description	Delay in Seconds
A	Little or no delays	< 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 with intersection capacity exceeded	> 50

SIGNIFICANCE CRITERIA

San Joaquin County

As per the San Joaquin County 2035, General Plan Draft Environmental Report dated October 2014, Congestion Management Program (CMP) Level of Service - The County is to maintain and enforce Level of Service (LOS) standards consistent with the San Joaquin Council of Governments (SJCOG) Congestion Management Program (CMP) for State highways and designated County roadways and intersections of regional significance. Per the CMP, all designated CMP roadways and intersections shall operate at LOS D or better except for roadways with "grandfathered" LOS. LOS for State highways shall be maintained in cooperation with Caltrans. The County LOS standards for intersections is LOS "D" or better on Minor Arterials and roadways of higher classification and LOS "C" or better on all other roads. The County shall maintain the following:

1. On State highways, LOS D or Caltrans standards whichever is stricter.
2. Within a city's sphere of influence, LOS D, or the city planned standards for that level of service.
3. On Mountain House Gateways, as defined in the Master Plan, LOS D, on all other roads, LOS C.

For State highways that are designated as part of SJCOG's CMP, both the Caltrans and CMP LOS standards shall apply. Where roadways are designated as part of SJCOG's CMP, both the County and CMP LOS standards shall apply. (Source: Existing GP, Transportation, Roadways, Policy 8, modified)
For CMP intersections or roadways currently operating or expected to operate at LOS E or F under No Project conditions, the Project would result in a significant impact if it would increase:

1. Average delay by 4 seconds or more (intersections); or
2. The volume-to-capacity (v/c) ratio by 1.0 or more.

4.0 EXISTING TRAFFIC CONDITION

This section presents the assessment of traffic conditions without the proposed Project.

INTERSECTION LEVEL OF SERVICE

To accurately model the traffic condition, AMG created a Synchro traffic analysis model to determine the intersection LOS. The Existing Conditions traffic operations were evaluated based on levels of service criteria using Synchro. Several intersection attributes (such as lane geometries, truck percentage, signal phasing and traffic control) were coded into the Synchro software model to evaluate the study intersections.

The results of the LOS analysis for the existing intersections are shown in **Table 3**. Two of the intersections operate at acceptable LOS C or better indicating acceptable conditions. The T-intersection of Naglee Road and W Larch Road is estimated to operate at LOS E during late Sunday morning. This is due to the delay experienced by the relatively high westbound volumes (left and right turn volume total 150 vph) on Larch Road during the late Sunday AM hours.

Table 3: Existing LOS of Study Intersections

			Weekday				Weekend	
ID	Intersection	Existing Control	A.M.		P.M.		Late A.M.	
			Delay	LOS	Delay	LOS	Delay	LOS
1	Naglee Rd/W Larch Rd	OWSC	12.5	B	15.0	C	36.2	E
2	Naglee Rd/Auto Plaza Dr	TWSC	16.5	C	14.2	B	17.0	C
3	Corral Hollow Rd/W Larch Rd	OWSC	9.4	A	12.2	B	11.0	B

Note:
OWSC: One-Way Stop Control
TWSC: Two-Way Stop Control

Detailed level of service worksheets is provided in **Appendix B.**

SIGNAL WARRANT

A peak hour signal warrant was conducted for the intersection of Naglee Road and W Larch Road which is currently stop control on the minor W Larch Road. Peak hour signal warrant is not met for the intersection. The result is shown in **Table 4**. Signal warrant sheets and detailed level of service worksheets are provided in **Appendix B.**

Table 4: Summary of Peak Hour Signal Warrant Analysis for Naglee Road & W. Larch Road

Scenario	Weekday PM	Late AM Sunday	Special Events
Existing	No	No	NA
EPAP	No	No	NA
EPAPP	No	Met	Met
Cumulative NP	No	Met	NA
Cumulative PP	No	Met	Met

5.0 EXISTING PLUS APPROVED PROJECTS (NO PROJECT) TRAFFIC CONDITION

The Existing Plus Approved (No Project) Traffic Condition (EPAP) Weekday P.M. & Weekend Late A.M. condition is a near-term future background condition. This condition is referred to in this traffic impact study as EPAP No Project conditions. Development of land uses, and roadway improvements associated with previously approved projects are assumed in this condition.

Based on discussions with the County and City of Tracy, the following approved projects in the Project vicinity were provided.[4]

- Tracy Assisted Living and Memory Care
- 15K Sq-ft multi-tenant commercial at 3280 W. Grant Line Rd
- 100+ room motel at 3095 N. Corral Hollow Road
- 100+ room motel at Orchard Pkwy
- Southwinds Church (Phase 3)

Estimated trips were added to the study intersections. **Figure 3** shows the Existing plus Approved Projects (EPAP) Conditions peak hour turning movement volumes and lane geometry.

The results of the LOS are shown in **Table 5**. Two of the intersections operate at acceptable LOS C or better indicating acceptable conditions. However, the intersection of Naglee Road and W Larch Road is estimated to deteriorate from LOS E to LOS F during late Sunday AM hours. It is estimated that the intersection will operate at LOS C if converted to All Way Stop Control as shown in **Table 6**. The intersection will operate at LOS A if signalized.

Table 5: Existing plus Approved Projects LOS of Study Intersections

			Existing				EPAP			
			Weekday		Weekend		Weekday		Weekend	
ID	*Intersection*	*Existing Control*	*P.M.*		*Late A.M.*		*P.M.*		*Late A.M.*	
			Delay	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*	*Delay*	*LOS*
1	Naglee Rd/W Larch Rd	OWSC	15.0	C	36.2	E	15.3	C	64.9	F
2	Naglee Rd/Auto Plaza Dr	TWSC	14.2	B	17.0	C	14.5	B	20.7	C
3	Corral Hollow Rd/W Larch Rd	OWSC	12.2	B	11.0	B	12.2	B	11.0	B

Note:
OWSC: One-Way Stop Control
TWSC: Two-Way Stop Control

[4] *September 21, 2021, email from County staff and September 23, 2021, email from City of Tracy staff*

Table 6: Existing plus Approved Projects LOS (Mitigated Alternative)

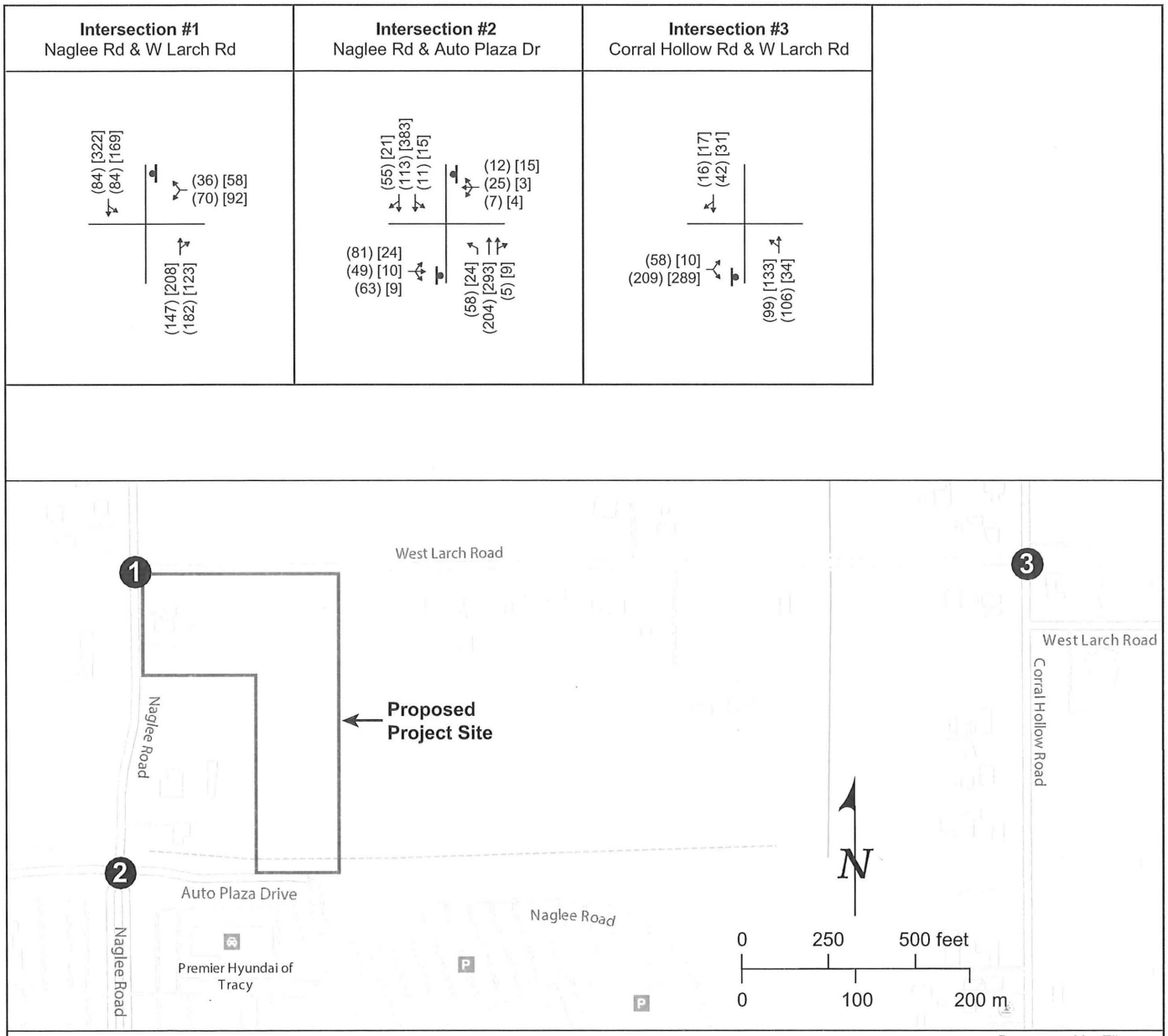
ID	Intersection	Existing Control	EPAP				Mitigated Control	EPAP (Mitigated)			
			Weekday		Weekend			Weekday		Weekend	
			P.M.		Late A.M.			P.M.		Late A.M.	
			Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
1	Naglee Rd/W Larch Rd	OWSC	15.3	C	64.9	F	Signal	6.9	A	7.4	A
							AWSC	9.9	A	20.4	C

Note:
OWSC: One-Way Stop Control
TWSC: Two-Way Stop Control

Detailed level of service worksheets and results of peak hour signal warrant are provided in **Appendix C.**

Existing Plus Approved Projects (No Project) Peak Hour Volumes and Lane Configurations

Figure 3



Study Intersections

No.	Intersection
1	Naglee Rd & W Larch Rd
2	Naglee Rd & Auto Plaza Dr
3	Corral Hollow Rd & W Larch Rd

Legend

- 1 Study Intersection
- Stop Sign
- (XX) Weekday PM Peak Hour Volume
- [XX] Weekend Late AM Peak Hour Volume

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6.0 EXISTING PLUS APPROVED PLUS PROJECT TRAFFIC CONDITION

The proposed Gurudwara Sahib is located at 21356 South Naglee Road, Tracy, CA. The following are key attributes of the proposed religious assembly development:

- Maximum of 250 people to be completed in two (2) phases over four (4) years.
- On Sundays, the site is expected to have average of 250 people
- The religious assembly also proposes to have four (4) special events per year with a maximum of 500 attendees. These events are considered accessory to the main use, which is religious assembly.
- The operating hours for this project will be 10:00 a.m. through 7:00 p.m., seven (7) days per week, with a maximum of fifteen (15) employees.
- Phase One, to be completed in eighteen (18) months, includes the construction of 34,439 square foot building to be used for religious assembly, a dining hall, a kitchen, an office, guest rooms, and meeting rooms.
- Phase Two includes the construction of a 13,818 square foot addition to the original building to be used for classrooms, guest rooms, and residence rooms for priests.
- Access to the project will be from Naglee Road and Larch Road.
- Parking spaces provided: 365 spaces[5]

The proposed project site plan is shown in **Figure 4**.

TRIP GENERATION

Trip generation is defined as the number of "vehicle trips" produced by a particular land use or project. A trip is defined as a one-direction vehicle movement. The total number of trips generated by each land use includes the inbound and outbound trips.

Based on the 2008 Traffic Study Guidelines, the peak hour trip generation for a project should be estimated based on the *Trip Generation, 10th Edition (most current)*, published by the Institute of Transportation Engineers (ITE) or based on trip generation from similar project.

The trip generation rates for the proposed Project are based on a previously approved Gurudwara traffic impact study report in the County.[6] The trip generation rates were estimated based on driveway counts.

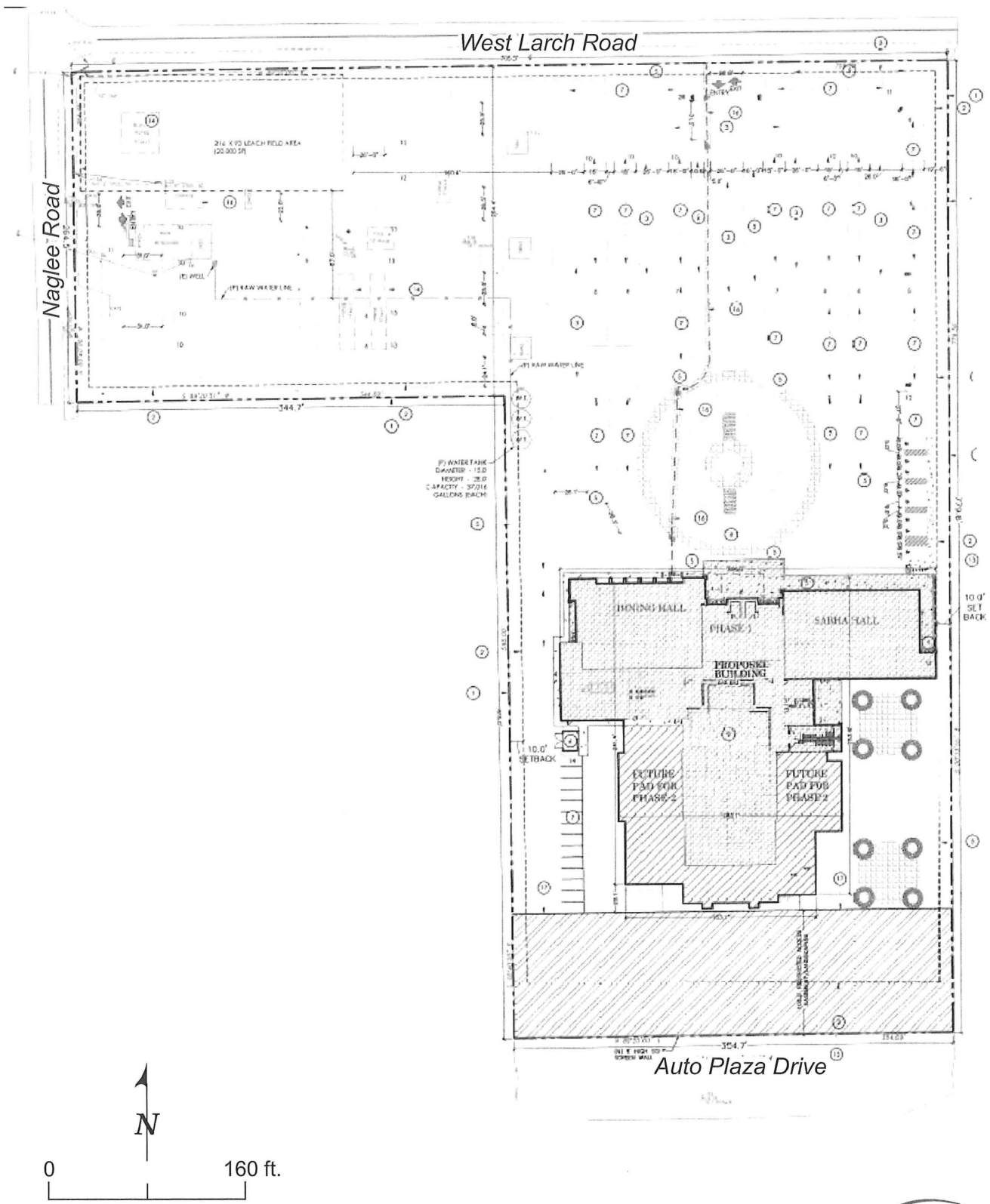
AMG used the driveway trip rates from the study to estimate potential trips for the proposed Project during weekday PM peak hour, weekends and special events. The Project is estimated to generate approximately 10 weekday PM peak hour, 223 weekends and 445 special events peak hour as shown in **Table 6**. Since the proposed project starts operation after 10 AM, it is expected there won't be any peak hour trips during the typical AM commute peak hours of 7-9 AM.

[5] *PA-1900085 (C) Application Packet (Received April 16, 2024)*

[6] *Traffic Impact Study for the Expansion of a Sikh Temple - Gurdwara Gur Nanak Parkash in San Joaquin County, July 25, 2011*

Figure 4

Proposed Project Site Plan



Base map from Sterling Consultants

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Table 7: Proposed Project Trip Generation

Land Use	Size		Weekday P.M. Peak [A]				Size		Weekend P.M. Peak [A]				Size		Special Events Peak [B]			
			Rate	In	Out	Total			Rate	In	Out	Total			Rate	In	Out	Total
Gurdwara Sahib	100	People	0.10	7	3	10	250	People	0.89	98	125	223	500	people	0.89	196	249	445

Note:
A - Based on information provided by Applicant dated Oct 27, 2023 (PA1900085); received from County April 16, 2024
B - Special Events

TRIP DISTRIBUTION

Trip distribution is a process that approximates the "proportion of vehicles" between a project site and various destinations outside the project study area. The trip assignment process determines the various routes that vehicles would take from the Project site to each destination using the estimated trip distribution.

The Project is expected to "generate" and "attract" trips throughout the County and from other locations throughout the area. Directional trip distribution for Project generated trips was estimated based on existing traffic flow patterns, geographic location of the Project site, and discussions with County staff.

Since it is a religious development, it is estimated that some visitor traffic might be accessing the Project site through I-205 freeway. The estimated trip distribution patterns are shown on **Figure 5** and Project only trips are shown on **Figure 6**.

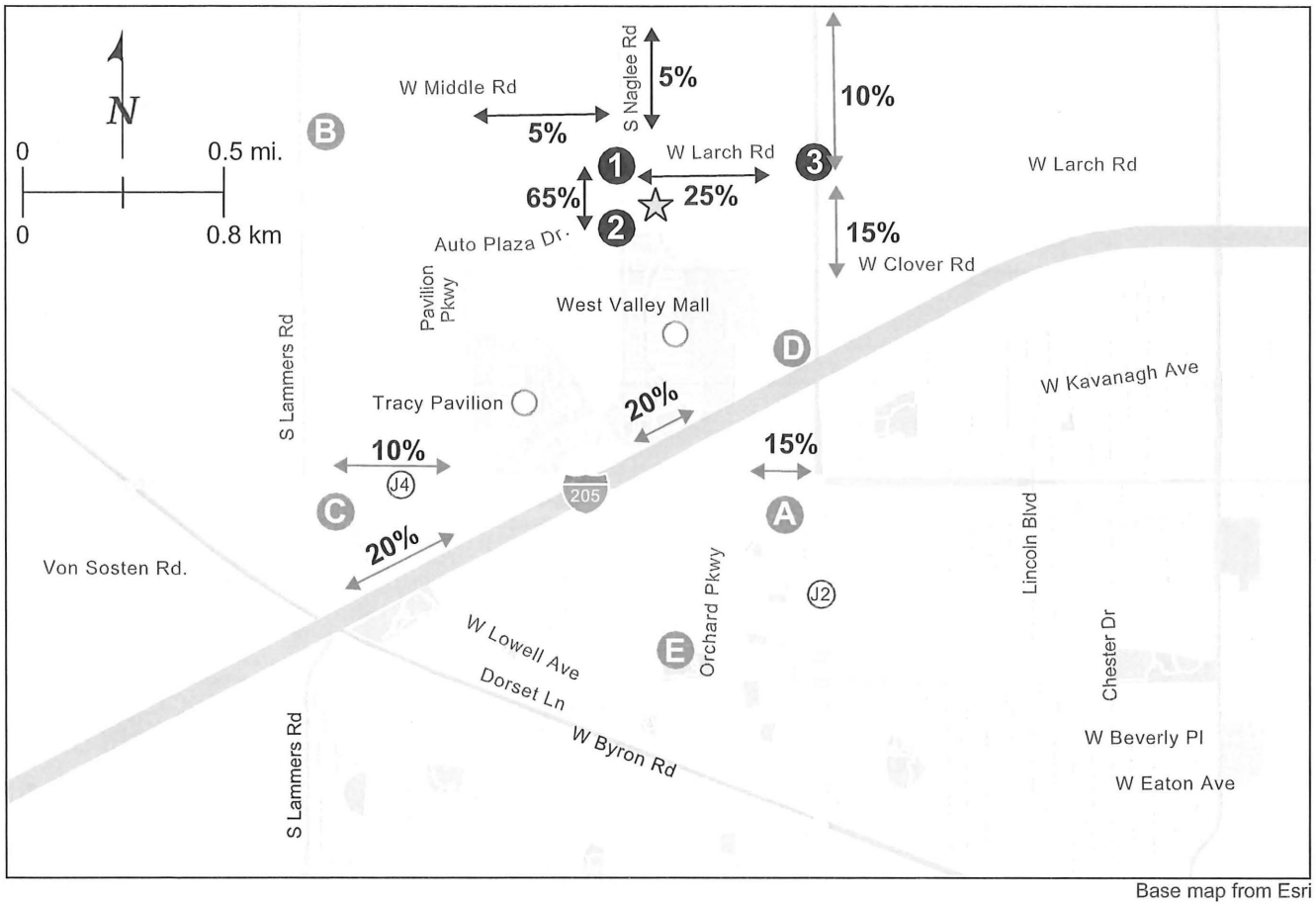
INTERSECTION LEVEL OF SERVICE ANALYSIS

This section presents the assessment of potential transportation impacts of the proposed Project. **Figure 7** shows the Existing plus Approved plus Project (EPAPP) Conditions peak hour turning movement volumes and lane geometry.

Table 7 shows the LOS under EPAPP Conditions during the Peak Hour. Similar to the EPAP scenario, the intersection of Naglee Road and W Larch Road is estimated to operate at LOS F during late Sunday morning and during special events. It should be noted that the weekend PM peak hour volumes were used to analyze LOS during the special events. This could be considered conservative or worst-case scenario since typically traffic volumes are lower during the off-peak.

Project Trip Distribution

Figure 5



Base map from Esri

Legend

- 1 Study Intersection Location
- Primary Distribution
- Secondary Distribution
- Proposed Project Site

Approved Projects

- A Tracy Assisted Living and Memory Care
- B Southwinds Church (Phase3)
- C 15K sq. ft. Multitenant Commercial at 3280 W Grant Line Rd
- D 100+ Room Motel at 3095 N Corral Hollow Rd
- E 100+ Room Motel at Orchard Pkwy

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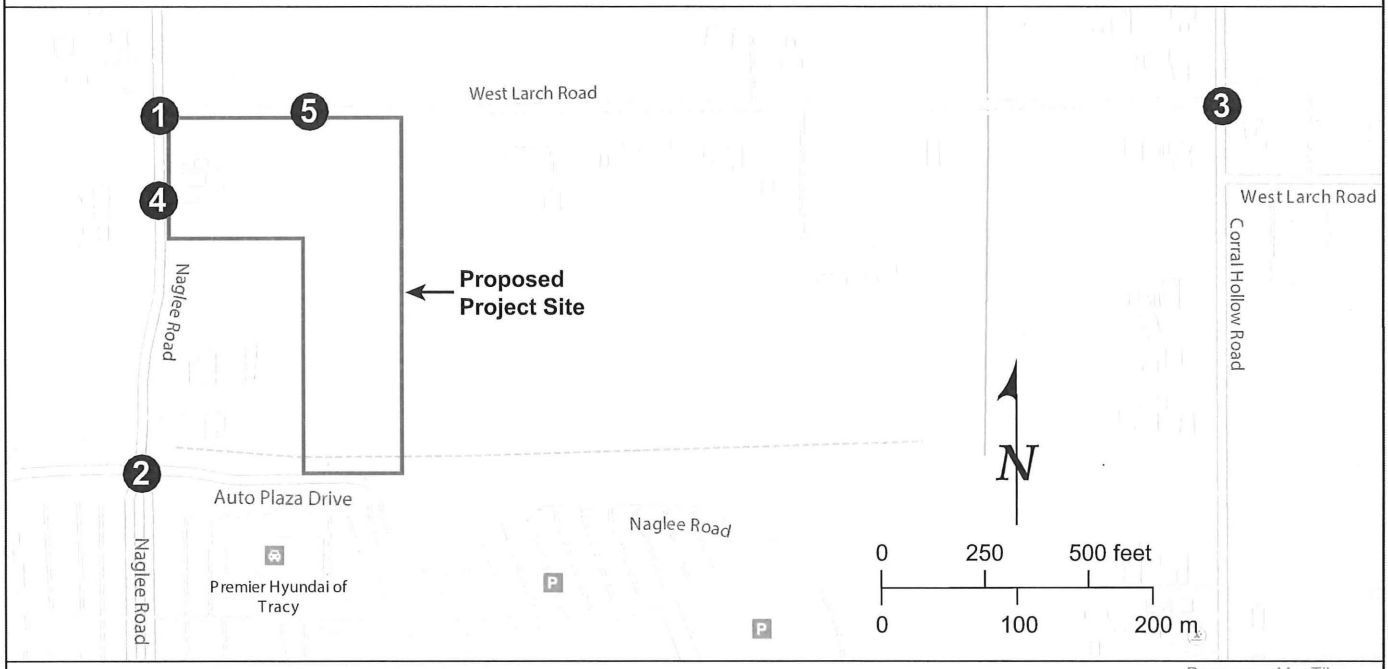
Project Only Peak Hour Volumes and Lane Configurations

Figure 6

Intersection #1 S Naglee Rd/W Larch Rd	**Intersection #2** S Naglee Rd/Auto Plaza Dr	**Intersection #3** W Larch Rd/Corral Hollow Rd	**Intersection #4** Project Driveway on Naglee Rd	**Intersection #5** Project Driveway on Larch Rd
(0) [0] 0 (1) [10] 20 (0) [6] 12 (2) [82] 162 (0) [6] 12 (1) [13] 25	(0) [0] 0 (2) [82] 162 (0) [0] 0 (0) [0] 0 (0) [0] 0 (0) [0] 0 (0) [0] 0 (0) [0] 0 (0) [0] 0 (4) [64] 127 (0) [0] 0	(1) [10] 20 (0) [0] 0 (0) [12] 25 (1) [19] 38 (1) [14] 29 (0) [0] 0	(2) [82] 162 (0) [6] 12 (1) [13] 25 (3) [51] 102	(0) [0] 0 (2) [24] 49 (0) [0] 0 (2) [23] 45 (2) [88] 174 (1) [31] 83



Study Intersections

No.	Intersection
1	Naglee Rd & W Larch Rd
2	Naglee Rd & Auto Plaza Dr
3	Corral Hollow Rd & W Larch Rd
4	Project Driveway on Naglee Rd
5	Project Driveway on Larch Rd

Legend

1	Study Intersection
	Stop Sign
(XX)	Weekday PM Peak Hour Volume
[XX]	Weekend Late AM Peak Hour Volume
XX	Weekend Special Events Peak Hour Volume

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As shown in **Table 4,** peak hour signal warrant for the intersection of Naglee Road and W Larch Road is met during late Sunday morning and during special events.

Since this location meets at least one signal warrant, this means it also meets All Way Stop Control (AWSC) Warrant C, a transition to a signal control. Therefore, instead of a signal, an AWSC would also be acceptable. With an AWSC, except during Special Events, the LOS would operate at LOS D or better as shown in **Table 7**. The intersection is estimated to operate at LOS E during Special Events.

It is noted that the current hourly traffic volumes do not meet the AWSC warrant. However, a review of the collision data[7] from the past 10 years indicated an uptick since 2019. Therefore, it is recommended to install AWSC as a proactive measure due to the anticipated increase in traffic volumes in the near future.

Table 8: EPAP plus Project (EPAPP) Peak Hour LOS

			EPAP + Project							EPAP + Project (Mitigated)					
			Weekday		Weekend		Special Events			Weekday		Weekend		Special Events	
ID	Intersection	Existing Control	P.M.		Late A.M.		Weekend		Mitigated Control	P.M.		Late A.M.		Weekend	
			Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS
1	Naglee Rd/W Larch Rd	OWSC	15.5	C	347.2	F	740.7	F	AWSC	10.1	B	26.9	D	39.5	E
2	Naglee Rd/Auto Plaza Dr	TWSC	23.7	C	26.4	D	34.7	D							
3	Corral Hollow Rd/W Larch Rd	OWSC	12.3	B	11.9	B	13.3	B							

Note:
OWSC: One-Way Stop Control
TWSC: Two-Way Stop Control

Detailed level of service worksheets, results of peak hour signal warrant and collision summary are provided in **Appendix D.**

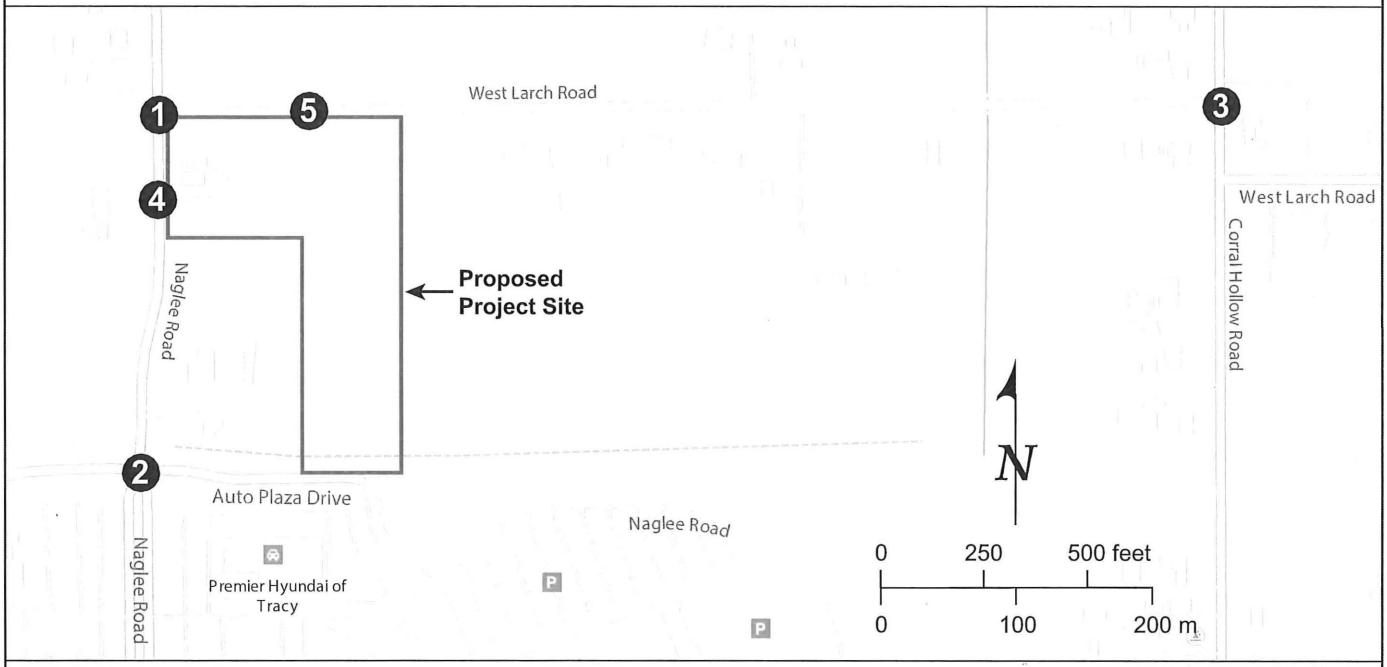
[7] *Based on collision data in County's Crossroads database*

Traffic Impact Analysis for the Proposed Gurdwara Sahib Located at 21356 South Naglee Road, Tracy, CA

Figure 7

Existing Plus Approved Plus Project Peak Hour Volumes and Lane Configurations

Intersection #1 S Naglee Rd/W Larch Rd	Intersection #2 S Naglee Rd/Auto Plaza Dr	Intersection #3 W Larch Rd/Corral Hollow Rd	Intersection #4 Project Driveway on Naglee Rd	Intersection #5 Project Driveway on Larch Rd
(84) [322] 322 (85) [179] 189 (36) [64] 70 (72) [174] 254 (147) [214] 220 (183) [136] 148	(55) [21] 21 (115) [465] 545 (11) [15] 15 (12) [15] 15 (25) [13] 13 (4) [7] 7 (81) [24] 24 (49) [10] 10 (63) [9] 9 (58) [24] 24 (208) [357] 420 (5) [9] 9	(17) [27] 37 (42) [31] 31 (58) [22] 35 (210) [308] 327 (100) [147] 162 (106) [34] 34	(156) [496] 576 (0) [6] 12 (140) [345] 357 (3) [51] 102	(115) [150] 150 (2) [24] 49 (266) [292] 292 (2) [23] 45 (2) [88] 174 (1) [31] 63



Study Intersections

No.	Intersection
1	Naglee Rd & W Larch Rd
2	Naglee Rd & Auto Plaza Dr
3	Corral Hollow Rd & W Larch Rd
4	Project Driveway on Naglee Rd
5	Project Driveway on Larch Rd

Legend

1	Study Intersection
	Stop Sign
(XX)	Weekday PM Peak Hour Volume
[XX]	Weekend Late AM Peak Hour Volume
XX	Weekend Special Events Peak Hour Volume

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PROPOSED ACCESS, PARKING AND CIRCULATION

Two driveway access are proposed for the site as shown in **Figure 4**. The main project driveway access is located on Larch Road at approximately 515 feet to the east of the intersection of Naglee Road and Larch Road as shown in **Exhibit 1**. The proposed secondary driveway on Naglee Road is approximately 107 feet south of Larch Road. Both access driveways are expected to be stop control at the driveway.

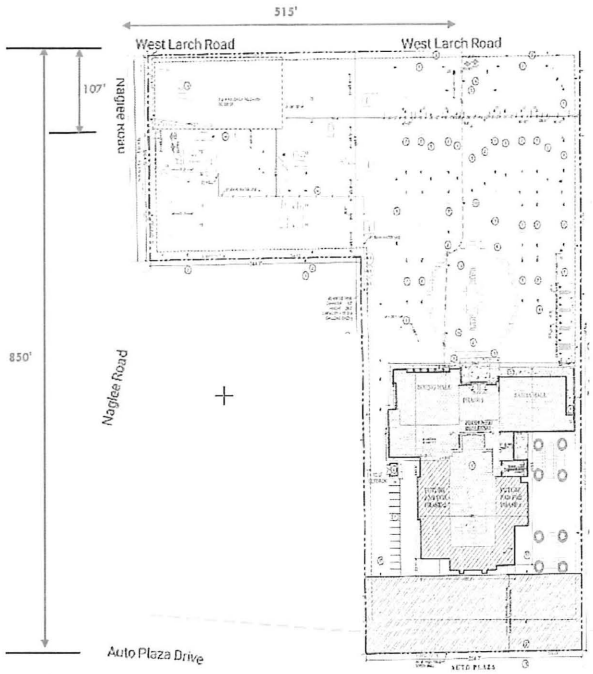


Exhibit 1: Project Driveway Locations

Based on speed data collected, it could be assumed that the 85th percentile speed in the Project vicinity along Larch Road is between 45-50 mph. Based on American Association of State Highway and Transportation Officials (AASHTO) guidelines, a stopping sight distance of 360-425 feet is required for a roadway with 50 mph speed. Based on field review, the existing driveway has a sight distance of more than 500 feet in both directions, which provides adequate line of sight for drivers exiting the site in both the eastbound and the westbound directions.

The sight visibility from the secondary driveway on Naglee Road is also clear. It is recommended that all project access driveways should have unobstructed views of the roadway, clear of any vegetation, landscaping and roadside objects, including project entry signage, in both directions.

The driveway on Naglee Road is approximately 107 feet south of Larch Road. Based on good access management, it is recommended that the proposed driveway should be a right-in and right-out driveway. To prevent left-turn exit and southbound left-turn inbound traffic, flexible delineator posts should be installed on the center median on Naglee Road.

It is estimated that a significant amount of traffic would be using this driveway to enter the site. To prevent any slowing or backups that could block northbound through traffic, a right-turn deceleration lane should be provided.

Recommended Project Entrance Improvements

Both of the proposed driveways on Larch Road and Naglee Road are shown as 26 feet wide. This would be adequate to accommodate two-way traffic.

Larch Road Driveway Access

The site plan showed the first access point to parking spaces on each side of the driveway entry is less than 25-feet beyond the driveway. To prevent any backups

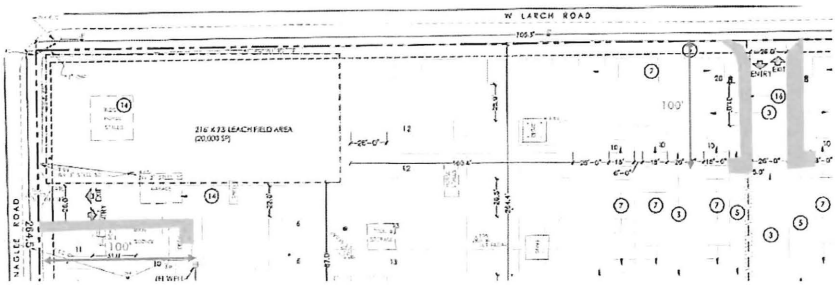


Exhibit 2: Recommended Driveway Improvement

within this short area near the entrance, it is recommended that a longer driveway "throat" be created as shown in **Exhibit 2.** The longer distance (100-feet or more) will accommodate at least 4-5 vehicles and prevent queue overflow beyond the entrance onto Larch Road.

Naglee Road Driveway Access

The first access point to parking spaces of the driveway entry is also shown as less than 25-feet beyond the driveway. A longer driveway "throat" (100-feet or more) as shown in **Exhibit 2** will accommodate at least 4-5 vehicles and prevent queue overflow beyond the entrance onto Naglee Road.

It is recommended that access within the site should be designed so that internal circulation between the two driveways would not be circuitous.

Parking Demand

Based on the ITE Parking Generation Manual (5th Edition) rates for a religious facility (such as a church), an average peak period parking demand of 0.48 vehicles per attendee is expected. This seems reasonable considering that typically a family goes to a religious event together as opposed to driving individually and the previously approved Sikh Temple study indicated that "staff observed that the majority of the vehicles that arrived at these sites carried more than two persons in each car...[8]" It should be noted that the manual does not have parking survey data for a Sikh temple or a Hindu temple.

The following is the estimated parking demand based on the ITE Parking Generation Manual:

	Visitors	**Parking Demand**
Weekday	100	48
Weekend	250	120
Special Event	500	240

Based on the San Joaquin County Parking and Loading Manual, a religious assembly land use requires 0.33 parking spaces per seat. Based on this rate the following would be required:

	Visitors	**Parking Demand**
Weekday	100	33
Weekend	250	83
Special Event	500	165

In addition, per County requirements, a minimum of 7 accessible spaces should be provided for a parking lot with spaces in the range of 201 to 300 spaces.

The proposed Project site plan shows 365 parking stalls and eight ADA parking spaces. Thus, the proposed regular parking spaces provided appears to meet the minimum ITE and County parking requirements for both expected weekdays, weekend services and special event.

In summary, the site provides more than adequate parking for all its operations.

[8] *Traffic Impact Study for the Expansion of a Sikh Temple - Gurdwara Gur Nanak Parkash in San Joaquin County, July 25, 2011*

7.0 CUMULATIVE NO PROJECT CONDITIONS

This section details expected traffic conditions at the study intersections under Cumulative (No Project) Conditions. This analysis scenario is defined as Cumulative conditions without the proposed Project. The scenario is similar to the Existing Conditions, but with a projected growth rate of one percent per year applied over 20 years to project traffic demands for approximately the Year 2044.

Figure 8 shows projected turning movement volumes at the study intersection for the Cumulative No Project Conditions for AM and PM peak hours.

INTERSECTION LEVEL OF SERVICE - CUMULATIVE NO PROJECT CONDITIONS

It is our understanding that based on information provided by the City of Tracy staff, a signal would not be required for the intersection of Auto Plaza Drive and Naglee Road in the future[9]. It is estimated that the intersection of Auto Plaza Drive and Naglee Road will operate at LOS E during the PM peak hour as shown in **Table 8.** Assuming an AWSC, the intersection of Naglee Road and W Larch Road is estimated to operate at LOS E during late Sunday morning.

As shown in **Table 4,** peak hour signal warrant for the intersection of Naglee Road and W Larch Road is met during late Sunday morning. With a signal, the LOS would operate at LOS B or better as shown in **Table 8.**

Table 9: Cumulative (No Project) Peak Hour LOS

			Existing				Cumulative NP					Cum NP (Mitigated)				
			Weekday		Weekend			Weekday		Weekend			Weekday		Weekend	
ID	Intersection	Existing Control	P.M.		Late A.M.		Cumulative Control	P.M.		Late A.M.		Mitigated Control	P.M.		Late A.M.	
			Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS
1	Naglee Rd/W Larch Rd	OWSC	15.0	C	36.2	E	OWSC	19.5	C	282.3	F	AWSC	11.5	B	45.1	E
2	Naglee Rd/Auto Plaza Dr	TWSC	22.4	C	17.0	C	TWSC	46.8	E	31.0	D	AWSC	13.1	B	13.0	B
3	Corral Hollow Rd/W Larch Rd	OWSC	12.2	B	11.0	B	OWSC	14.5	B	12.1	B					

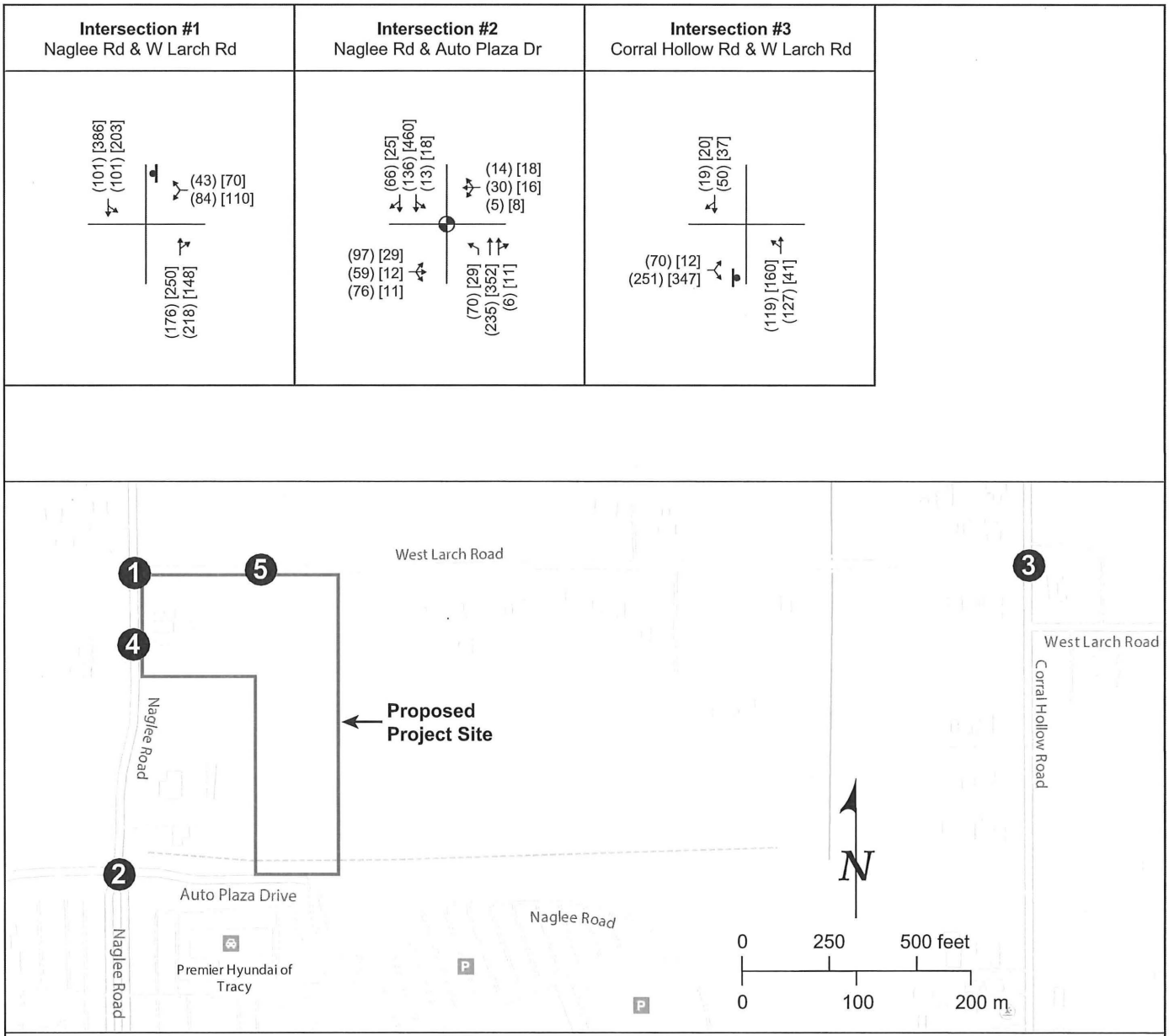
Note:
OWSC: One-Way Stop Control
TWSC: Two-Way Stop Control

Detailed calculation sheets for Cumulative no Project Conditions and results of peak hour signal warrant are contained in **Appendix E.**

[9] *July 31, 2023, City of Tracy staff letter to Alisa Goulart, Community Development Department (Gurudwara Sahib Tracy on 21356 South Naglee Road, PA19-00085 (UP))*

Cumulative No Project Peak Hour Volumes and Lane Configurations

Figure 8



Study Intersections

No.	Intersection
1	Naglee Rd & W Larch Rd
2	Naglee Rd & Auto Plaza Dr
3	Corral Hollow Rd & W Larch Rd

Legend

- 1 Study Intersection
- Traffic Signal
- Stop Sign
- (XX) Weekday PM Peak Hour Volume
- [XX] Weekend Late AM Peak Hour Volume

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8.0 CUMULATIVE PLUS PROJECT CONDITIONS

This scenario is identical to Cumulative Conditions, with the addition of projected traffic from the proposed development of the Project. Trip generation, distribution, and assignment for the proposed Project are identical to that assumed under Existing plus Approved plus Project Conditions. **Figure 9** shows projected turning movement volumes at the study intersection for Cumulative plus Project Conditions.

INTERSECTION LEVEL OF SERVICE ANALYSIS – CUMULATIVE PLUS PROJECT CONDITIONS

Similar to the Cumulative No Project Conditions, a signal is assumed for the intersection of Auto Plaza Drive and Naglee Road.

The intersection LOS analysis results for Cumulative plus Project Conditions are summarized in **Table 9.** Similar to the Cumulative No Project scenario, the intersection of Naglee Road and W Larch Road is estimated to operate at LOS F during weekend peak hours. Under AWSC, the intersection is estimated to operate at LOS F as shown in **Table 9.** It is anticipated that with a signal, the LOS would operate at LOS D or better.

Table 10: Cumulative Plus Project Peak Hour LOS

			Cumulative NP				Cumulative + Project							Cumulative + Project (Mitigated)					
			Weekday		Weekend		Weekday		Weekend		Special Events			Weekday		Weekend		Special Events	
ID	Intersection	Existing Control	P.M.		Late A.M.		P.M.		Late A.M.		Weekend		Mitigated Control	P.M.		Late A.M.		Weekend	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS		Delay	LOS	Delay	LOS	Delay	LOS
1	Naglee Rd/W Larch Rd	OWSC	19.5	C	282.3	F	19.8	C	644.5	F	1056.3	F	AWSC	11.6	B	62.4	F	80.8	F
2	Naglee Rd/Auto Plaza Dr	TWSC	46.8	E	31.0	D	48.2	E	44.4	E	69.5	F	AWSC	13.2	B	15.1	C	18.2	C
3	Corral Hollow Rd/W Larch Rd	OWSC	14.5	B	12.1	B	14.6	B	13.5	B	15.7	C							

Note:
OWSC: One-Way Stop Control
TWSC: Two-Way Stop Control

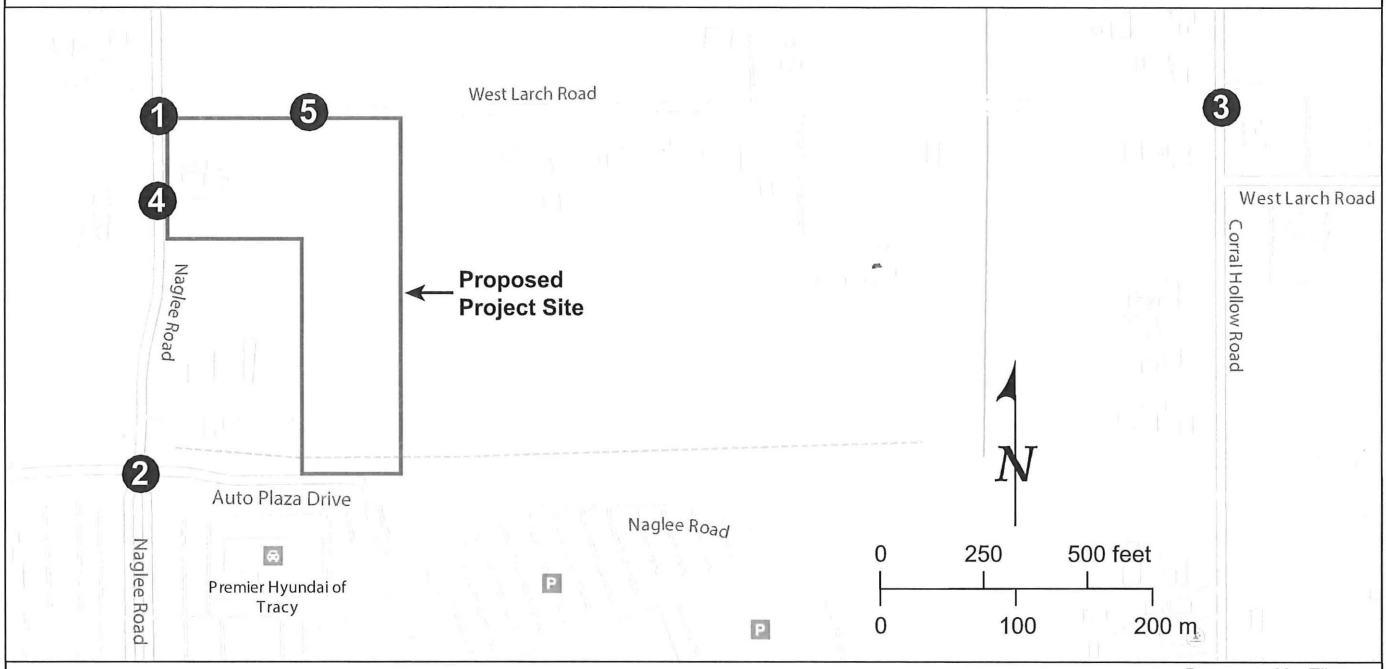
Detailed calculation sheets for Cumulative plus Project Conditions and results of peak hour signal warrant are contained in **Appendix F.**

Traffic Impact Analysis for the Proposed Gurdwara Sahib Located at 21356 South Naglee Road, Tracy, CA

Figure 9

Cumulative Plus Project Peak Hour Volumes and Lane Configurations

Intersection #1 S Naglee Rd/W Larch Rd	Intersection #2 S Naglee Rd/Auto Plaza Dr	Intersection #3 W Larch Rd/Corral Hollow Rd	Intersection #4 Project Driveway on Naglee Rd	Intersection #5 Project Driveway on Larch Rd
(101) [386] 386 (102) [213] 223 (43) [76] 82 (86) [192] 272 (176) [256] 262 (219) [161] 173	(66) [25] 25 (138) [542] 622 (13) [18] 18 (14) [18] 18 (30) [16] 16 (5) [8] 8 (97) [29] 29 (59) [12] 12 (76) [11] 11 (70) [29] 29 (239) [416] 479 (29) [11] 11	(20) [30] 40 (50) [37] 37 (70) [24] 37 (252) [366] 385 (120) [174] 189 (127) [41] 41	(187) [578] 658 (0) [6] 12 (167) [412] 424 (3) [51] 102	(138) [180] 180 (2) [24] 49 (319) [351] 351 (2) [23] 45 (2) [88] 174 (1) [31] 63



Study Intersections

No.	Intersection
1	Naglee Rd & W Larch Rd
2	Naglee Rd & Auto Plaza Dr
3	Corral Hollow Rd & W Larch Rd
4	Project Driveway on Naglee Rd
5	Project Driveway on Larch Rd

Legend

- 1 Study Intersection
- Traffic Signal
- Stop Sign
- (XX) Weekday PM Peak Hour Volume
- [XX] Weekend Late AM Peak Hour Volume
- XX Weekend Special Events Peak Hour Volume

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9.0 CONCLUSION

Based on the results of the analysis, the following is a summary of our findings:

Existing Traffic Conditions

Two of the intersections operate at acceptable LOS C or better indicating acceptable conditions. The T-intersection of Naglee Road and W Larch Road is estimated to operate at LOS E during late Sunday morning. Peak hour signal warrant evaluated for the intersection of is not met.

Proposed Project Trip Generation

The Project is estimated to attract approximately 100 attendees during the weekday and 250 during the weekend worship events. It is estimated that the Project will generate approximately 10 weekday PM peak hour and 223 peak hour trips during weekends.

The religious assembly also proposes to have four (4) special events per year. The special event is assumed to include 500 attendees. It is estimated that the Project will generate approximately 445 peak hour trips during special events.

Existing Plus Approved Projects (EPAP) Traffic Condition

Based on discussions with the County and City of Tracy staff, four approved projects in the vicinity of the proposed Project were included in the evaluation. Two of the intersections operate at acceptable LOS C or better indicating acceptable conditions. However, the intersection of Naglee Road and W Larch Road is estimated to deteriorate from LOS E to LOS F during late Sunday AM hours.

It is estimated that the intersection will operate at LOS C if it is converted to All Way Stop Control.

Existing Plus Approved Plus Project Traffic Condition

Similar to the Existing Plus Approved Projects scenario, it is estimated that two study intersections would operate acceptably at LOS C or better during peak hours and special events. Also, as in the EPAP scenario, the intersection of Naglee Road and W Larch Road is estimated to operate at LOS F during late Sunday morning. Due to increased traffic volumes and an uptick of collisions since 2019, use of All Way Stop Control (AWSC) would be appropriate. A peak hour signal warrant for the intersection of Naglee Road and W Larch Road is met during late Sunday morning and during special events so having an AWSC might be a good interim measure. This would also provide for further traffic monitoring of the AWSC operation.

The proposed Project site plan shows 365 parking stalls and eight ADA parking spaces. Therefore, the estimated parking demand based on the average ITE rate and County parking requirements for both weekdays and weekend services could be adequately accommodated.

It is estimated that a significant amount of traffic would be using this driveway to enter the site. To prevent any slowing or backups that could block northbound through traffic, a right-turn deceleration lane should be provided.

Cumulative (No Project) Condition

The scenario is similar to the Existing Conditions, but with a projected growth rate of one percent per year applied over 20 years to project traffic demands for the Year 2044.

It is estimated that two study intersections (Naglee Road/W Larch Road and Naglee Road/Auto Plaza Drive) would operate unacceptably at LOS E/F for one of the peak hours. A peak hour signal warrant for the intersection of Naglee Road and W Larch Road is met during late Sunday morning. As indicated under Existing Plus Approved Plus Project scenario, due to increased traffic volumes and an uptick of collisions since 2019 at the intersection of Naglee Road and W Larch Road, use of All Way Stop Control (AWSC) would be appropriate interim measure. Further monitoring could determine if additional traffic control might be necessary in the long-term.

Cumulative plus Project Condition

Similar to the Cumulative No Project Condition, it is estimated that two study intersections (Naglee Road/W Larch Road and Naglee Road/Auto Plaza Drive) would operate unacceptably at LOS E/F during the peak hours and during special events. A peak hour signal warrant for the intersection of Naglee Road and W Larch Road is met during late Sunday morning and special events. As indicated under Existing Plus Approved Plus Project scenario, due to increased traffic volumes and an uptick of collisions since 2019 at the intersection of Naglee Road and W Larch Road, use of All Way Stop Control (AWSC) would be appropriate interim measure. Further monitoring could determine if additional traffic control might be necessary in the long-term. If a signal is installed, the LOS would operate at LOS D or better.

REFERENCES

1. *Trip Generation, 10th Edition*, published by the Institute of Transportation Engineers (ITE)
2. Performance Measurement System (PeMS) Data Source
3. *Traffic Impact Study for the Expansion of a Sikh Temple - Gurudwara Gur Nanak Parkash in San Joaquin County, July 25, 2011*

Advanced Mobility Group

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Anju Pillai, PE	City of Tracy
Al Gali	City of Tracy

Appendix A **TRAFFIC VOLUME COUNTS**

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

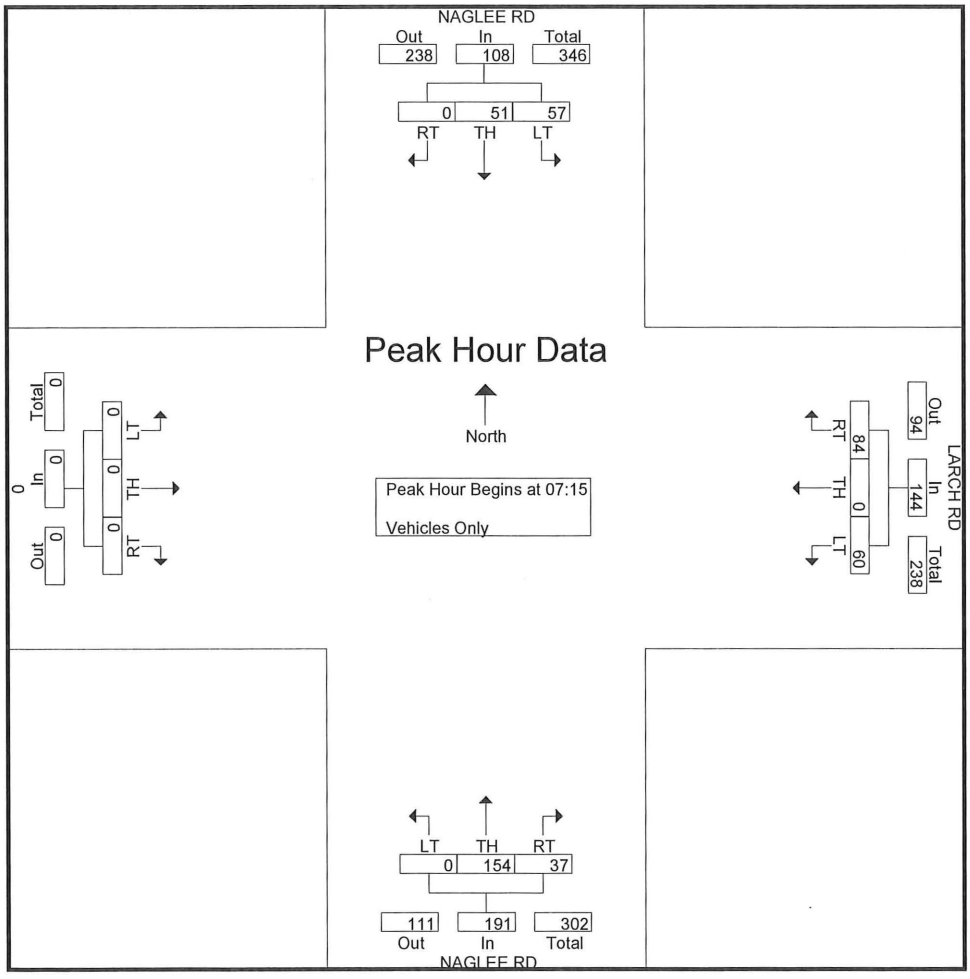
CITY OF TRACY
Naglee Rd. & Larch Rd.
Latitude: 37.765455
Longitude: -121.462234

File Name : naglee-larch-a
Site Code : 1
Start Date : 2/29/2024
Page No : 1

Groups Printed- Vehicles Only

	NAGLEE RD Southbound				LARCH RD Westbound				NAGLEE RD Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	0	5	3	8	27	0	3	30	6	50	0	56	0	0	0	0	94
07:15	0	10	9	19	17	0	14	31	8	42	0	50	0	0	0	0	100
07:30	0	10	5	15	26	0	12	38	4	42	0	46	0	0	0	0	99
07:45	0	13	18	31	25	0	17	42	10	47	0	57	0	0	0	0	130
Total	0	38	35	73	95	0	46	141	28	181	0	209	0	0	0	0	423
08:00	0	18	25	43	16	0	17	33	15	23	0	38	0	0	0	0	114
08:15	0	21	18	39	20	0	13	33	6	16	0	22	0	0	0	0	94
08:30	0	18	8	26	16	0	13	29	10	20	0	30	0	0	0	0	85
08:45	0	30	8	38	9	0	27	36	6	15	0	21	0	0	0	0	95
Total	0	87	59	146	61	0	70	131	37	74	0	111	0	0	0	0	388
Grand Total	0	125	94	219	156	0	116	272	65	255	0	320	0	0	0	0	811
Apprch %	0	57.1	42.9		57.4	0	42.6		20.3	79.7	0		0	0	0		
Total %	0	15.4	11.6	27	19.2	0	14.3	33.5	8	31.4	0	39.5	0	0	0	0	

	NAGLEE RD Southbound				LARCH RD Westbound				NAGLEE RD Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15																	
07:15	0	10	9	19	17	0	14	31	8	42	0	50	0	0	0	0	100
07:30	0	10	5	15	**26**	0	12	38	4	42	0	46	0	0	0	0	99
07:45	0	13	18	31	25	0	**17**	**42**	10	**47**	0	**57**	0	0	0	0	**130**
08:00	0	**18**	**25**	**43**	16	0	17	33	**15**	23	0	38	0	0	0	0	114
Total Volume	0	51	57	108	84	0	60	144	37	154	0	191	0	0	0	0	443
% App. Total	0	47.2	52.8		58.3	0	41.7		19.4	80.6	0		0	0	0		
PHF	.000	.708	.570	.628	.808	.000	.882	.857	.617	.819	.000	.838	.000	.000	.000	.000	.852



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

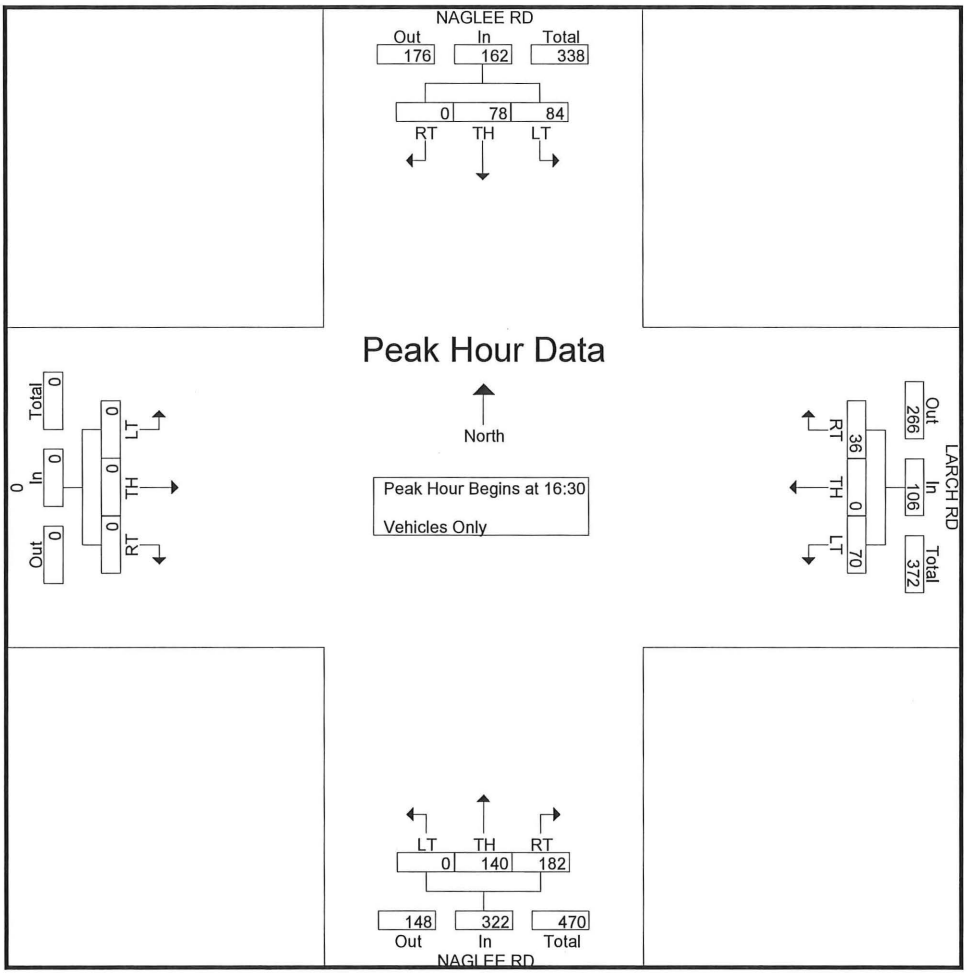
CITY OF TRACY
Naglee Rd. & Larch Rd.
Latitude: 37.765455
Longitude: -121.462234

File Name : naglee-larch-p
Site Code : 1
Start Date : 2/28/2024
Page No : 1

Groups Printed- Vehicles Only

	NAGLEE RD Southbound				LARCH RD Westbound				NAGLEE RD Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	0	24	26	50	3	0	21	24	42	25	0	67	0	0	0	0	141
16:15	0	27	24	51	17	0	18	35	38	25	0	63	0	0	0	0	149
16:30	0	19	15	34	10	0	16	26	43	34	0	77	0	0	0	0	137
16:45	0	22	17	39	6	0	22	28	40	39	0	79	0	0	0	0	146
Total	0	92	82	174	36	0	77	113	163	123	0	286	0	0	0	0	573
17:00	0	21	20	41	10	0	12	22	50	35	0	85	0	0	0	0	148
17:15	0	16	32	48	10	0	20	30	49	32	0	81	0	0	0	0	159
17:30	0	10	17	27	14	0	18	32	38	31	0	69	0	0	0	0	128
17:45	0	25	19	44	15	0	15	30	28	24	0	52	0	0	0	0	126
Total	0	72	88	160	49	0	65	114	165	122	0	287	0	0	0	0	561
Grand Total	0	164	170	334	85	0	142	227	328	245	0	573	0	0	0	0	1134
Apprch %	0	49.1	50.9		37.4	0	62.6		57.2	42.8	0		0	0	0		
Total %	0	14.5	15	29.5	7.5	0	12.5	20	28.9	21.6	0	50.5	0	0	0	0	

	NAGLEE RD Southbound				LARCH RD Westbound				NAGLEE RD Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	0	19	15	34	**10**	0	16	26	43	34	0	77	0	0	0	0	137
16:45	0	**22**	17	39	6	0	**22**	28	40	**39**	0	79	0	0	0	0	146
17:00	0	21	20	41	10	0	12	22	**50**	35	0	**85**	0	0	0	0	148
17:15	0	16	**32**	**48**	10	0	20	**30**	49	32	0	81	0	0	0	0	**159**
Total Volume	0	78	84	162	36	0	70	106	182	140	0	322	0	0	0	0	590
% App. Total	0	48.1	51.9		34	0	66		56.5	43.5	0		0	0	0		
PHF	.000	.886	.656	.844	.900	.000	.795	.883	.910	.897	.000	.947	.000	.000	.000	.000	.928



TRAFFIC COUNTS PLUS
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CITY OF TRACY
Naglee Rd. & Larch Rd.
Latitude: 37.765455
Longitude: -121.462234

File Name : naglee-larch-s
Site Code : 1
Start Date : 3/3/2024
Page No : 1

Groups Printed- Vehicles Only

	NAGLEE RD Southbound				LARCH RD Westbound				NAGLEE RD Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
10:00	0	18	10	28	6	0	16	22	8	10	0	18	0	0	0	0	68
10:15	0	40	18	58	9	0	11	20	10	22	0	32	0	0	0	0	110
10:30	0	25	34	59	35	0	15	50	15	22	0	37	0	0	0	0	146
10:45	0	28	29	57	21	0	9	30	18	28	0	46	0	0	0	0	133
Total	0	111	91	202	71	0	51	122	51	82	0	133	0	0	0	0	457
11:00	0	52	37	89	14	0	18	32	25	33	0	58	0	0	0	0	179
11:15	0	65	34	99	12	0	14	26	32	30	0	62	0	0	0	0	187
11:30	0	57	34	91	10	0	19	29	26	32	0	58	0	0	0	0	178
11:45	0	60	32	92	12	0	34	46	31	37	0	68	0	0	0	0	206
Total	0	234	137	371	48	0	85	133	114	132	0	246	0	0	0	0	750
12:00	0	63	47	110	16	0	14	30	32	32	0	64	0	0	0	0	204
12:15	0	65	56	121	20	0	25	45	34	37	0	71	0	0	0	0	237
12:30	0	40	23	63	27	0	21	48	24	33	0	57	0	0	0	0	168
12:45	0	59	63	122	16	0	14	30	10	21	0	31	0	0	0	0	183
Total	0	227	189	416	79	0	74	153	100	123	0	223	0	0	0	0	792
Grand Total	0	572	417	989	198	0	210	408	265	337	0	602	0	0	0	0	1999
Apprch %	0	57.8	42.2		48.5	0	51.5		44	56	0		0	0	0		
Total %	0	28.6	20.9	49.5	9.9	0	10.5	20.4	13.3	16.9	0	30.1	0	0	0	0	

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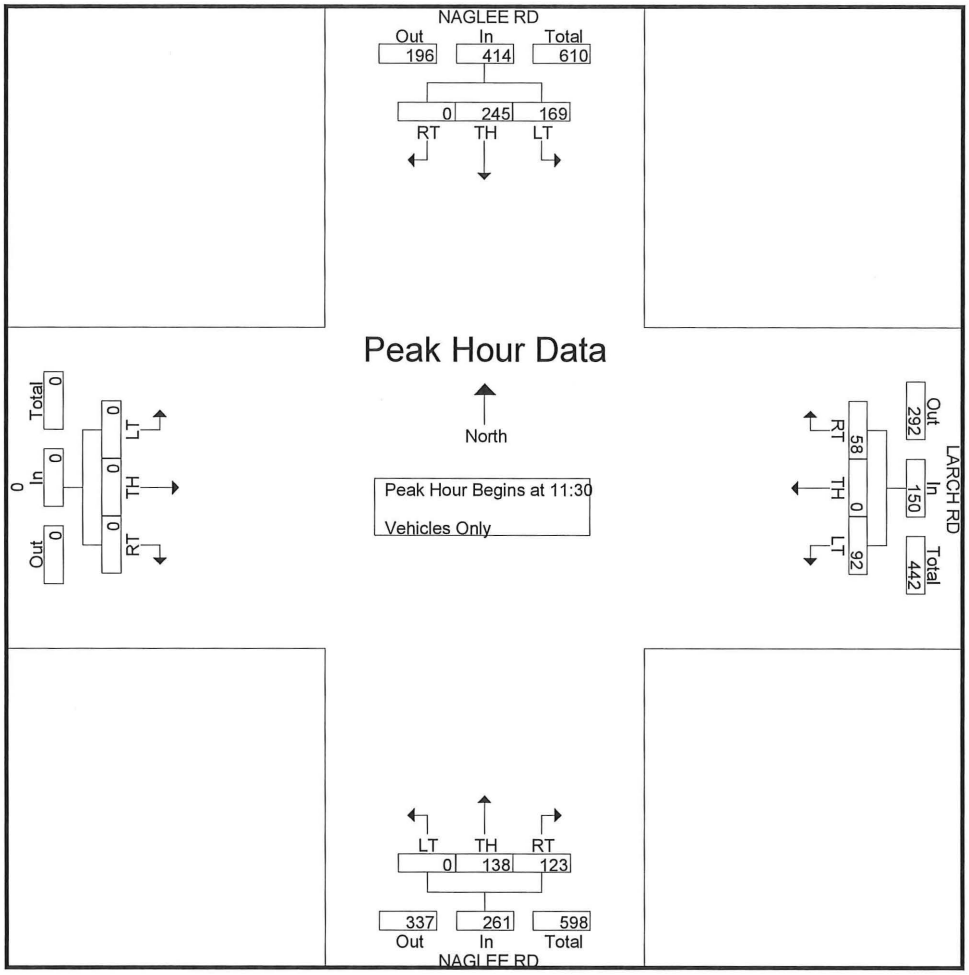
CITY OF TRACY
Naglee Rd. & Larch Rd.
Latitude: 37.765455
Longitude: -121.462234

File Name : naglee-larch-s
Site Code : 1
Start Date : 3/3/2024
Page No : 2

	NAGLEE RD Southbound				LARCH RD Westbound				NAGLEE RD Northbound				0 Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 10:00 to 12:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:30																	
11:30	0	57	34	91	10	0	19	29	26	32	0	58	0	0	0	0	178
11:45	0	60	32	92	12	0	**34**	**46**	31	**37**	0	68	0	0	0	0	206
12:00	0	63	47	110	16	0	14	30	32	32	0	64	0	0	0	0	204
12:15	0	**65**	**56**	**121**	**20**	0	25	45	**34**	37	0	**71**	0	0	0	0	**237**
Total Volume	0	245	169	414	58	0	92	150	123	138	0	261	0	0	0	0	825
% App. Total	0	59.2	40.8		38.7	0	61.3		47.1	52.9	0		0	0	0		
PHF	.000	.942	.754	.855	.725	.000	.676	.815	.904	.932	.000	.919	.000	.000	.000	.000	.870



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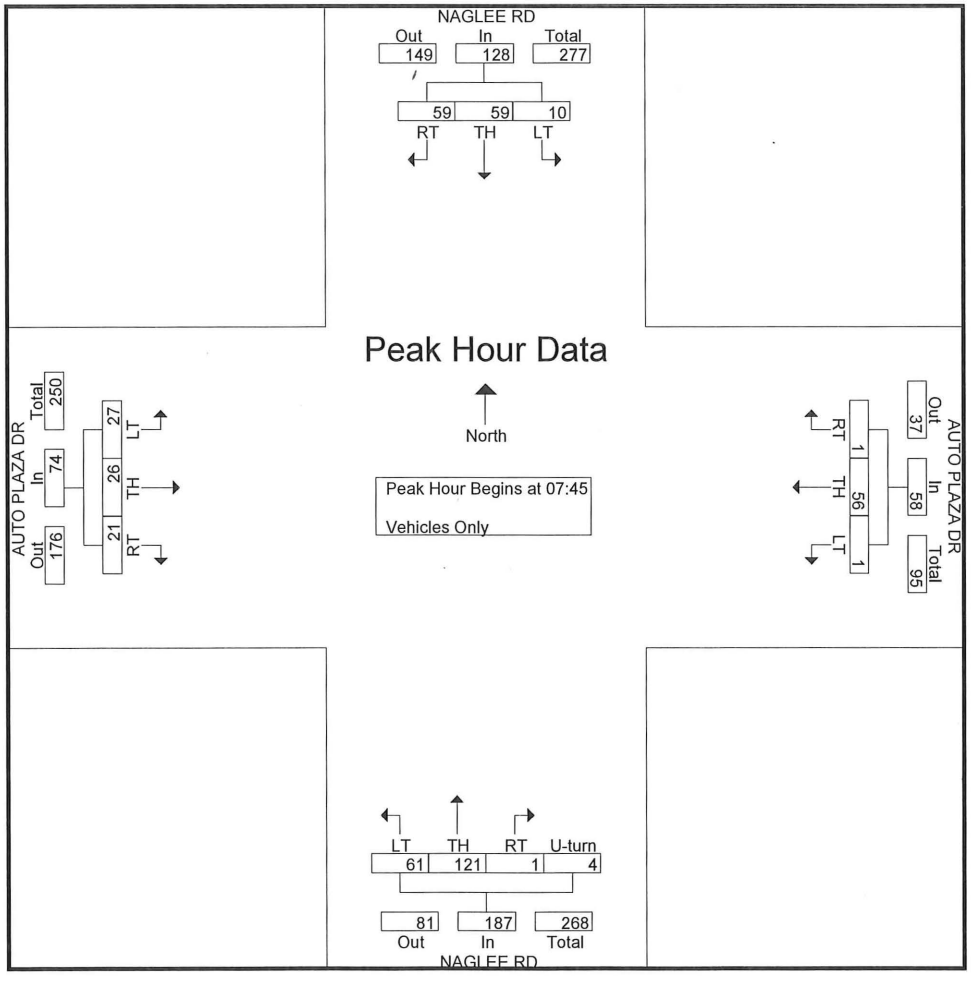
CITY OF TRACY
Naglee Rd. & Auto Plaza Dr.
Latitude: 37.763103
Longitude: -121.462395

File Name : naglee-auto plaza-a
Site Code : 2
Start Date : 2/29/2024
Page No : 1

Groups Printed- Vehicles Only

	NAGLEE RD Southbound				AUTO PLAZA DR Westbound				NAGLEE RD Northbound					AUTO PLAZA DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	3	5	0	8	0	2	0	2	0	51	9	0	60	2	4	8	14	84
07:15	7	13	3	23	0	8	1	9	0	41	6	0	47	3	1	5	9	88
07:30	13	9	1	23	0	8	0	8	0	44	13	0	57	5	4	3	12	100
07:45	15	11	3	29	0	11	0	11	0	53	12	0	65	3	9	6	18	123
Total	38	38	7	83	0	29	1	30	0	189	40	0	229	13	18	22	53	395
08:00	16	13	5	34	0	15	0	15	1	32	14	0	47	1	9	4	14	110
08:15	13	22	1	36	1	12	1	14	0	15	13	2	30	8	4	7	19	99
08:30	15	13	1	29	0	18	0	18	0	21	22	2	45	9	4	10	23	115
08:45	23	29	5	57	1	11	0	12	1	11	16	1	29	10	3	5	18	116
Total	67	77	12	156	2	56	1	59	2	79	65	5	151	28	20	26	74	440
Grand Total	105	115	19	239	2	85	2	89	2	268	105	5	380	41	38	48	127	835
Apprch %	43.9	48.1	7.9		2.2	95.5	2.2		0.5	70.5	27.6	1.3		32.3	29.9	37.8		
Total %	12.6	13.8	2.3	28.6	0.2	10.2	0.2	10.7	0.2	32.1	12.6	0.6	45.5	4.9	4.6	5.7	15.2	

	NAGLEE RD Southbound				AUTO PLAZA DR Westbound				NAGLEE RD Northbound					AUTO PLAZA DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 07:45																		
07:45	15	11	3	29	0	11	0	11	0	**53**	12	0	**65**	3	**9**	6	18	**123**
08:00	**16**	13	**5**	34	0	15	0	15	**1**	32	14	0	47	1	9	4	14	110
08:15	13	**22**	1	**36**	**1**	12	**1**	14	0	15	13	**2**	30	8	4	7	19	99
08:30	15	13	1	29	0	**18**	0	**18**	0	21	**22**	2	45	**9**	4	**10**	**23**	115
Total Volume	59	59	10	128	1	56	1	58	1	121	61	4	187	21	26	27	74	447
% App. Total	46.1	46.1	7.8		1.7	96.6	1.7		0.5	64.7	32.6	2.1		28.4	35.1	36.5		
PHF	.922	.670	.500	.889	.250	.778	.250	.806	.250	.571	.693	.500	.719	.583	.722	.675	.804	.909



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

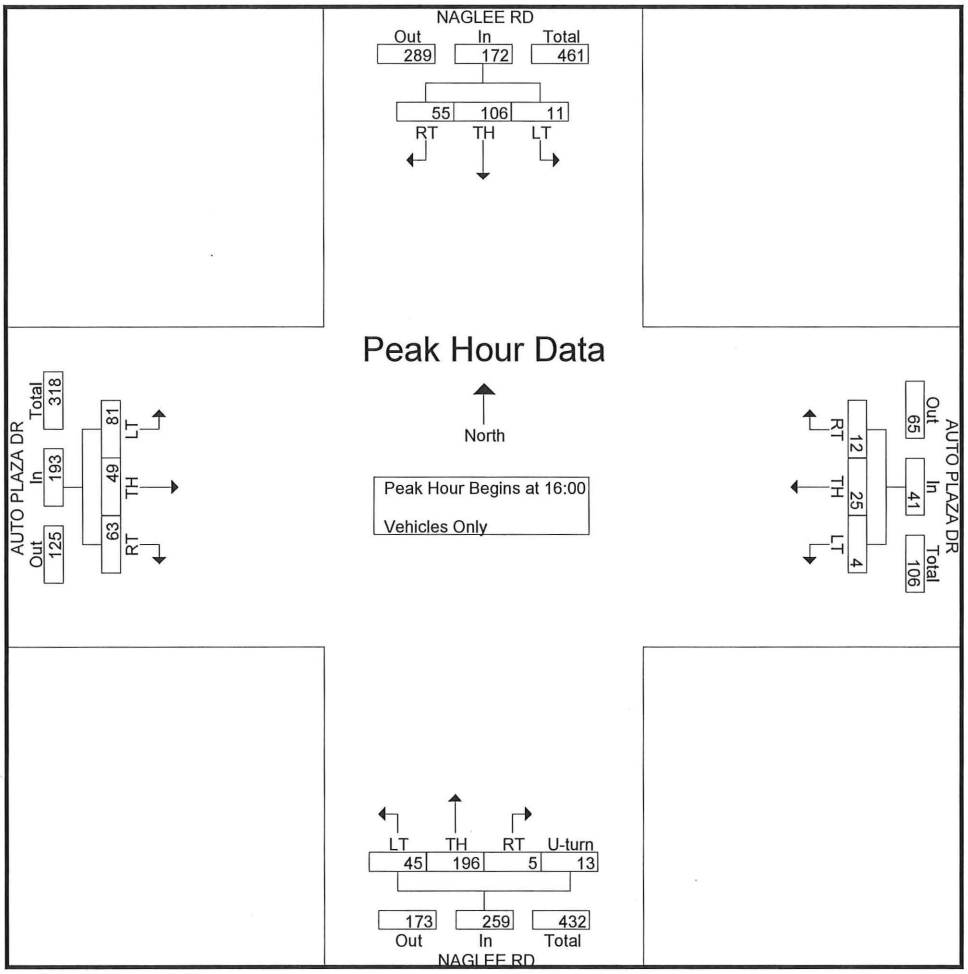
CITY OF TRACY
Naglee Rd. & Auto Plaza Dr.
Latitude: 37.763103
Longitude: -121.462395

File Name : naglee-auto plaza-p
Site Code : 2
Start Date : 2/28/2024
Page No : 1

Groups Printed- Vehicles Only

	NAGLEE RD Southbound				AUTO PLAZA DR Westbound				NAGLEE RD Northbound					AUTO PLAZA DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	13	30	2	45	4	4	0	8	1	38	19	2	60	19	11	23	53	166
16:15	14	25	6	45	3	8	0	11	3	46	9	2	60	11	18	15	44	160
16:30	10	23	2	35	4	4	1	9	1	59	12	5	77	16	8	17	41	162
16:45	18	28	1	47	1	9	3	13	0	53	5	4	62	17	12	26	55	177
Total	55	106	11	172	12	25	4	41	5	196	45	13	259	63	49	81	193	665
17:00	8	23	2	33	3	3	1	7	0	56	7	0	63	12	14	25	51	154
17:15	8	25	2	35	3	4	1	8	1	59	4	0	64	11	8	18	37	144
17:30	4	23	2	29	0	0	1	1	1	43	7	1	52	2	14	24	40	122
17:45	5	33	2	40	2	6	1	9	0	37	5	1	43	1	11	12	24	116
Total	25	104	8	137	8	13	4	25	2	195	23	2	222	26	47	79	152	536
Grand Total	80	210	19	309	20	38	8	66	7	391	68	15	481	89	96	160	345	1201
Apprch %	25.9	68	6.1		30.3	57.6	12.1		1.5	81.3	14.1	3.1		25.8	27.8	46.4		
Total %	6.7	17.5	1.6	25.7	1.7	3.2	0.7	5.5	0.6	32.6	5.7	1.2	40	7.4	8	13.3	28.7	

	NAGLEE RD Southbound				AUTO PLAZA DR Westbound				NAGLEE RD Northbound					AUTO PLAZA DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 16:00																		
16:00	13	**30**	2	45	**4**	4	0	8	1	38	**19**	2	60	**19**	11	23	53	166
16:15	14	25	**6**	45	3	8	0	11	**3**	46	9	2	60	11	**18**	15	44	160
16:30	10	23	2	35	4	4	1	9	1	**59**	12	**5**	**77**	16	8	17	41	162
16:45	**18**	28	1	**47**	1	**9**	**3**	**13**	0	53	5	4	62	17	12	**26**	**55**	**177**
Total Volume	55	106	11	172	12	25	4	41	5	196	45	13	259	63	49	81	193	665
% App. Total	32	61.6	6.4		29.3	61	9.8		1.9	75.7	17.4	5		32.6	25.4	42		
PHF	.764	.883	.458	.915	.750	.694	.333	.788	.417	.831	.592	.650	.841	.829	.681	.779	.877	.939



TRAFFIC COUNTS PLUS
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CITY OF TRACY
Naglee Rd. & Auto Plaza Dr.
Latitude: 37.763103
Longitude: -121.462395

File Name : naglee-auto plaza-s
Site Code : 2
Start Date : 3/3/2024
Page No : 1

Groups Printed- Vehicles Only

	NAGLEE RD Southbound				AUTO PLAZA DR Westbound				NAGLEE RD Northbound					AUTO PLAZA DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
10:00	6	25	3	34	0	2	1	3	0	17	8	0	25	1	0	1	2	64
10:15	4	45	3	52	1	3	0	4	1	27	4	0	32	1	2	4	7	95
10:30	8	31	3	42	3	3	0	6	0	29	4	4	37	4	0	5	9	94
10:45	2	29	5	36	2	1	0	3	2	42	2	3	49	1	2	1	4	92
Total	20	130	14	164	6	9	1	16	3	115	18	7	143	7	4	11	22	345
11:00	5	57	6	68	3	3	3	9	3	46	3	0	52	3	3	10	16	145
11:15	4	70	4	78	5	1	1	7	4	50	3	3	60	1	0	7	8	153
11:30	5	72	3	80	4	3	2	9	5	48	2	3	58	1	3	5	9	156
11:45	7	82	5	94	4	1	2	7	2	62	4	1	69	2	0	5	7	177
Total	21	281	18	320	16	8	8	32	14	206	12	7	239	7	6	27	40	631
12:00	3	69	4	76	5	6	1	12	1	53	8	1	63	4	4	3	11	162
12:15	6	83	3	92	2	3	2	7	1	60	2	3	66	2	3	11	16	181
12:30	11	47	3	61	3	3	4	10	1	46	2	1	50	1	2	7	10	131
12:45	3	67	2	72	0	3	0	3	0	31	0	0	31	1	2	1	4	110
Total	23	266	12	301	10	15	7	32	3	190	12	5	210	8	11	22	41	584
Grand Total	64	677	44	785	32	32	16	80	20	511	42	19	592	22	21	60	103	1560
Apprch %	8.2	86.2	5.6		40	40	20		3.4	86.3	7.1	3.2		21.4	20.4	58.3		
Total %	4.1	43.4	2.8	50.3	2.1	2.1	1	5.1	1.3	32.8	2.7	1.2	37.9	1.4	1.3	3.8	6.6	

TRAFFIC COUNTS PLUS
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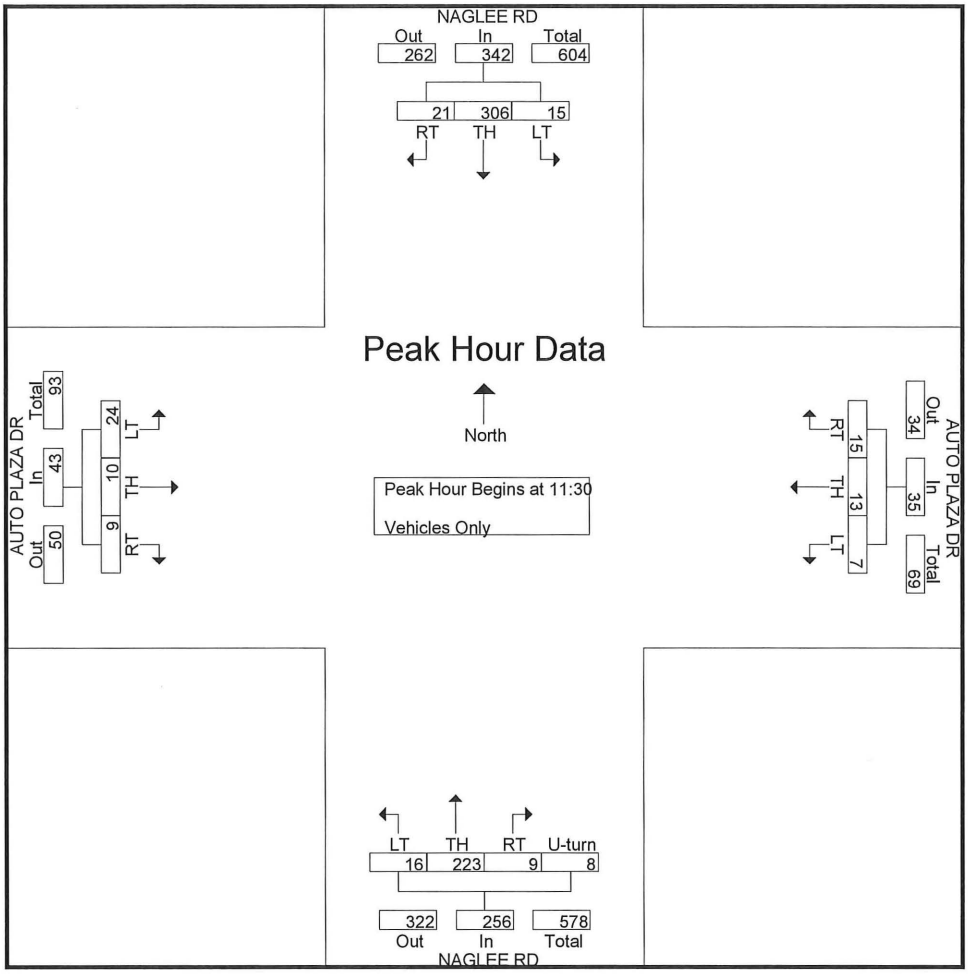
CITY OF TRACY
Naglee Rd. & Auto Plaza Dr.
Latitude: 37.763103
Longitude: -121.462395

File Name : naglee-auto plaza-s
Site Code : 2
Start Date : 3/3/2024
Page No : 2

	NAGLEE RD Southbound				AUTO PLAZA DR Westbound				NAGLEE RD Northbound					AUTO PLAZA DR Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	U-turn	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 10:00 to 12:45 - Peak 1 of 1																		
Peak Hour for Entire Intersection Begins at 11:30																		
11:30	5	72	3	80	4	3	**2**	9	**5**	48	2	**3**	58	1	3	5	9	156
11:45	**7**	82	**5**	**94**	4	1	2	7	2	**62**	4	1	**69**	2	0	5	7	177
12:00	3	69	4	76	**5**	**6**	1	**12**	1	53	**8**	1	63	**4**	**4**	3	11	162
12:15	6	**83**	3	92	2	3	2	7	1	60	2	3	66	2	3	**11**	**16**	**181**
Total Volume	21	306	15	342	15	13	7	35	9	223	16	8	256	9	10	24	43	676
% App. Total	6.1	89.5	4.4		42.9	37.1	20		3.5	87.1	6.2	3.1		20.9	23.3	55.8		
PHF	.750	.922	.750	.910	.750	.542	.875	.729	.450	.899	.500	.667	.928	.563	.625	.545	.672	.934



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

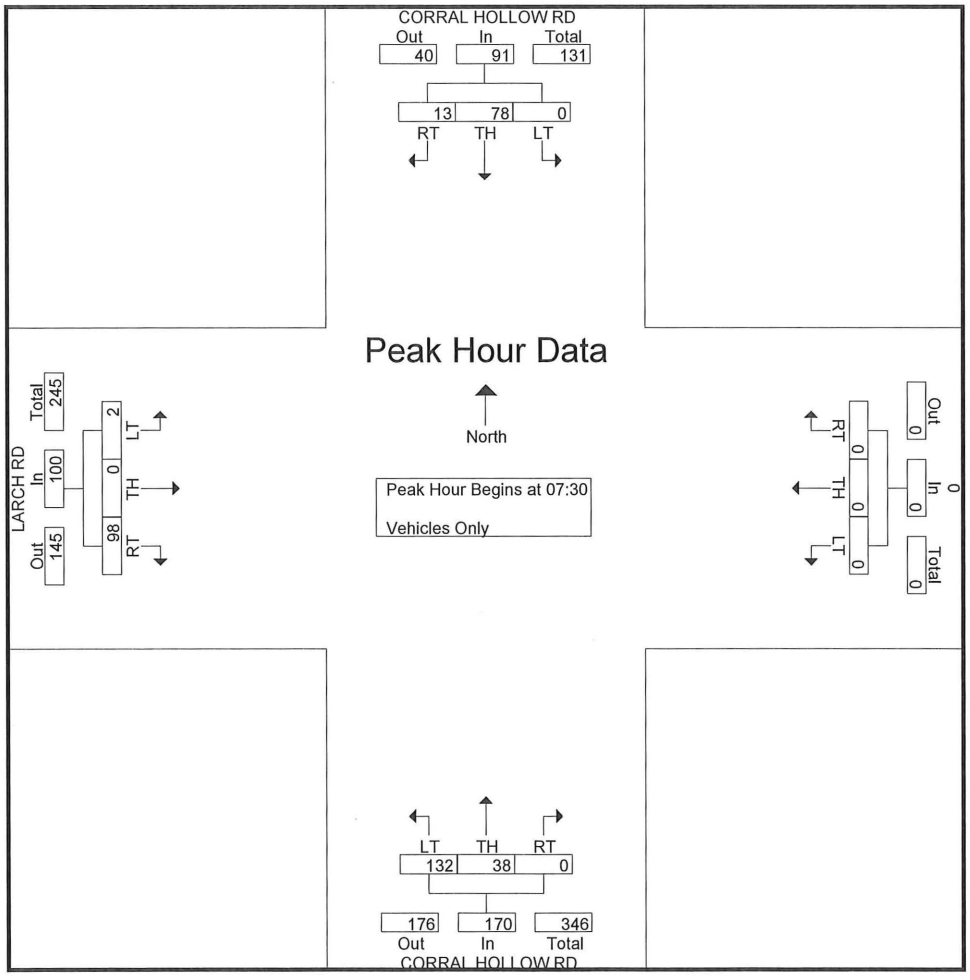
CITY OF TRACY
Corral Hollow Rd. & Larch Rd.
Latitude: 37.765528
Longitude: -121.453357

File Name : corral hollow-larch-a
Site Code : 3
Start Date : 2/29/2024
Page No : 1

Groups Printed- Vehicles Only

	CORRAL HOLLOW RD Southbound				0 Westbound				CORRAL HOLLOW RD Northbound				LARCH RD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
07:00	1	6	0	7	0	0	0	0	0	5	27	32	7	0	0	7	46
07:15	5	18	0	23	0	0	0	0	0	8	26	34	14	0	4	18	75
07:30	2	12	0	14	0	0	0	0	0	10	40	50	9	0	1	10	74
07:45	6	26	0	32	0	0	0	0	0	6	33	39	26	0	0	26	97
Total	14	62	0	76	0	0	0	0	0	29	126	155	56	0	5	61	292
08:00	2	26	0	28	0	0	0	0	0	11	29	40	39	0	0	39	107
08:15	3	14	0	17	0	0	0	0	0	11	30	41	24	0	1	25	83
08:30	3	9	0	12	0	0	0	0	0	10	29	39	16	0	1	17	68
08:45	2	5	0	7	0	0	0	0	0	8	33	41	18	0	0	18	66
Total	10	54	0	64	0	0	0	0	0	40	121	161	97	0	2	99	324
Grand Total	24	116	0	140	0	0	0	0	0	69	247	316	153	0	7	160	616
Apprch %	17.1	82.9	0		0	0	0		0	21.8	78.2		95.6	0	4.4		
Total %	3.9	18.8	0	22.7	0	0	0	0	0	11.2	40.1	51.3	24.8	0	1.1	26	

	CORRAL HOLLOW RD Southbound				0 Westbound				CORRAL HOLLOW RD Northbound				LARCH RD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 07:00 to 08:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30																	
07:30	2	12	0	14	0	0	0	0	0	10	**40**	**50**	9	0	**1**	10	74
07:45	**6**	**26**	0	**32**	0	0	0	0	0	6	33	39	26	0	0	26	97
08:00	2	26	0	28	0	0	0	0	0	**11**	29	40	**39**	0	0	**39**	**107**
08:15	3	14	0	17	0	0	0	0	0	11	30	41	24	0	1	25	83
Total Volume	13	78	0	91	0	0	0	0	0	38	132	170	98	0	2	100	361
% App. Total	14.3	85.7	0		0	0	0		0	22.4	77.6		98	0	2		
PHF	.542	.750	.000	.711	.000	.000	.000	.000	.000	.864	.825	.850	.628	.000	.500	.641	.843



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

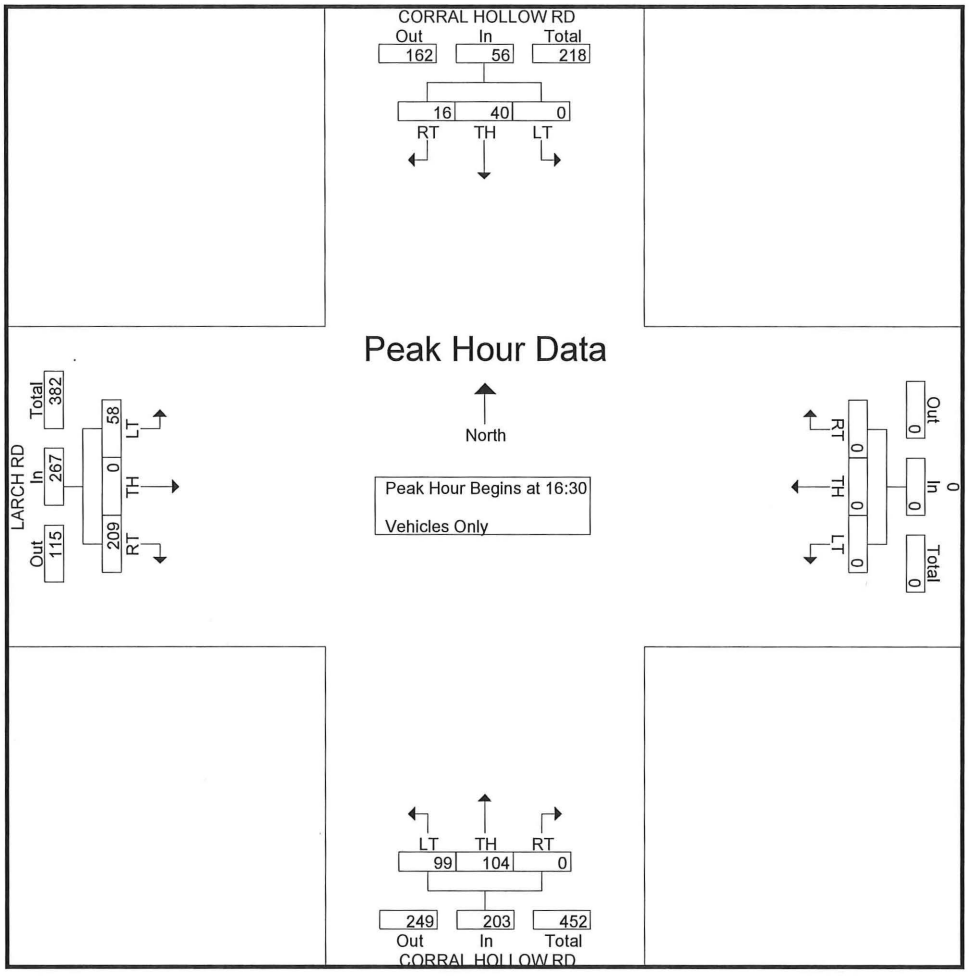
CITY OF TRACY
Corral Hollow Rd. & Larch Rd.
Latitude: 37.765528
Longitude: -121.453357

File Name : corral hollow-larch-p
Site Code : 3
Start Date : 2/28/2024
Page No : 1

Groups Printed- Vehicles Only

	CORRAL HOLLOW RD Southbound				0 Westbound				CORRAL HOLLOW RD Northbound				LARCH RD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
16:00	1	10	0	11	0	0	0	0	0	40	28	68	53	0	12	65	144
16:15	3	14	0	17	0	0	0	0	0	27	28	55	45	0	16	61	133
16:30	2	8	0	10	0	0	0	0	0	21	23	44	49	0	12	61	115
16:45	4	10	0	14	0	0	0	0	0	24	25	49	42	0	12	54	117
Total	10	42	0	52	0	0	0	0	0	112	104	216	189	0	52	241	509
17:00	4	8	0	12	0	0	0	0	0	36	20	56	55	0	16	71	139
17:15	6	14	0	20	0	0	0	0	0	23	31	54	63	0	18	81	155
17:30	6	6	0	12	0	0	0	0	0	15	20	35	50	0	13	63	110
17:45	6	11	0	17	0	0	0	0	0	20	26	46	39	0	8	47	110
Total	22	39	0	61	0	0	0	0	0	94	97	191	207	0	55	262	514
Grand Total	32	81	0	113	0	0	0	0	0	206	201	407	396	0	107	503	1023
Apprch %	28.3	71.7	0		0	0	0		0	50.6	49.4		78.7	0	21.3		
Total %	3.1	7.9	0	11	0	0	0	0	0	20.1	19.6	39.8	38.7	0	10.5	49.2	

	CORRAL HOLLOW RD Southbound				0 Westbound				CORRAL HOLLOW RD Northbound				LARCH RD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 16:30																	
16:30	2	8	0	10	0	0	0	0	0	21	23	44	49	0	12	61	115
16:45	4	10	0	14	0	0	0	0	0	24	25	49	42	0	12	54	117
17:00	4	8	0	12	0	0	0	0	0	**36**	20	**56**	55	0	16	71	139
17:15	**6**	**14**	0	**20**	0	0	0	0	0	23	**31**	54	**63**	0	**18**	**81**	**155**
Total Volume	16	40	0	56	0	0	0	0	0	104	99	203	209	0	58	267	526
% App. Total	28.6	71.4	0		0	0	0		0	51.2	48.8		78.3	0	21.7		
PHF	.667	.714	.000	.700	.000	.000	.000	.000	.000	.722	.798	.906	.829	.000	.806	.824	.848



TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF TRACY
Corral Hollow Rd. & Larch Rd.
Latitude: 37.765528
Longitude: -121.453357

File Name : corral hollow-larch-s
Site Code : 3
Start Date : 3/3/2024
Page No : 1

Groups Printed- Vehicles Only

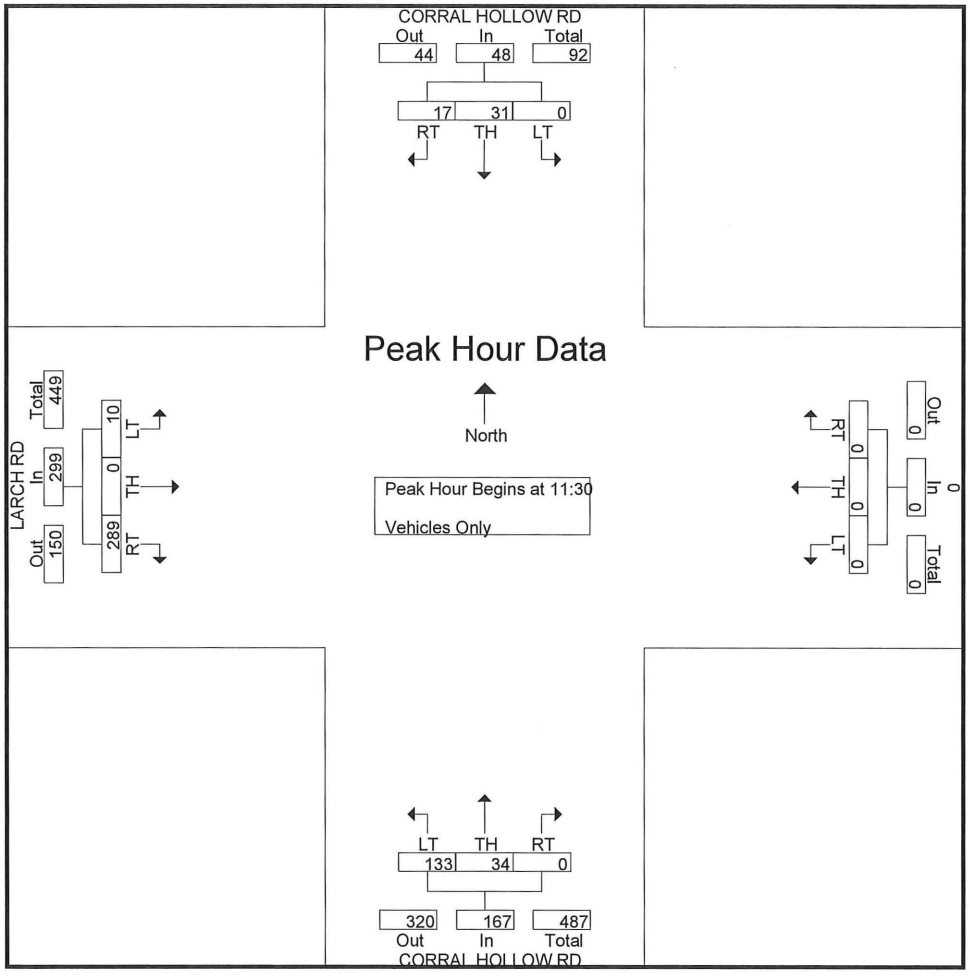
	CORRAL HOLLOW RD Southbound				0 Westbound				CORRAL HOLLOW RD Northbound				LARCH RD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
10:00	3	5	0	8	0	0	0	0	0	7	21	28	17	0	0	17	53
10:15	0	4	0	4	0	0	0	0	0	4	18	22	27	0	0	27	53
10:30	1	6	0	7	0	0	0	0	0	3	49	52	46	0	1	47	106
10:45	1	5	0	6	0	0	0	0	0	11	34	45	46	0	0	46	97
Total	5	20	0	25	0	0	0	0	0	25	122	147	136	0	1	137	309
11:00	4	4	0	8	0	0	0	0	0	4	28	32	64	0	0	64	104
11:15	3	6	0	9	0	0	0	0	0	7	21	28	56	0	4	60	97
11:30	0	10	0	10	0	0	0	0	0	8	29	37	66	0	3	69	116
11:45	8	8	0	16	0	0	0	0	0	6	40	46	58	0	3	61	123
Total	15	28	0	43	0	0	0	0	0	25	118	143	244	0	10	254	440
12:00	3	5	0	8	0	0	0	0	0	5	30	35	73	0	2	75	118
12:15	6	8	0	14	0	0	0	0	0	15	34	49	92	0	2	94	157
12:30	7	14	0	21	0	0	0	0	0	7	38	45	46	0	2	48	114
12:45	3	5	0	8	0	0	0	0	0	11	30	41	47	0	1	48	97
Total	19	32	0	51	0	0	0	0	0	38	132	170	258	0	7	265	486
Grand Total	39	80	0	119	0	0	0	0	0	88	372	460	638	0	18	656	1235
Apprch %	32.8	67.2	0		0	0	0		0	19.1	80.9		97.3	0	2.7		
Total %	3.2	6.5	0	9.6	0	0	0	0	0	7.1	30.1	37.2	51.7	0	1.5	53.1	

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF TRACY
Corral Hollow Rd. & Larch Rd.
Latitude: 37.765528
Longitude: -121.453357

File Name : corral hollow-larch-s
Site Code : 3
Start Date : 3/3/2024
Page No : 2

	CORRAL HOLLOW RD Southbound				0 Westbound				CORRAL HOLLOW RD Northbound				LARCH RD Eastbound				
Start Time	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	RT	TH	LT	App. Total	Int. Total
Peak Hour Analysis From 10:00 to 12:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 11:30																	
11:30	0	**10**	0	10	0	0	0	0	0	8	29	37	66	0	**3**	69	116
11:45	**8**	8	0	**16**	0	0	0	0	0	6	**40**	46	58	0	3	61	123
12:00	3	5	0	8	0	0	0	0	0	5	30	35	73	0	2	75	118
12:15	6	8	0	14	0	0	0	0	0	**15**	34	**49**	**92**	0	2	**94**	**157**
Total Volume	17	31	0	48	0	0	0	0	0	34	133	167	289	0	10	299	514
% App. Total	35.4	64.6	0		0	0	0		0	20.4	79.6		96.7	0	3.3		
PHF	.531	.775	.000	.750	.000	.000	.000	.000	.000	.567	.831	.852	.785	.000	.833	.795	.818



TRAFFIC COUNTS PLUS

mietekm@comcast.net
925.305.4358

CITY OF TRACY
NAGLEE RD. btwn LARCH RD. & AUTO PLAZA DR.

naglee1-n
Site Code: 2n
Latitude: 37.764544
Longitude: -121.462332

NORTHBOUND

Start Time	1 20	21 22	23 24	25 26	27 28	29 30	31 32	33 34	35 36	37 38	39 40	41 42	43 44	45 46	47 48	49 50	51 52	53 54	55 56	57 9999	Total
12 PM	15	1	6	2	11	15	21	26	23	36	31	25	8	5	1	2	2	0	0	0	230
13:00	9	0	0	3	8	22	29	20	41	24	28	10	10	3	4	0	0	0	1	0	212
14:00	13	1	2	6	8	15	22	25	25	20	25	14	15	12	7	2	0	0	0	1	213
15:00	16	2	1	3	8	7	12	25	33	34	36	42	15	17	11	2	5	0	2	1	272
16:00	13	0	0	2	6	8	22	26	39	37	37	40	18	17	9	5	3	2	0	1	285
17:00	7	1	0	2	3	7	31	43	39	43	39	23	16	11	10	5	2	0	1	1	284
18:00	3	0	1	1	3	9	22	30	41	13	23	22	17	12	8	8	2	0	1	0	216
19:00	0	0	0	1	2	8	8	6	12	18	23	17	11	10	11	0	3	4	3	2	139
20:00	2	0	1	0	2	6	11	8	15	13	10	6	9	7	11	6	0	3	0	2	112
21:00	0	1	0	2	3	2	1	2	3	2	3	3	5	5	5	1	3	2	2	2	47
22:00	0	1	0	0	0	0	1	4	1	4	3	6	1	2	0	2	0	0	0	2	27
23:00	0	0	0	0	0	0	2	2	2	3	1	3	1	1	0	0	1	0	1	3	20
02/29/2																					
4	0	0	0	0	0	0	1	0	2	1	1	1	1	0	1	0	0	0	0	1	9
01:00	0	0	0	1	1	1	0	0	1	0	1	1	0	0	0	1	0	0	0	0	7
02:00	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	3
03:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	2
04:00	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	4	1	1	2	6	17
05:00	1	0	0	0	1	0	0	2	3	2	1	3	8	9	6	9	10	9	15	31	110
06:00	7	1	3	0	4	5	11	9	13	20	28	21	27	47	33	34	26	20	17	36	362
07:00	12	1	2	2	1	4	6	7	13	17	15	16	25	23	16	15	10	11	7	7	210
08:00	11	0	3	5	5	5	9	15	13	8	9	6	10	7	1	4	0	0	1	1	113
09:00	5	2	5	4	12	18	12	11	11	13	4	9	2	0	0	0	0	0	0	0	108
10:00	11	0	2	7	5	15	22	12	15	21	18	10	5	4	1	0	1	0	1	0	150
11:00	9	3	0	7	7	11	21	24	10	22	12	10	11	11	2	2	1	0	0	2	165
Total	134	14	26	48	90	158	264	297	356	352	349	289	215	204	139	102	70	52	54	100	3313
Grand Total	134	14	26	48	90	158	264	297	356	352	349	289	215	204	139	102	70	52	54	100	3313

Stats

15th Percentile :	13 MPH
50th Percentile :	35 MPH
85th Percentile :	44 MPH
95th Percentile :	49 MPH
Mean Speed(Average) :	33 MPH
10 MPH Pace Speed :	33-42 MPH
Number in Pace :	1370
Percent in Pace :	42.6%
Number of Vehicles > 35 MPH :	1741
Percent of Vehicles > 35 MPH :	54.2%

TRAFFIC COUNTS PLUS
mietekm@comcast.net
925.305.4358

CITY OF TRACY
NAGLEE RD. btwn LARCH RD. & AUTO PLAZA DR.

naglee1-s
Site Code: 2s
Latitude: 37.764544
Longitude: -121.462332

SOUTHBOUND

Start	1	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	
Time	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	9999	Total
12 PM	5	3	2	3	4	8	10	27	19	28	17	13	11	5	12	4	0	0	1	0	172
13:00	7	0	0	3	1	6	10	22	15	20	14	15	13	7	8	8	3	2	0	1	155
14:00	5	1	1	2	1	2	7	9	14	23	20	17	10	8	9	1	1	3	1	3	138
15:00	9	0	0	1	0	5	4	7	10	16	18	33	21	16	11	11	4	1	0	0	167
16:00	9	0	0	0	1	6	7	12	8	24	24	19	25	12	9	9	4	0	0	1	170
17:00	7	0	0	0	2	2	8	8	20	15	13	17	5	16	9	8	1	5	0	1	137
18:00	3	1	0	1	2	1	4	7	7	7	7	12	13	9	10	7	2	1	0	3	97
19:00	0	0	0	0	0	0	1	5	5	11	6	8	9	5	6	4	3	0	0	1	64
20:00	1	0	0	0	1	6	3	2	2	2	2	10	8	3	3	2	0	1	0	1	47
21:00	0	0	0	0	0	0	1	1	1	1	2	2	2	3	0	2	0	0	1	0	16
22:00	0	0	0	0	0	1	1	1	2	3	2	2	0	3	0	1	0	0	0	0	16
23:00	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	1	0	4
02/29/2																					
4	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	3
01:00	0	0	0	0	0	1	0	0	1	1	1	0	0	0	0	1	0	1	0	0	6
02:00	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	1	0	0	0	0	5
03:00	1	0	0	0	0	1	0	0	0	1	1	1	0	0	0	0	0	0	0	0	5
04:00	0	0	0	0	1	0	0	0	3	0	1	0	1	1	0	0	1	1	0	1	10
05:00	0	0	3	0	0	0	0	2	0	1	0	0	3	0	0	0	1	2	1	1	14
06:00	3	0	0	0	0	1	1	3	3	2	4	5	5	3	2	2	3	0	0	1	38
07:00	2	0	0	1	1	1	2	5	9	11	12	9	6	6	2	6	4	3	3	2	85
08:00	9	1	2	1	2	9	7	13	17	20	13	19	14	12	9	4	3	2	1	0	158
09:00	3	3	3	4	7	6	7	16	11	26	13	12	4	7	5	2	3	2	0	1	135
10:00	7	0	0	0	1	7	6	13	9	16	20	12	19	12	9	4	1	1	1	1	139
11:00	7	2	5	7	4	9	11	21	17	15	14	16	19	11	5	2	1	3	2	0	171
Total	78	11	16	23	28	73	90	177	174	245	204	223	188	140	109	79	35	28	12	19	1952
Grand Total	78	11	16	23	28	73	90	177	174	245	204	223	188	140	109	79	35	28	12	19	1952

Stats

15th Percentile :	13 MPH
50th Percentile :	33 MPH
85th Percentile :	41 MPH
95th Percentile :	45 MPH
Mean Speed(Average) :	31 MPH
10 MPH Pace Speed :	31-40 MPH
Number in Pace :	896
Percent in Pace :	46.4%
Number of Vehicles > 45 MPH :	114
Percent of Vehicles > 45 MPH :	5.9%

TRAFFIC COUNTS PLUS

mietekm@comcast.net
925.305.4358

CITY OF TRACY
LARCH RD. btwn NAGLEE RD. & CORRAL HOLLOW RD.

larch 2
Site Code: 2e
Latitude: 37.76544
Longitude: -121.45879

EASTBOUND

Start	1	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	
Time	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	9999	Total
12 PM	7	2	2	7	7	19	21	17	12	22	12	10	11	6	1	1	1	0	1	1	160
13:00	10	0	1	2	11	15	20	24	30	21	14	5	12	5	3	2	0	0	0	0	175
14:00	8	4	6	5	5	15	18	23	25	18	27	12	6	7	4	3	2	0	1	0	189
15:00	2	1	0	8	12	15	16	32	23	36	21	20	12	16	3	2	2	1	0	1	223
16:00	2	0	2	5	7	22	23	39	38	29	23	18	16	6	4	5	4	0	0	2	245
17:00	6	0	1	3	6	18	25	37	33	45	31	23	13	10	3	5	0	0	0	0	259
18:00	3	2	3	9	18	11	23	23	21	19	12	15	7	8	4	1	5	2	1	1	188
19:00	3	0	2	2	4	4	11	12	24	12	9	6	5	7	1	1	0	1	1	1	106
20:00	2	1	0	1	4	5	8	6	9	10	8	11	2	5	2	4	2	0	2	0	82
21:00	1	0	0	0	3	8	5	3	1	3	2	3	0	2	1	0	2	0	1	0	35
22:00	0	1	0	1	1	1	1	1	3	2	1	0	0	0	1	0	1	0	0	1	15
23:00	0	0	0	0	0	0	1	3	1	0	0	0	1	0	1	0	0	1	0	0	8
02/29/2																					
4	0	2	0	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	0	0	5
01:00	0	1	0	1	0	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	7
02:00	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	2
03:00	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	3
04:00	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	3
05:00	0	0	0	0	0	1	2	6	0	1	3	2	2	0	0	0	0	0	0	0	17
06:00	1	0	0	3	0	2	2	1	3	6	3	1	2	1	1	0	0	0	1	0	27
07:00	3	1	0	1	4	7	6	4	7	10	5	4	3	5	2	2	2	0	0	0	66
08:00	0	0	3	1	3	7	8	13	12	13	15	10	2	2	1	0	2	0	0	1	93
09:00	6	1	3	5	9	7	14	13	9	12	8	5	1	3	0	1	0	0	0	0	97
10:00	4	3	3	2	9	18	13	17	13	9	3	2	5	1	1	1	0	0	0	1	105
11:00	10	2	3	7	12	9	20	13	13	18	5	5	8	2	2	3	0	0	0	1	133
Total	68	21	29	63	115	187	238	289	279	289	203	153	110	86	35	31	23	6	8	10	2243
Grand Total	68	21	29	63	115	187	238	289	279	289	203	153	110	86	35	31	23	6	8	10	2243

Stats

15th Percentile :	18 MPH
50th Percentile :	39 MPH
85th Percentile :	47 MPH
95th Percentile :	51 MPH
Mean Speed(Average) :	37 MPH
10 MPH Pace Speed :	37-46 MPH
Number in Pace :	1067
Percent in Pace :	47.8%
Number of Vehicles > 55 MPH :	48
Percent of Vehicles > 55 MPH :	2.2%

TRAFFIC COUNTS PLUS

mietekm@comcast.net
925.305.4358

CITY OF TRACY
LARCH RD. btwn NAGLEE RD. & CORRAL HOLLOW RD.

larch 2
Site Code: 2e
Latitude: 37.76544
Longitude: -121.45879

WESTBOUND

Start	1	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	
Time	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	9999	Total
12 PM	6	0	1	2	6	7	11	3	9	16	22	13	10	10	2	3	1	1	0	1	124
13:00	5	0	2	2	2	5	10	12	8	14	12	5	8	7	2	3	0	0	0	1	98
14:00	5	0	2	2	1	3	6	12	9	15	19	11	8	9	1	5	1	3	1	2	115
15:00	4	0	1	2	4	5	4	10	15	14	11	17	9	14	2	6	1	1	0	0	120
16:00	3	1	2	2	4	7	9	7	4	17	13	14	9	8	5	2	2	2	0	0	111
17:00	4	0	3	1	0	5	11	10	15	18	14	10	9	7	3	3	2	0	0	1	116
18:00	1	0	1	2	2	3	8	5	13	17	13	11	7	5	1	3	1	0	2	0	95
19:00	1	0	0	1	0	4	2	6	2	8	3	6	3	2	0	1	2	0	0	0	41
20:00	1	1	1	3	1	5	2	9	1	4	5	3	0	2	0	1	0	0	0	0	39
21:00	0	1	0	0	0	0	2	0	2	1	1	1	1	0	0	1	0	0	0	0	10
22:00	1	1	0	0	0	0	0	3	1	1	4	2	1	0	0	0	0	0	0	1	15
23:00	0	0	0	0	0	1	0	2	0	0	0	2	1	0	0	0	0	0	0	1	7
02/29/2																					
4	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
01:00	0	1	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	0	0	0	5
02:00	1	0	0	0	0	0	0	1	1	1	0	0	0	3	0	0	0	0	0	0	7
03:00	1	0	0	0	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	0	5
04:00	0	0	0	0	0	0	2	1	1	2	4	1	2	0	3	0	2	1	1	2	22
05:00	0	0	0	1	0	3	1	4	1	1	3	9	4	6	2	8	2	3	1	4	53
06:00	0	0	1	0	1	4	1	4	4	4	13	10	8	5	1	10	3	3	1	5	78
07:00	1	3	1	0	3	7	6	12	8	15	18	16	6	16	6	8	8	4	2	2	142
08:00	6	0	2	4	2	11	10	20	11	21	15	4	7	10	1	5	0	1	0	2	132
09:00	2	2	5	4	6	6	9	14	9	7	11	8	5	2	1	1	3	1	2	0	98
10:00	4	2	1	3	1	7	4	9	8	10	12	4	4	9	2	0	1	0	0	1	82
11:00	8	1	6	3	12	10	7	11	6	18	5	5	2	2	2	3	0	1	0	0	102
Total	55	13	29	32	45	93	105	155	130	206	200	153	104	118	34	64	29	21	10	23	1619
Grand Total	55	13	29	32	45	93	105	155	130	206	200	153	104	118	34	64	29	21	10	23	1619

Stats

15th Percentile :	17 MPH
50th Percentile :	41 MPH
85th Percentile :	50 MPH
95th Percentile :	55 MPH
Mean Speed(Average) :	38 MPH
10 MPH Pace Speed :	39-48 MPH
Number in Pace :	676
Percent in Pace :	42.4%
Number of Vehicles > 55 MPH :	86
Percent of Vehicles > 55 MPH :	5.4%

Appendix B INTERSECTION LOS ANALYSIS: EXISTING CONDITIONS LOS CALCULATION SHEETS

Intersection	
Int Delay, s/veh	5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	84	154	37	57	51
Future Vol, veh/h	60	84	154	37	57	51
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	88	81	82	62	57	71
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	68	104	188	60	100	72

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	490	218	0	0	248	0
Stage 1	218	-	-	-	-	-
Stage 2	272	-	-	-	-	-
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	537	822	-	-	1318	-
Stage 1	818	-	-	-	-	-
Stage 2	774	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	495	822	-	-	1318	-
Mov Cap-2 Maneuver	495	-	-	-	-	-
Stage 1	818	-	-	-	-	-
Stage 2	713	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	12.5	0	4.6
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	651	1318	-
HCM Lane V/C Ratio	-	-	0.264	0.076	-
HCM Control Delay (s)	-	-	12.5	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.2	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑↱			↔	
Traffic Vol, veh/h	27	26	21	1	56	1	65	121	1	10	59	59
Future Vol, veh/h	27	26	21	1	56	1	65	121	1	10	59	59
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	180	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	68	72	58	25	78	25	69	57	25	50	67	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	40	36	36	4	72	4	94	212	4	20	88	64

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	490	564	76	504	594	108	152	0	0	216	0	0
Stage 1	160	160	-	402	402	-	-	-	-	-	-	-
Stage 2	330	404	-	102	192	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	461	433	970	451	416	925	1426	-	-	1351	-	-
Stage 1	826	764	-	596	599	-	-	-	-	-	-	-
Stage 2	657	598	-	893	740	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	369	398	970	379	382	925	1426	-	-	1351	-	-
Mov Cap-2 Maneuver	369	398	-	379	382	-	-	-	-	-	-	-
Stage 1	771	752	-	557	559	-	-	-	-	-	-	-
Stage 2	533	559	-	805	728	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	14.9	16.5	2.3	0.9
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1426	-	-	475	393	1351	-	-
HCM Lane V/C Ratio	0.066	-	-	0.236	0.203	0.015	-	-
HCM Control Delay (s)	7.7	-	-	14.9	16.5	7.7	0	-
HCM Lane LOS	A	-	-	B	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	0.9	0.8	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	9	132	38	78	13
Future Vol, veh/h	1	9	132	38	78	13
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	50	63	83	86	75	54
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	14	159	44	104	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	478	116	128	0	-	0
Stage 1	116	-	-	-	-	-
Stage 2	362	-	-	-	-	-
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	546	936	1458	-	-	-
Stage 1	909	-	-	-	-	-
Stage 2	704	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	485	936	1458	-	-	-
Mov Cap-2 Maneuver	485	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	704	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	6.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1458	-	840	-	-
HCM Lane V/C Ratio	0.109	-	0.019	-	-
HCM Control Delay (s)	7.8	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.4	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	36	140	182	84	78
Future Vol, veh/h	70	36	140	182	84	78
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	80	90	90	91	66	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	88	40	156	200	127	88

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	598	256	0	0	356	0
Stage 1	256	-	-	-	-	-
Stage 2	342	-	-	-	-	-
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	465	783	-	-	1203	-
Stage 1	787	-	-	-	-	-
Stage 2	719	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	413	783	-	-	1203	-
Mov Cap-2 Maneuver	413	-	-	-	-	-
Stage 1	787	-	-	-	-	-
Stage 2	639	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	4.9
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	485	1203	-
HCM Lane V/C Ratio	-	-	0.263	0.106	-
HCM Control Delay (s)	-	-	15	8.3	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1	0.4	-

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑↱			↔	
Traffic Vol, veh/h	81	49	63	4	25	12	58	196	5	11	106	55
Future Vol, veh/h	81	49	63	4	25	12	58	196	5	11	106	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	180	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	69	83	33	69	75	65	83	42	46	88	76
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	71	76	12	36	16	89	236	12	24	120	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	518	630	96	564	660	124	192	0	0	248	0	0
Stage 1	204	204	-	420	420	-	-	-	-	-	-	-
Stage 2	314	426	-	144	240	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	440	397	942	408	382	904	1379	-	-	1315	-	-
Stage 1	779	732	-	581	588	-	-	-	-	-	-	-
Stage 2	671	584	-	844	706	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	373	363	942	299	350	904	1379	-	-	1315	-	-
Mov Cap-2 Maneuver	373	363	-	299	350	-	-	-	-	-	-	-
Stage 1	728	717	-	543	550	-	-	-	-	-	-	-
Stage 2	576	546	-	684	691	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.4	15.8	2.1	0.9
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1379	-	-	452	398	1315	-	-
HCM Lane V/C Ratio	0.065	-	-	0.555	0.162	0.018	-	-
HCM Control Delay (s)	7.8	-	-	22.4	15.8	7.8	0.1	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	3.3	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	58	209	99	104	40	16
Future Vol, veh/h	58	209	99	104	40	16
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	81	83	80	72	71	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	252	124	144	56	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	460	68	80	0	-	0
Stage 1	68	-	-	-	-	-
Stage 2	392	-	-	-	-	-
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	559	995	1518	-	-	-
Stage 1	955	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	509	995	1518	-	-	-
Mov Cap-2 Maneuver	509	-	-	-	-	-
Stage 1	870	-	-	-	-	-
Stage 2	683	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1518	-	821	-	-
HCM Lane V/C Ratio	0.082	-	0.394	-	-
HCM Control Delay (s)	7.6	0	12.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	1.9	-	-

Intersection	
Int Delay, s/veh	9.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	92	58	138	123	169	245
Future Vol, veh/h	92	58	138	123	169	245
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	68	73	93	90	75	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	135	79	148	137	225	261

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	928	217	0	0	285	0
Stage 1	217	-	-	-	-	-
Stage 2	711	-	-	-	-	-
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	297	823	-	-	1277	-
Stage 1	819	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	236	823	-	-	1277	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	387	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	36.2	0	3.9
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	321	1277	-
HCM Lane V/C Ratio	-	-	0.669	0.176	-
HCM Control Delay (s)	-	-	36.2	8.4	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	4.5	0.6	-

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	24	10	9	7	13	15	24	223	9	15	306	21
Future Vol, veh/h	24	10	9	7	13	15	24	223	9	15	306	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	180	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	55	63	56	88	54	75	50	90	45	75	92	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	16	16	8	24	20	48	248	20	20	333	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	619	751	181	569	755	134	361	0	0	268	0	0
Stage 1	387	387	-	354	354	-	-	-	-	-	-	-
Stage 2	232	364	-	215	401	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	373	338	831	405	336	890	1194	-	-	1293	-	-
Stage 1	608	608	-	636	629	-	-	-	-	-	-	-
Stage 2	750	622	-	767	599	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	328	318	831	365	317	890	1194	-	-	1293	-	-
Mov Cap-2 Maneuver	328	318	-	365	317	-	-	-	-	-	-	-
Stage 1	584	596	-	611	604	-	-	-	-	-	-	-
Stage 2	676	597	-	718	588	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17	14.4	1.2	0.5
HCM LOS	C	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1194	-	-	374	433	1293	-	-
HCM Lane V/C Ratio	0.04	-	-	0.202	0.12	0.015	-	-
HCM Control Delay (s)	8.1	-	-	17	14.4	7.8	0.1	-
HCM Lane LOS	A	-	-	C	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0.7	0.4	0	-	-

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	289	133	34	31	17
Future Vol, veh/h	10	289	133	34	31	17
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	83	79	83	57	78	53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	366	160	60	40	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	436	56	72	0	-	0
Stage 1	56	-	-	-	-	-
Stage 2	380	-	-	-	-	-
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	578	1011	1528	-	-	-
Stage 1	967	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	516	1011	1528	-	-	-
Mov Cap-2 Maneuver	516	-	-	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	691	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	5.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1528	-	981	-	-
HCM Lane V/C Ratio	0.105	-	0.385	-	-
HCM Control Delay (s)	7.6	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.8	-	-

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	62	11	39
Average Queue (ft)	42	2	11
95th Queue (ft)	69	11	42
Link Distance (ft)	2501	397	501
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	NB	SB
Directions Served	LR	TR	LT
Maximum Queue (ft)	72	5	48
Average Queue (ft)	46	1	20
95th Queue (ft)	81	7	51
Link Distance (ft)	2501	397	501
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	70	79
Average Queue (ft)	45	34
95th Queue (ft)	79	77
Link Distance (ft)	2501	501
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Peak Hour Signal Warrant Analysis

Intersection: Naglee Road (major) & W. Larch Road (minor)
Scenario: Existing Conditions

WARRANT 3 – PEAK HOURS

PART A or PART B SATISFIED?

Part A

(Criteria 1, 2 and 3, below, must all be satisfied)

AM Satisfied?	PM Satisfied?	Late AM Sunday Satisfied?
No	**No**	**No**

Part A Criteria	AM Satisfied?	PM Satisfied?	Sunday Satisfied?
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND	No	No	No
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes	Yes	Yes
3. The total entering volume services during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 for intersections with three approaches.	No	No	Yes

Part B

AM Satisfied?	PM Satisfied?	Sunday Satisfied?
No	**No**	**Yes**

Approach Lanes	AM Peak Hour Volume	PM Peak Hour Volume	Late AM Sunday Peak Hour Volume
Both Approaches – Major Street	299	484	675
Highest Approach – Minor Street	144	106	150

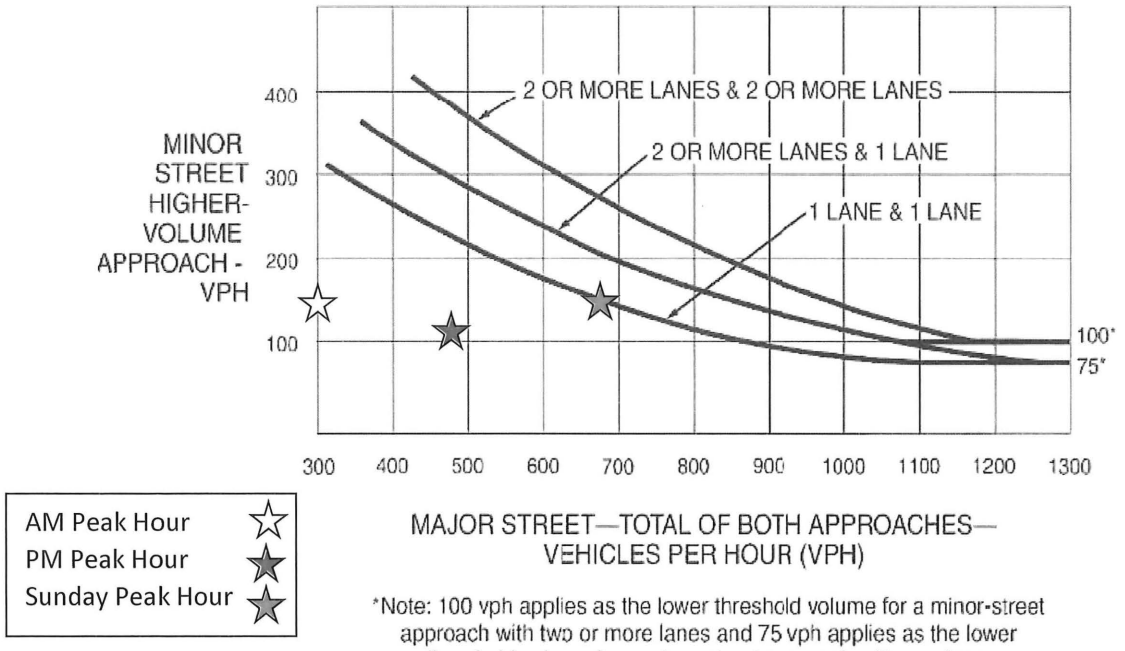
Source: February 29th & March 1st, 2024 counts

Note: The plotted points for vehicles per hour on major street (both approaches) and corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any consecutive 15-minute intervals) must fall above the applicable curve in MUTCD Figure 4C-4 for a traffic signal to be warranted.

Intersection: Naglee Road (major) & W. Larch Road (minor)
Scenario: Existing Conditions

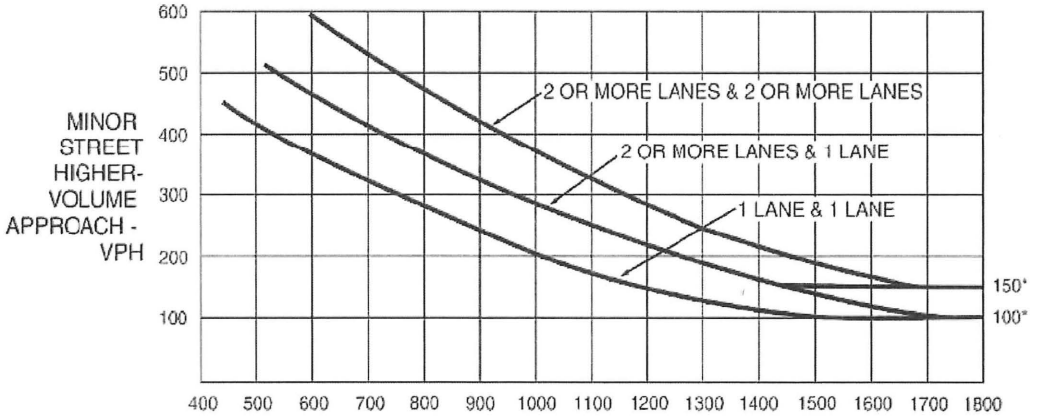
Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

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.

Appendix C ANALYSIS: EXISTING PLUS APPROVED PROJECTS CONDITIONS

- LOS CALCULATION SHEETS

- PEAK HOUR WARRANTS

Intersection	
Int Delay, s/veh	4.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	36	147	182	84	84
Future Vol, veh/h	70	36	147	182	84	84
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	80	90	90	91	66	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	88	40	163	200	127	94

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	611	263	0	0	363	0
Stage 1	263	-	-	-	-	-
Stage 2	348	-	-	-	-	-
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	457	776	-	-	1196	-
Stage 1	781	-	-	-	-	-
Stage 2	715	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	406	776	-	-	1196	-
Mov Cap-2 Maneuver	406	-	-	-	-	-
Stage 1	781	-	-	-	-	-
Stage 2	635	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.3	0	4.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	477	1196	-
HCM Lane V/C Ratio	-	-	0.267	0.106	-
HCM Control Delay (s)	-	-	15.3	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.4	-

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↱			↔	
Traffic Vol, veh/h	81	49	63	4	25	12	58	204	5	11	113	55
Future Vol, veh/h	81	49	63	4	25	12	58	204	5	11	113	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	180	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	69	83	33	69	75	65	83	42	46	88	76
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	71	76	12	36	16	89	246	12	24	128	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	531	648	100	578	678	129	200	0	0	258	0	0
Stage 1	212	212	-	430	430	-	-	-	-	-	-	-
Stage 2	319	436	-	148	248	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	431	388	936	399	373	897	1370	-	-	1304	-	-
Stage 1	770	726	-	574	582	-	-	-	-	-	-	-
Stage 2	667	578	-	840	700	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	364	355	936	291	341	897	1370	-	-	1304	-	-
Mov Cap-2 Maneuver	364	355	-	291	341	-	-	-	-	-	-	-
Stage 1	720	711	-	537	544	-	-	-	-	-	-	-
Stage 2	572	540	-	680	685	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.2	16.1	2	0.9
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1370	-	-	443	388	1304	-	-
HCM Lane V/C Ratio	0.065	-	-	0.566	0.166	0.018	-	-
HCM Control Delay (s)	7.8	-	-	23.2	16.1	7.8	0.1	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	3.4	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	58	209	99	106	42	16
Future Vol, veh/h	58	209	99	106	42	16
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	81	83	80	72	71	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	252	124	147	59	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	466	71	83	0	-	0
Stage 1	71	-	-	-	-	-
Stage 2	395	-	-	-	-	-
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	555	991	1514	-	-	-
Stage 1	952	-	-	-	-	-
Stage 2	681	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	506	991	1514	-	-	-
Mov Cap-2 Maneuver	506	-	-	-	-	-
Stage 1	867	-	-	-	-	-
Stage 2	681	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.2	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1514	-	818	-	-
HCM Lane V/C Ratio	0.082	-	0.395	-	-
HCM Control Delay (s)	7.6	0	12.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	1.9	-	-

Intersection	
Int Delay, s/veh	13.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	92	58	208	123	169	322
Future Vol, veh/h	92	58	208	123	169	322
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	68	73	93	90	75	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	135	79	224	137	225	343

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1086	293	0	0	361	0
Stage 1	293	-	-	-	-	-
Stage 2	793	-	-	-	-	-
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	239	746	-	-	1198	-
Stage 1	757	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	184	746	-	-	1198	-
Mov Cap-2 Maneuver	184	-	-	-	-	-
Stage 1	757	-	-	-	-	-
Stage 2	343	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	64.9	0	3.5
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	255	1198	-
HCM Lane V/C Ratio	-	-	0.842	0.188	-
HCM Control Delay (s)	-	-	64.9	8.7	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	6.8	0.7	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔			↔		↰	↑↑↱			↔↑↱	
Traffic Vol, veh/h	24	10	9	7	13	15	24	293	9	15	383	21
Future Vol, veh/h	24	10	9	7	13	15	24	293	9	15	383	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	180	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	55	63	56	88	54	75	50	90	45	75	92	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	16	16	8	24	20	48	326	20	20	416	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	741	912	222	688	916	173	444	0	0	346	0	0
Stage 1	470	470	-	432	432	-	-	-	-	-	-	-
Stage 2	271	442	-	256	484	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	305	272	782	333	271	840	1112	-	-	1210	-	-
Stage 1	543	558	-	572	581	-	-	-	-	-	-	-
Stage 2	712	575	-	726	550	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	263	255	782	296	254	840	1112	-	-	1210	-	-
Mov Cap-2 Maneuver	263	255	-	296	254	-	-	-	-	-	-	-
Stage 1	520	546	-	547	556	-	-	-	-	-	-	-
Stage 2	636	550	-	675	538	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	20.7	16.8	1	0.4
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1112	-	-	304	358	1210	-	-
HCM Lane V/C Ratio	0.043	-	-	0.249	0.145	0.017	-	-
HCM Control Delay (s)	8.4	-	-	20.7	16.8	8	0.1	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1	0.5	0.1	-	-

Intersection	
Int Delay, s/veh	8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	289	133	34	31	17
Future Vol, veh/h	10	289	133	34	31	17
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	83	79	83	57	78	53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	366	160	60	40	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	436	56	72	0	-	0
Stage 1	56	-	-	-	-	-
Stage 2	380	-	-	-	-	-
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	578	1011	1528	-	-	-
Stage 1	967	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	516	1011	1528	-	-	-
Mov Cap-2 Maneuver	516	-	-	-	-	-
Stage 1	863	-	-	-	-	-
Stage 2	691	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	5.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1528	-	981	-	-
HCM Lane V/C Ratio	0.105	-	0.385	-	-
HCM Control Delay (s)	7.6	0	11	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.8	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	70	36	147	182	84	84
Future Volume (veh/h)	70	36	147	182	84	84
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	88	40	163	200	127	94
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.80	0.90	0.90	0.91	0.66	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	179	160	280	344	418	234
Arrive On Green	0.10	0.10	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1774	1583	762	935	385	636
Grp Volume(v), veh/h	88	40	0	363	221	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1698	1021	0
Q Serve(g_s), s	1.0	0.5	0.0	3.5	1.0	0.0
Cycle Q Clear(g_c), s	1.0	0.5	0.0	3.5	4.5	0.0
Prop In Lane	1.00	1.00		0.55	0.57	
Lane Grp Cap(c), veh/h	179	160	0	624	652	0
V/C Ratio(X)	0.49	0.25	0.00	0.58	0.34	0.00
Avail Cap(c_a), veh/h	770	687	0	1730	1428	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.7	8.5	0.0	5.2	5.1	0.0
Incr Delay (d2), s/veh	2.1	0.8	0.0	0.9	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.2	0.0	1.8	1.1	0.0
LnGrp Delay(d),s/veh	10.8	9.3	0.0	6.1	5.4	0.0
LnGrp LOS	B	A		A	A	
Approach Vol, veh/h	128		363			221
Approach Delay, s/veh	10.3		6.1			5.4
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		13.3				13.3		7.2
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 21				20.2		8.9
Max Q Clear Time (g_c+I1), s		5.5				6.5		3.0
Green Ext Time (p_c), s		2.0				1.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	6.6
HCM 2010 LOS	A

Notes

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	92	58	208	123	169	322
Future Volume (veh/h)	92	58	208	123	169	322
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	135	79	224	137	225	343
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	217	194	580	355	388	498
Arrive On Green	0.12	0.12	0.54	0.54	0.54	0.54
Sat Flow, veh/h	1774	1583	1083	663	429	931
Grp Volume(v), veh/h	135	79	0	361	568	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1746	1360	0
Q Serve(g_s), s	2.3	1.5	0.0	3.9	7.1	0.0
Cycle Q Clear(g_c), s	2.3	1.5	0.0	3.9	10.9	0.0
Prop In Lane	1.00	1.00		0.38	0.40	
Lane Grp Cap(c), veh/h	217	194	0	934	886	0
V/C Ratio(X)	0.62	0.41	0.00	0.39	0.64	0.00
Avail Cap(c_a), veh/h	552	492	0	2188	1861	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	13.3	12.9	0.0	4.3	5.9	0.0
Incr Delay (d2), s/veh	2.9	1.4	0.0	0.3	0.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.7	0.0	1.9	4.0	0.0
LnGrp Delay(d),s/veh	16.2	14.3	0.0	4.6	6.7	0.0
LnGrp LOS	B	B		A	A	
Approach Vol, veh/h	214		361			568
Approach Delay, s/veh	15.5		4.6			6.7
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		22.8				22.8		9.0
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 40				39.2		9.9
Max Q Clear Time (g_c+I1), s		5.9				12.9		4.3
Green Ext Time (p_c), s		2.4				4.1		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.7
HCM 2010 LOS	A

Notes

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	36	147	182	84	84
Future Vol, veh/h	70	36	147	182	84	84
Peak Hour Factor	0.80	0.90	0.90	0.91	0.66	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	88	40	163	200	127	94
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	9.3	10.3	9.7
HCM LOS	A	B	A

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	66%	50%
Vol Thru, %	45%	0%	50%
Vol Right, %	55%	34%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	329	106	168
LT Vol	0	70	84
Through Vol	147	0	84
RT Vol	182	36	0
Lane Flow Rate	363	128	222
Geometry Grp	1	1	1
Degree of Util (X)	0.423	0.181	0.292
Departure Headway (Hd)	4.191	5.119	4.737
Convergence, Y/N	Yes	Yes	Yes
Cap	857	697	756
Service Time	2.223	3.174	2.777
HCM Lane V/C Ratio	0.424	0.184	0.294
HCM Control Delay	10.3	9.3	9.7
HCM Lane LOS	B	A	A
HCM 95th-tile Q	2.1	0.7	1.2

Intersection	
Intersection Delay, s/veh	20.4
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	92	58	208	123	169	322
Future Vol, veh/h	92	58	208	123	169	322
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	135	79	224	137	225	343
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	12.6	13.8	27.5
HCM LOS	B	B	D

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	61%	34%
Vol Thru, %	63%	0%	66%
Vol Right, %	37%	39%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	331	150	491
LT Vol	0	92	169
Through Vol	208	0	322
RT Vol	123	58	0
Lane Flow Rate	360	215	568
Geometry Grp	1	1	1
Degree of Util (X)	0.52	0.364	0.82
Departure Headway (Hd)	5.191	6.096	5.197
Convergence, Y/N	Yes	Yes	Yes
Cap	692	588	699
Service Time	3.236	4.149	3.236
HCM Lane V/C Ratio	0.52	0.366	0.813
HCM Control Delay	13.8	12.6	27.5
HCM Lane LOS	B	B	D
HCM 95th-tile Q	3	1.7	8.7

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	76	38	72	72
Average Queue (ft)	51	20	37	30
95th Queue (ft)	85	50	63	63
Link Distance (ft)	2501		397	489
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	11	3		
Queuing Penalty (veh)	4	2		

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	31	50	74	182
Average Queue (ft)	30	31	45	95
95th Queue (ft)	32	55	73	184
Link Distance (ft)	2501		397	489
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	17	4		
Queuing Penalty (veh)	10	4		

Appendix D ANALYSIS: EXISTING PLUS APPROVED PLUS PROJECT CONDITIONS

- LOS CALCULATION SHEETS

- PEAK HOUR WARRANTS

Intersection	
Int Delay, s/veh	4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	72	36	147	183	85	84
Future Vol, veh/h	72	36	147	183	85	84
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	80	90	90	91	66	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	40	163	201	129	94

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	616	264	0	0	364	0
Stage 1	264	-	-	-	-	-
Stage 2	352	-	-	-	-	-
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	454	775	-	-	1195	-
Stage 1	780	-	-	-	-	-
Stage 2	712	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	402	775	-	-	1195	-
Mov Cap-2 Maneuver	402	-	-	-	-	-
Stage 1	780	-	-	-	-	-
Stage 2	631	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15.5	0	4.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	472	1195	-
HCM Lane V/C Ratio	-	-	0.275	0.108	-
HCM Control Delay (s)	-	-	15.5	8.4	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.1	0.4	-

Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	81	49	63	4	25	12	58	208	5	11	115	55
Future Vol, veh/h	81	49	63	4	25	12	58	208	5	11	115	55
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	180	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	69	83	33	69	75	65	83	42	46	88	76
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	104	71	76	12	36	16	89	251	12	24	131	72

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	537	656	102	584	686	132	203	0	0	263	0	0
Stage 1	215	215	-	435	435	-	-	-	-	-	-	-
Stage 2	322	441	-	149	251	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	427	384	933	395	369	893	1366	-	-	1298	-	-
Stage 1	767	724	-	570	579	-	-	-	-	-	-	-
Stage 2	664	575	-	838	698	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	360	351	933	287	338	893	1366	-	-	1298	-	-
Mov Cap-2 Maneuver	360	351	-	287	338	-	-	-	-	-	-	-
Stage 1	717	709	-	533	541	-	-	-	-	-	-	-
Stage 2	569	538	-	678	683	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	23.7	16.2	2	0.9
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1366	-	-	438	385	1298	-	-
HCM Lane V/C Ratio	0.065	-	-	0.573	0.167	0.018	-	-
HCM Control Delay (s)	7.8	-	-	23.7	16.2	7.8	0.1	-
HCM Lane LOS	A	-	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	3.5	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	58	210	100	106	42	17
Future Vol, veh/h	58	210	100	106	42	17
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	81	83	80	72	71	62
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	72	253	125	147	59	27

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	470	73	86	0	-	0
Stage 1	73	-	-	-	-	-
Stage 2	397	-	-	-	-	-
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	552	989	1510	-	-	-
Stage 1	950	-	-	-	-	-
Stage 2	679	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	502	989	1510	-	-	-
Mov Cap-2 Maneuver	502	-	-	-	-	-
Stage 1	865	-	-	-	-	-
Stage 2	679	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.3	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1510	-	815	-	-
HCM Lane V/C Ratio	0.083	-	0.398	-	-
HCM Control Delay (s)	7.6	0	12.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	1.9	-	-

Intersection	
Int Delay, s/veh	92.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	174	64	214	136	179	322
Future Vol, veh/h	174	64	214	136	179	322
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	68	73	93	90	75	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	256	88	230	151	239	343

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1127	306	0	0	381	0
Stage 1	306	-	-	-	-	-
Stage 2	821	-	-	-	-	-
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	~ 226	734	-	-	1177	-
Stage 1	747	-	-	-	-	-
Stage 2	432	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 169	734	-	-	1177	-
Mov Cap-2 Maneuver	~ 169	-	-	-	-	-
Stage 1	747	-	-	-	-	-
Stage 2	324	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 347.2	0	3.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	210	1177	-
HCM Lane V/C Ratio	-	-	1.636	0.203	-
HCM Control Delay (s)	-	-	$ 347.2	8.8	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	22.4	0.8	-

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

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	24	10	9	7	13	15	24	357	9	15	465	21
Future Vol, veh/h	24	10	9	7	13	15	24	357	9	15	465	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	180	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	55	63	56	88	54	75	50	90	45	75	92	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	16	16	8	24	20	48	397	20	20	505	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	866	1072	267	804	1076	209	533	0	0	417	0	0
Stage 1	559	559	-	503	503	-	-	-	-	-	-	-
Stage 2	307	513	-	301	573	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	247	219	731	274	218	797	1031	-	-	1138	-	-
Stage 1	481	509	-	519	540	-	-	-	-	-	-	-
Stage 2	678	534	-	683	502	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	207	203	731	239	203	797	1031	-	-	1138	-	-
Mov Cap-2 Maneuver	207	203	-	239	203	-	-	-	-	-	-	-
Stage 1	458	496	-	495	515	-	-	-	-	-	-	-
Stage 2	601	509	-	630	489	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.4	19.9	0.9	0.4
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1031	-	-	243	294	1138	-	-
HCM Lane V/C Ratio	0.047	-	-	0.311	0.177	0.018	-	-
HCM Control Delay (s)	8.7	-	-	26.4	19.9	8.2	0.1	-
HCM Lane LOS	A	-	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	0.6	0.1	-	-

Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	308	147	34	31	27
Future Vol, veh/h	22	308	147	34	31	27
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	83	79	83	57	78	53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	27	390	177	60	40	51

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	480	66	91	0	-	0
Stage 1	66	-	-	-	-	-
Stage 2	414	-	-	-	-	-
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	545	998	1504	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	667	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	479	998	1504	-	-	-
Mov Cap-2 Maneuver	479	-	-	-	-	-
Stage 1	840	-	-	-	-	-
Stage 2	667	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	5.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1504	-	934	-	-
HCM Lane V/C Ratio	0.118	-	0.446	-	-
HCM Control Delay (s)	7.7	0	11.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	2.3	-	-

Intersection	
Int Delay, s/veh	238.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	254	70	220	148	189	322
Future Vol, veh/h	254	70	220	148	189	322
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	68	73	93	90	75	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	374	96	237	164	252	343

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1166	319	0	0	401	0
Stage 1	319	-	-	-	-	-
Stage 2	847	-	-	-	-	-
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	~ 214	722	-	-	1158	-
Stage 1	737	-	-	-	-	-
Stage 2	420	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 156	722	-	-	1158	-
Mov Cap-2 Maneuver	~ 156	-	-	-	-	-
Stage 1	737	-	-	-	-	-
Stage 2	~ 307	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 740.7	0	3.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	186	1158	-
HCM Lane V/C Ratio	-	-	2.524	0.218	-
HCM Control Delay (s)	-	-	$ 740.7	9	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	39.8	0.8	-

Notes

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

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	24	10	9	7	13	15	24	420	9	15	545	21
Future Vol, veh/h	24	10	9	7	13	15	24	420	9	15	545	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	180	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	55	63	56	88	54	75	50	90	45	75	92	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	44	16	16	8	24	20	48	467	20	20	592	28

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	988	1229	310	917	1233	244	620	0	0	487	0	0
Stage 1	646	646	-	573	573	-	-	-	-	-	-	-
Stage 2	342	583	-	344	660	-	-	-	-	-	-	-
Critical Hdwy	7.54	6.54	6.94	7.54	6.54	6.94	4.14	-	-	4.14	-	-
Critical Hdwy Stg 1	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.54	5.54	-	6.54	5.54	-	-	-	-	-	-	-
Follow-up Hdwy	3.52	4.02	3.32	3.52	4.02	3.32	2.22	-	-	2.22	-	-
Pot Cap-1 Maneuver	201	177	686	227	176	757	956	-	-	1072	-	-
Stage 1	427	465	-	472	502	-	-	-	-	-	-	-
Stage 2	646	497	-	645	458	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	163	163	686	193	162	757	956	-	-	1072	-	-
Mov Cap-2 Maneuver	163	163	-	193	162	-	-	-	-	-	-	-
Stage 1	406	452	-	448	477	-	-	-	-	-	-	-
Stage 2	567	472	-	590	445	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	34.7	24	0.8	0.4
HCM LOS	D	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	956	-	-	195	241	1072	-	-
HCM Lane V/C Ratio	0.05	-	-	0.388	0.216	0.019	-	-
HCM Control Delay (s)	9	-	-	34.7	24	8.4	0.1	-
HCM Lane LOS	A	-	-	D	C	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	1.7	0.8	0.1	-	-

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	327	162	34	31	37
Future Vol, veh/h	35	327	162	34	31	37
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	83	79	83	57	78	53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	414	195	60	40	70

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	525	75	110	0	-	0
Stage 1	75	-	-	-	-	-
Stage 2	450	-	-	-	-	-
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	986	1480	-	-	-
Stage 1	948	-	-	-	-	-
Stage 2	642	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	443	986	1480	-	-	-
Mov Cap-2 Maneuver	443	-	-	-	-	-
Stage 1	819	-	-	-	-	-
Stage 2	642	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.3	6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1480	-	886	-	-
HCM Lane V/C Ratio	0.132	-	0.515	-	-
HCM Control Delay (s)	7.8	0	13.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.5	-	3	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	72	36	147	183	85	84
Future Volume (veh/h)	72	36	147	183	85	84
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	90	40	163	201	129	94
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.80	0.90	0.90	0.91	0.66	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	181	161	282	347	419	232
Arrive On Green	0.10	0.10	0.37	0.37	0.37	0.37
Sat Flow, veh/h	1774	1583	760	937	389	625
Grp Volume(v), veh/h	90	40	0	364	223	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1697	1015	0
Q Serve(g_s), s	1.0	0.5	0.0	3.5	1.0	0.0
Cycle Q Clear(g_c), s	1.0	0.5	0.0	3.5	4.6	0.0
Prop In Lane	1.00	1.00		0.55	0.58	
Lane Grp Cap(c), veh/h	181	161	0	629	651	0
V/C Ratio(X)	0.50	0.25	0.00	0.58	0.34	0.00
Avail Cap(c_a), veh/h	764	682	0	1717	1413	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	8.8	8.5	0.0	5.2	5.1	0.0
Incr Delay (d2), s/veh	2.1	0.8	0.0	0.8	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	0.2	0.0	1.8	1.1	0.0
LnGrp Delay(d),s/veh	10.9	9.3	0.0	6.1	5.4	0.0
LnGrp LOS	B	A		A	A	
Approach Vol, veh/h	130		364			223
Approach Delay, s/veh	10.4		6.1			5.4
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		13.5				13.5		7.2
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 21				20.2		8.9
Max Q Clear Time (g_c+I1), s		5.5				6.6		3.0
Green Ext Time (p_c), s		2.0				1.1		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	6.7
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	49	63	4	25	12	58	208	5	11	115	55
Future Volume (veh/h)	81	49	63	4	25	12	58	208	5	11	115	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	104	71	76	12	36	16	89	251	12	24	131	72
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.78	0.69	0.83	0.33	0.69	0.75	0.65	0.83	0.42	0.46	0.88	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	147	101	108	36	108	48	260	820	39	102	337	175
Arrive On Green	0.21	0.21	0.21	0.11	0.11	0.11	0.15	0.24	0.24	0.06	0.15	0.15
Sat Flow, veh/h	719	491	525	332	995	442	1774	3440	164	1774	2254	1171
Grp Volume(v), veh/h	251	0	0	64	0	0	89	129	134	24	101	102
Grp Sat Flow(s),veh/h/ln	1734	0	0	1768	0	0	1774	1770	1834	1774	1770	1656
Q Serve(g_s), s	6.3	0.0	0.0	1.6	0.0	0.0	2.1	2.8	2.8	0.6	2.4	2.6
Cycle Q Clear(g_c), s	6.3	0.0	0.0	1.6	0.0	0.0	2.1	2.8	2.8	0.6	2.4	2.6
Prop In Lane	0.41		0.30	0.19		0.25	1.00		0.09	1.00		0.71
Lane Grp Cap(c), veh/h	356	0	0	192	0	0	260	422	437	102	264	247
V/C Ratio(X)	0.71	0.00	0.00	0.33	0.00	0.00	0.34	0.30	0.31	0.24	0.38	0.41
Avail Cap(c_a), veh/h	977	0	0	392	0	0	379	940	974	379	940	880
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.3	0.0	0.0	19.3	0.0	0.0	18.0	14.7	14.7	21.1	18.0	18.1
Incr Delay (d2), s/veh	2.6	0.0	0.0	1.0	0.0	0.0	0.8	0.4	0.4	1.2	0.9	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.0	0.8	0.0	0.0	1.1	1.4	1.5	0.3	1.2	1.3
LnGrp Delay(d),s/veh	19.9	0.0	0.0	20.3	0.0	0.0	18.8	15.1	15.1	22.3	18.9	19.2
LnGrp LOS	B			C			B	B	B	C	B	B
Approach Vol, veh/h		251			64			352			227	
Approach Delay, s/veh		19.9			20.3			16.0			19.4	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.7	16.3		14.2	10.9	12.1		9.7
Change Period (Y+Rc), s	4.0	5.1		4.6	4.0	5.1		4.6
Max Green Setting (Gmax), s	10.0	24.9		26.4	10.0	24.9		10.4
Max Q Clear Time (g_c+I1), s	2.6	4.8		8.3	4.1	4.6		3.6
Green Ext Time (p_c), s	0.0	1.3		1.4	0.1	1.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.3
HCM 2010 LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	174	64	214	136	179	322
Future Volume (veh/h)	174	64	214	136	179	322
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	256	88	230	151	239	343
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	339	302	573	376	359	449
Arrive On Green	0.19	0.19	0.55	0.55	0.55	0.55
Sat Flow, veh/h	1774	1583	1051	690	432	823
Grp Volume(v), veh/h	256	88	0	381	582	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1741	1255	0
Q Serve(g_s), s	5.6	2.0	0.0	5.3	11.9	0.0
Cycle Q Clear(g_c), s	5.6	2.0	0.0	5.3	17.2	0.0
Prop In Lane	1.00	1.00		0.40	0.41	
Lane Grp Cap(c), veh/h	339	302	0	949	807	0
V/C Ratio(X)	0.76	0.29	0.00	0.40	0.72	0.00
Avail Cap(c_a), veh/h	494	441	0	1403	1142	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.8	14.3	0.0	5.5	8.6	0.0
Incr Delay (d2), s/veh	3.9	0.5	0.0	0.3	1.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.9	0.0	2.5	6.0	0.0
LnGrp Delay(d),s/veh	19.7	14.8	0.0	5.7	9.9	0.0
LnGrp LOS	B	B		A	A	
Approach Vol, veh/h	344		381			582
Approach Delay, s/veh	18.5		5.7			9.9
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		28.3				28.3		13.0
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 33				32.6		11.5
Max Q Clear Time (g_c+I1), s		7.3				19.2		7.6
Green Ext Time (p_c), s		2.4				3.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	10.9
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	10	9	7	13	15	24	357	9	15	465	21
Future Volume (veh/h)	24	10	9	7	13	15	24	357	9	15	465	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	44	16	16	8	24	20	48	397	20	20	505	28
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.55	0.63	0.56	0.88	0.54	0.75	0.50	0.90	0.45	0.75	0.92	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	51	51	26	77	64	179	1015	51	88	833	46
Arrive On Green	0.14	0.14	0.14	0.10	0.10	0.10	0.10	0.30	0.30	0.05	0.24	0.24
Sat Flow, veh/h	1012	368	368	266	799	666	1774	3430	172	1774	3410	189
Grp Volume(v), veh/h	76	0	0	52	0	0	48	204	213	20	262	271
Grp Sat Flow(s),veh/h/ln	1747	0	0	1732	0	0	1774	1770	1832	1774	1770	1829
Q Serve(g_s), s	1.7	0.0	0.0	1.2	0.0	0.0	1.1	4.0	4.0	0.5	5.7	5.7
Cycle Q Clear(g_c), s	1.7	0.0	0.0	1.2	0.0	0.0	1.1	4.0	4.0	0.5	5.7	5.7
Prop In Lane	0.58		0.21	0.15		0.38	1.00		0.09	1.00		0.10
Lane Grp Cap(c), veh/h	241	0	0	167	0	0	179	524	542	88	432	447
V/C Ratio(X)	0.32	0.00	0.00	0.31	0.00	0.00	0.27	0.39	0.39	0.23	0.61	0.61
Avail Cap(c_a), veh/h	497	0	0	453	0	0	489	1134	1174	407	1052	1088
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	16.9	0.0	0.0	18.3	0.0	0.0	18.1	12.2	12.2	19.9	14.6	14.6
Incr Delay (d2), s/veh	0.7	0.0	0.0	1.0	0.0	0.0	0.8	0.5	0.5	1.3	1.4	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.6	0.0	0.0	0.6	2.0	2.1	0.3	2.9	3.0
LnGrp Delay(d),s/veh	17.7	0.0	0.0	19.4	0.0	0.0	18.9	12.7	12.7	21.2	16.0	15.9
LnGrp LOS	B			B			B	B	B	C	B	B
Approach Vol, veh/h		76			52			465			553	
Approach Delay, s/veh		17.7			19.4			13.3			16.1	
Approach LOS		B			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	18.0		10.6	8.4	15.7		8.8
Change Period (Y+Rc), s	4.0	5.1		4.6	4.0	5.1		4.6
Max Green Setting (Gmax), s	10.0	27.9		12.4	12.0	25.9		11.4
Max Q Clear Time (g_c+I1), s	2.5	6.0		3.7	3.1	7.7		3.2
Green Ext Time (p_c), s	0.0	2.3		0.2	0.0	2.9		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.2
HCM 2010 LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	254	70	220	148	189	322
Future Volume (veh/h)	254	70	220	148	189	322
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	374	96	237	164	252	343
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	440	392	590	409	339	411
Arrive On Green	0.25	0.25	0.57	0.57	0.57	0.57
Sat Flow, veh/h	1774	1583	1027	711	444	716
Grp Volume(v), veh/h	374	96	0	401	595	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1737	1160	0
Q Serve(g_s), s	12.4	3.0	0.0	7.8	21.6	0.0
Cycle Q Clear(g_c), s	12.4	3.0	0.0	7.8	29.5	0.0
Prop In Lane	1.00	1.00		0.41	0.42	
Lane Grp Cap(c), veh/h	440	392	0	999	750	0
V/C Ratio(X)	0.85	0.24	0.00	0.40	0.79	0.00
Avail Cap(c_a), veh/h	603	538	0	1382	1032	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	22.0	18.5	0.0	7.2	13.5	0.0
Incr Delay (d2), s/veh	8.4	0.3	0.0	0.3	3.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.1	1.3	0.0	3.7	9.5	0.0
LnGrp Delay(d),s/veh	30.4	18.8	0.0	7.5	16.5	0.0
LnGrp LOS	C	B		A	B	
Approach Vol, veh/h	470		401			595
Approach Delay, s/veh	28.1		7.5			16.5
Approach LOS	C		A			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		41.2				41.2		20.3
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 49				48.2		20.9
Max Q Clear Time (g_c+I1), s		9.8				31.5		14.4
Green Ext Time (p_c), s		2.8				3.9		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	17.7
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	10	9	7	13	15	24	420	9	15	545	21
Future Volume (veh/h)	24	10	9	7	13	15	24	420	9	15	545	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	44	16	16	8	24	20	48	467	20	20	592	28
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.55	0.63	0.56	0.88	0.54	0.75	0.50	0.90	0.45	0.75	0.92	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	136	50	50	25	76	63	177	1124	48	87	945	45
Arrive On Green	0.13	0.13	0.13	0.09	0.09	0.09	0.10	0.33	0.33	0.05	0.27	0.27
Sat Flow, veh/h	1012	368	368	266	799	666	1774	3458	148	1774	3441	163
Grp Volume(v), veh/h	76	0	0	52	0	0	48	239	248	20	304	316
Grp Sat Flow(s),veh/h/ln	1747	0	0	1732	0	0	1774	1770	1837	1774	1770	1834
Q Serve(g_s), s	1.8	0.0	0.0	1.3	0.0	0.0	1.2	4.9	4.9	0.5	7.0	7.0
Cycle Q Clear(g_c), s	1.8	0.0	0.0	1.3	0.0	0.0	1.2	4.9	4.9	0.5	7.0	7.0
Prop In Lane	0.58		0.21	0.15		0.38	1.00		0.08	1.00		0.09
Lane Grp Cap(c), veh/h	236	0	0	164	0	0	177	575	597	87	486	503
V/C Ratio(X)	0.32	0.00	0.00	0.32	0.00	0.00	0.27	0.41	0.42	0.23	0.63	0.63
Avail Cap(c_a), veh/h	393	0	0	352	0	0	384	1222	1269	384	1222	1267
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	18.1	0.0	0.0	19.5	0.0	0.0	19.2	12.2	12.2	21.1	14.7	14.7
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.1	0.0	0.0	0.8	0.5	0.5	1.3	1.3	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	0.0	0.7	0.0	0.0	0.6	2.4	2.5	0.3	3.6	3.7
LnGrp Delay(d),s/veh	18.9	0.0	0.0	20.6	0.0	0.0	20.1	12.6	12.6	22.5	16.0	16.0
LnGrp LOS	B			C			C	B	B	C	B	B
Approach Vol, veh/h		76			52			535			640	
Approach Delay, s/veh		18.9			20.6			13.3			16.2	
Approach LOS		B			C			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.3	20.1		10.8	8.6	17.8		9.0
Change Period (Y+Rc), s	4.0	5.1		4.6	4.0	5.1		4.6
Max Green Setting (Gmax), s	10.0	31.9		10.4	10.0	31.9		9.4
Max Q Clear Time (g_c+I1), s	2.5	6.9		3.8	3.2	9.0		3.3
Green Ext Time (p_c), s	0.0	2.8		0.1	0.0	3.7		0.1

Intersection Summary		
HCM 2010 Ctrl Delay		15.3
HCM 2010 LOS		B

Intersection	
Intersection Delay, s/veh	10.0
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	72	36	147	183	85	84
Future Vol, veh/h	72	36	147	183	85	84
Peak Hour Factor	0.80	0.90	0.90	0.91	0.66	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	40	163	201	129	94
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	9.7	10.4	9.9
HCM LOS	A	B	A

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	50%
Vol Thru, %	45%	0%	0%	50%
Vol Right, %	55%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	330	72	36	169
LT Vol	0	72	0	85
Through Vol	147	0	0	84
RT Vol	183	0	36	0
Lane Flow Rate	364	90	40	223
Geometry Grp	2	5	5	2
Degree of Util (X)	0.429	0.158	0.057	0.297
Departure Headway (Hd)	4.239	6.308	5.095	4.787
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	849	566	698	748
Service Time	2.276	4.078	2.864	2.834
HCM Lane V/C Ratio	0.429	0.159	0.057	0.298
HCM Control Delay	10.4	10.3	8.2	9.9
HCM Lane LOS	B	B	A	A
HCM 95th-tile Q	2.2	0.6	0.2	1.2

Intersection	
Intersection Delay, s/veh	30.5
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	174	64	214	136	179	322
Future Vol, veh/h	174	64	214	136	179	322
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	256	88	230	151	239	343
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	16.9	18.1	46.7
HCM LOS	C	C	E

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	36%
Vol Thru, %	61%	0%	0%	64%
Vol Right, %	39%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	350	174	64	501
LT Vol	0	174	0	179
Through Vol	214	0	0	322
RT Vol	136	0	64	0
Lane Flow Rate	381	256	88	581
Geometry Grp	2	5	5	2
Degree of Util (X)	0.619	0.541	0.156	0.938
Departure Headway (Hd)	5.843	7.618	6.39	5.811
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	614	471	558	622
Service Time	3.931	5.405	4.176	3.888
HCM Lane V/C Ratio	0.621	0.544	0.158	0.934
HCM Control Delay	18.1	19.1	10.4	46.7
HCM Lane LOS	C	C	B	E
HCM 95th-tile Q	4.2	3.2	0.5	12.5

Intersection	
Intersection Delay, s/veh	49
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	254	70	220	148	189	322
Future Vol, veh/h	254	70	220	148	189	322
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	374	96	237	164	252	343
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	31	24.1	80
HCM LOS	D	C	F

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	37%
Vol Thru, %	60%	0%	0%	63%
Vol Right, %	40%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	368	254	70	511
LT Vol	0	254	0	189
Through Vol	220	0	0	322
RT Vol	148	0	70	0
Lane Flow Rate	401	374	96	595
Geometry Grp	2	5	5	2
Degree of Util (X)	0.709	0.804	0.174	1.059
Departure Headway (Hd)	6.603	8.005	6.772	6.41
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	549	456	533	565
Service Time	4.603	5.705	4.472	4.503
HCM Lane V/C Ratio	0.73	0.82	0.18	1.053
HCM Control Delay	24.1	36.2	10.9	80
HCM Lane LOS	C	E	B	F
HCM 95th-tile Q	5.7	7.4	0.6	17

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	74	38	76	53
Average Queue (ft)	36	28	50	27
95th Queue (ft)	61	49	74	51
Link Distance (ft)	482		81	489
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			0	
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	8	4		
Queuing Penalty (veh)	3	3		

Intersection: 4: Naglee Rd & DWY

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Zone Summary

Zone wide Queuing Penalty: 6

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	116	53	95	313
Average Queue (ft)	59	35	59	120
95th Queue (ft)	96	73	83	259
Link Distance (ft)	482		81	489
Upstream Blk Time (%)			2	
Queuing Penalty (veh)			6	
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	36	6		
Queuing Penalty (veh)	23	10		

Intersection: 4: Naglee Rd & DWY

Movement	WB	NB
Directions Served	R	TR
Maximum Queue (ft)	30	50
Average Queue (ft)	4	0
95th Queue (ft)	21	0
Link Distance (ft)	155	257
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 39

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	160	54	98	204
Average Queue (ft)	92	45	81	138
95th Queue (ft)	156	58	107	176
Link Distance (ft)	482		81	489
Upstream Blk Time (%)			5	
Queuing Penalty (veh)			17	
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	41	7		
Queuing Penalty (veh)	29	17		

Intersection: 4: Naglee Rd & DWY

Movement	WB	NB
Directions Served	R	TR
Maximum Queue (ft)	30	77
Average Queue (ft)	8	25
95th Queue (ft)	30	75
Link Distance (ft)	155	257
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 64

San Joaquin County
Traffic Engineering Department

From 1/1/2014 to 12/31/2023

Total Collisions: 5
Injury Collisions: 0
Fatal Collisions: 0

Collision Summary Report

7/17/24

NAGLEE RD & LARCH RD

90902616 **1/8/2019** **02:40** Tuesday NAGLEE RD - LARCH RD 126' Direction: North Dark - No Street Clear Pty at Fault:1
Hit Object Fixed Object Driving Under Influence 23152A Hit & Run: No Property Damage Only # Inj: 0 # Killed: 0

Party 1 Driver North Ran Off Road Male Age: 29 2019 NISS
Veh Type: Passenger Car Sobriety: HBD Under Influence Assoc Factor: Violation Air Bag Not Deployed Not Stated

91608660 **10/7/2021** **00:35** Thursday NAGLEE RD - LARCH RD 10' Direction: North Dark - No Street Clear Pty at Fault:1
Hit Object Fixed Object Driving Under Influence 23152A Hit & Run: No Property Damage Only # Inj: 0 # Killed: 0

Party 1 Driver North Other Unsafe Turning Male Age: 28 2002 FORD
Veh Type: Passenger Car Sobriety: HBD Under Influence Assoc Factor: Not Stated Air Bag Deployed Not Stated

91787725 **5/27/2022** **16:45** Friday LARCH RD - NAGLEE RD 5' Direction: North Daylight Clear Pty at Fault:1
Hit Object Fixed Object Improper Turning 22107 Hit & Run: No Property Damage Only # Inj: 0 # Killed: 0

Party 1 Driver North Making Right Turn Male Age: 26 2011 BMW Passenger Car, Station Wagon, Jeep No Injury
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: Not Stated Air Bag Not Deployed Not Stated

91956699 **12/22/2022** **12:55** Thursday NAGLEE RD - LARCH RD 0' Direction: Not Stated Daylight Clear Pty at Fault:1
Broadside Other Motor Vehicle Traffic Signals and Signs 22450A Hit & Run: Misde Property Damage Only # Inj: 0 # Killed: 0

Party 1 Driver West Proceeding Straight Not Sta Age: 0 - Unknown Hit and Run Vehicle Involvem No Injury
Veh Type: Not Stated Sobriety: Impairment Not Kno Assoc Factor: Not Stated Unknown Not Stated
Party 2 Driver North Proceeding Straight Male Age: 52 2019 TOYT Pickups & Panels No Injury
Veh Type: Pickup Truck Sobriety: HNBD Assoc Factor: Not Stated Air Bag Not Deployed Not Stated

92088974 **5/4/2023** **16:30** Thursday LARCH RD - NAGLEE RD 20' Direction: East Daylight Cloudy Pty at Fault:1
Rear-End Other Motor Vehicle Unsafe Speed 22350 Hit & Run: Misde Property Damage Only # Inj: 0 # Killed: 0

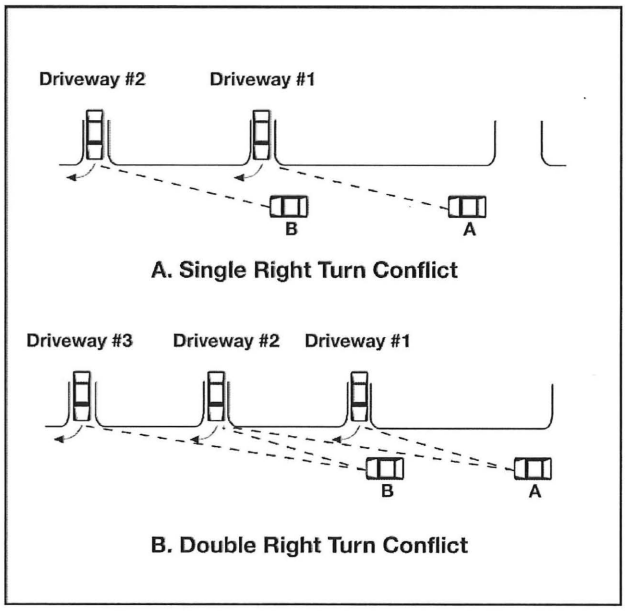
Party 1 Driver West Proceeding Straight Not Sta Age: 0 - Unknown Hit and Run Vehicle Involvem No Injury
Veh Type: Not Stated Sobriety: Impairment Not Kno Assoc Factor: Not Stated Unknown Not Stated
Party 2 Driver West Stopped in Road Male Age: 59 2015 MERZ Sport Utility Vehicle No Injury
Veh Type: Passenger Car Sobriety: HNBD Assoc Factor: Not Stated Air Bag Not Deployed Not Stated

Settings for Query:

Street: NAGLEE RD
Cross Street: LARCH RD
Within Distance of: 500
Sorted By: Date and Time

Good Access Management

Good access management improves traffic safety and operations. In a local residential street, driveway access is generally provided to all homes. However, good access management to non-residential streets generally requires a different set of criteria. Too many individual access points along a relatively undeveloped corridor are seldom seen as hazardous. However, unplanned and uncoordinated access points may create significant impacts on the traffic operations and safety on a corridor in the future when traffic volumes increase.



The following guidelines are generally applicable to collector streets (or higher) with street medians.

It is widely accepted that minimum access spacing provides drivers with sufficient perception-reaction time to address one potential conflict area at a time. Guidelines for minimum unsignalized driveway or local street spacing should consider the speed of the major roadway, stopping site distance, the elimination of right-turn conflict overlays, and the functional area of unsignalized access points. When a driveway is to be located upstream of a major intersection, the possibility of weaving, or lane shifts, to make a left turn at the major intersection should also be considered.

A single conflict between a through vehicle and an egress vehicle is created where the driver of the through vehicle must be alert to a right-turning vehicle entering the roadway from one driveway or minor street at a time. The driver must monitor two access locations at a time while performing the other driving tasks.

The functional area of any access point should also be kept clear of any additional points of access. The Transportation Research Board (TRB) published guidelines for minimum access spacing as shown in Table I.

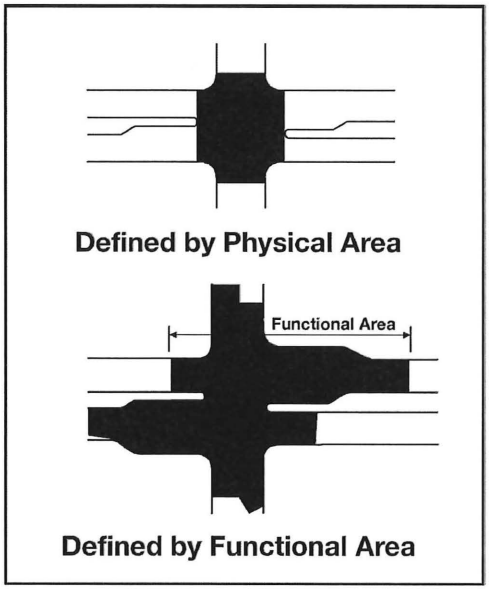


Table I: Minimum Access Spacing (Feet)

Speed (mph)	Right-Turn Conflict Overlays[1]		Functional Area[2]
	Minimum (ft)	Preferred (ft)	
30	100	180	145
40	195	260	180
45	295	345	230
50	395	430	295
55	-	-	380

Notes: [1]*Adapted from National Highway Institute, Access Management, Location, and Design, NHI Course No. 15255, 1998.*
[2]*Adapted from Transportation Research Board, Impacts of Access management Techniques, NCHRP Report 420, Washington, D.C., TRB, NRC, 1988.*

Also, it is important to consider corner clearance. Corner clearance is the distance between a private access drive and the nearest cross road intersection. It should provide drivers with adequate perception-reaction time to assess potential downstream conflicts and is aimed at preventing the location of driveways within the functional area of an intersection. It will also minimize driveway/intersection conflicts by preventing blockage of driveways upstream of an intersection due to standing traffic queues. Minimum driveway setback distances should take into consideration typical traffic queue lengths while permitting sufficient movement to driveway vehicles. Corner clearances are applicable to all categories of roadways. On a major roadway the corner clearance should be the same as driveway spacing. The corner clearance on the upstream side should be longer than the longest expected queue, or at a minimum, the distances indicated on Table II. On the downstream side, the minimum distance should conform to Table II. Driveways on corner lots should be located on the lesser street and near the property line most distance from the intersection.

Table II: Minimum Corner Clearance (Feet)

Speed (mph)	Distance From Near Side of Street to Near Side of Access Driveway		
	Major Generator (ft)	Minor Generator (ft)	Minimum Generator (ft)
30	195	150	80
40	260	215	115
45	330	260	150
50	395	310	180

Source: *TRB, Access Management Guidelines for Activity Center, NCHRP Report 348, 1992.*

Peak Hour Signal Warrant Analysis

Intersection: Naglee Road (major) & W. Larch Road (minor)
Scenario: Existing Plus Approved Projects Plus Project Conditions

WARRANT 3 – PEAK HOURS

PART A or PART B SATISFIED?

Part A

(Criteria 1, 2 and 3, below, must all be satisfied)

Part A Criteria	PM Satisfied?	Late AM Sunday Satisfied?	Special Sunday Satisfied?
	No	Yes	Yes
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND	No	Yes (20-hr)	Yes (60-hr)
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND	Yes	Yes	Yes
3. The total entering volume services during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 for intersections with three approaches.	No	Yes	Yes

Part B

PM Satisfied?	Late AM Sunday Satisfied?	Special Sunday Satisfied?
No	Yes	Yes

Approach Lanes	PM Peak Hour Volume	Late AM Sunday Peak Hour Volume	Special Event Sunday Peak Hour Volume
Both Approaches – Major Street	499	851	879
Highest Approach – Minor Street	108	238	324

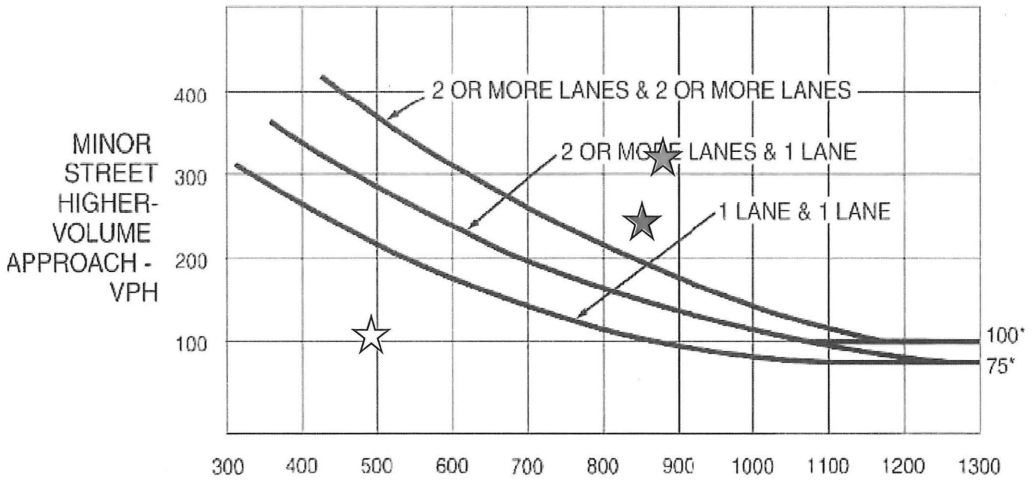
Source: February 29th & March 1st, 2024 counts

Note: The plotted points for vehicles per hour on major street (both approaches) and corresponding per hour higher vehicle volume minor street approach (one direction only) for one hour (any consecutive 15-minute intervals) must fall above the applicable curve in MUTCD Figure 4C-4 for a traffic signal to be warranted.

Intersection: Naglee Road (major) & W. Larch Road (minor)
Scenario: Existing Plus Approved Projects Plus Project Conditions

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

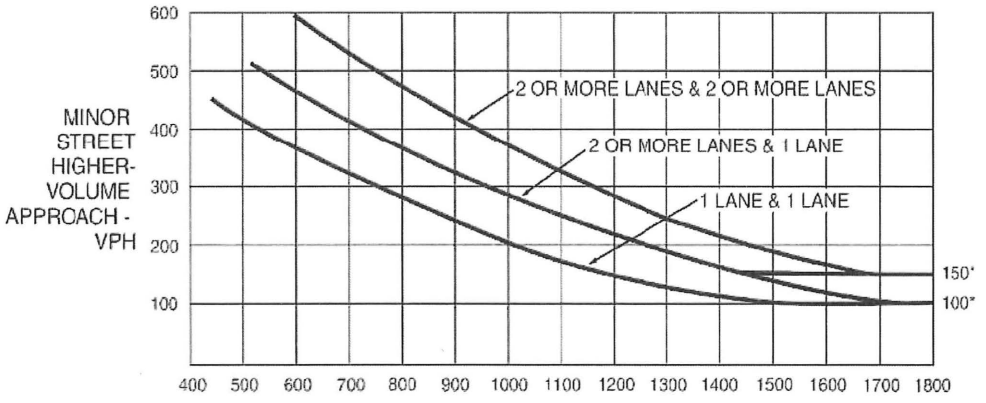
(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



PM Peak Hour ☆
Late AM Sunday Peak Hour ★
Special Event Sunday Peak ★

*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

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.

Appendix E ANALYSIS: CUMULATIVE NO PROJECT CONDITIONS

- LOS CALCULATION SHEETS

- PEAK HOUR WARRANTS

Intersection	
Int Delay, s/veh	5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	36	147	182	84	84
Future Vol, veh/h	70	36	147	182	84	84
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	80	90	90	91	66	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	105	48	196	240	153	113

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	735	316	0	0	436	0
Stage 1	316	-	-	-	-	-
Stage 2	419	-	-	-	-	-
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	387	724	-	-	1124	-
Stage 1	739	-	-	-	-	-
Stage 2	664	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	331	724	-	-	1124	-
Mov Cap-2 Maneuver	331	-	-	-	-	-
Stage 1	739	-	-	-	-	-
Stage 2	568	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.5	0	5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	399	1124	-
HCM Lane V/C Ratio	-	-	0.383	0.136	-
HCM Control Delay (s)	-	-	19.5	8.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0.5	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	81	49	63	4	25	12	58	196	5	11	113	55
Future Volume (veh/h)	81	49	63	4	25	12	58	196	5	11	113	55
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	125	85	91	15	43	19	107	283	14	29	154	87
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.78	0.69	0.83	0.33	0.69	0.75	0.65	0.83	0.42	0.46	0.88	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	167	113	121	40	116	51	272	1270	63	0	307	165
Arrive On Green	0.23	0.23	0.23	0.12	0.12	0.12	0.15	0.37	0.37	0.00	0.14	0.14
Sat Flow, veh/h	720	490	524	345	988	436	1774	3433	169	0	2227	1194
Grp Volume(v), veh/h	301	0	0	77	0	0	107	145	152	0	121	120
Grp Sat Flow(s),veh/h/ln	1734	0	0	1769	0	0	1774	1770	1833	0	1770	1652
Q Serve(g_s), s	8.2	0.0	0.0	2.0	0.0	0.0	2.8	2.9	2.9	0.0	3.2	3.4
Cycle Q Clear(g_c), s	8.2	0.0	0.0	2.0	0.0	0.0	2.8	2.9	2.9	0.0	3.2	3.4
Prop In Lane	0.42		0.30	0.19		0.25	1.00		0.09	0.00		0.72
Lane Grp Cap(c), veh/h	401	0	0	208	0	0	272	655	678	0	244	228
V/C Ratio(X)	0.75	0.00	0.00	0.37	0.00	0.00	0.39	0.22	0.22	0.00	0.49	0.53
Avail Cap(c_a), veh/h	901	0	0	362	0	0	349	867	898	0	867	810
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	0.0	20.7	0.0	0.0	19.4	11.0	11.0	0.0	20.3	20.4
Incr Delay (d2), s/veh	2.8	0.0	0.0	1.1	0.0	0.0	0.9	0.2	0.2	0.0	1.6	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	0.0	1.0	0.0	0.0	1.4	1.4	1.5	0.0	1.7	1.7
LnGrp Delay(d),s/veh	21.0	0.0	0.0	21.8	0.0	0.0	20.3	11.2	11.2	0.0	21.8	22.3
LnGrp LOS	C			C			C	B	B		C	C
Approach Vol, veh/h		301			77			404			241	
Approach Delay, s/veh		21.0			21.8			13.6			22.0	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	23.9		16.3	11.8	12.1		10.6
Change Period (Y+Rc), s	4.0	5.1		4.6	4.0	5.1		4.6
Max Green Setting (Gmax), s	10.0	24.9		26.4	10.0	24.9		10.4
Max Q Clear Time (g_c+I1), s	0.0	4.9		10.2	4.8	5.4		4.0
Green Ext Time (p_c), s	0.0	1.5		1.7	0.1	1.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	58	209	99	106	42	16
Future Vol, veh/h	58	209	99	106	42	16
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	81	83	80	72	71	67
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	302	149	177	71	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	561	86	100	0	-	0
Stage 1	86	-	-	-	-	-
Stage 2	475	-	-	-	-	-
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	489	973	1493	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	626	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	435	973	1493	-	-	-
Mov Cap-2 Maneuver	435	-	-	-	-	-
Stage 1	833	-	-	-	-	-
Stage 2	626	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.5	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1493	-	764	-	-
HCM Lane V/C Ratio	0.099	-	0.508	-	-
HCM Control Delay (s)	7.7	0	14.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	2.9	-	-

Intersection	
Int Delay, s/veh	54.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	92	58	208	123	169	322
Future Vol, veh/h	92	58	208	123	169	322
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	68	73	93	90	75	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	162	95	268	164	270	411

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1301	350	0	0	432	0
Stage 1	350	-	-	-	-	-
Stage 2	951	-	-	-	-	-
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	178	693	-	-	1128	-
Stage 1	713	-	-	-	-	-
Stage 2	375	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 123	693	-	-	1128	-
Mov Cap-2 Maneuver	~ 123	-	-	-	-	-
Stage 1	713	-	-	-	-	-
Stage 2	259	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	282.3	0	3.6
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	177	1128	-
HCM Lane V/C Ratio	-	-	1.456	0.24	-
HCM Control Delay (s)	-	-	282.3	9.2	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	16.1	0.9	-

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	24	10	9	7	13	15	24	293	9	15	383	21
Future Volume (veh/h)	24	10	9	7	13	15	24	293	9	15	383	21
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	52	19	19	10	29	24	58	391	24	24	500	34
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.55	0.63	0.56	0.88	0.54	0.75	0.50	0.90	0.45	0.75	0.92	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	150	55	55	30	86	71	201	1473	90	0	790	54
Arrive On Green	0.15	0.15	0.15	0.11	0.11	0.11	0.11	0.43	0.43	0.00	0.23	0.23
Sat Flow, veh/h	1009	369	369	275	798	660	1774	3388	207	0	3364	228
Grp Volume(v), veh/h	90	0	0	63	0	0	58	204	211	0	262	272
Grp Sat Flow(s),veh/h/ln	1747	0	0	1733	0	0	1774	1770	1826	0	1770	1822
Q Serve(g_s), s	2.1	0.0	0.0	1.6	0.0	0.0	1.4	3.4	3.4	0.0	6.2	6.2
Cycle Q Clear(g_c), s	2.1	0.0	0.0	1.6	0.0	0.0	1.4	3.4	3.4	0.0	6.2	6.2
Prop In Lane	0.58		0.21	0.16		0.38	1.00		0.11	0.00		0.13
Lane Grp Cap(c), veh/h	259	0	0	187	0	0	201	769	794	0	415	428
V/C Ratio(X)	0.35	0.00	0.00	0.34	0.00	0.00	0.29	0.26	0.27	0.00	0.63	0.63
Avail Cap(c_a), veh/h	378	0	0	337	0	0	383	868	896	0	868	894
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	17.7	0.0	0.0	19.1	0.0	0.0	18.8	8.4	8.4	0.0	15.9	15.9
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.1	0.0	0.0	0.8	0.2	0.2	0.0	1.6	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.0	0.8	0.0	0.0	0.7	1.7	1.7	0.0	3.2	3.3
LnGrp Delay(d),s/veh	18.5	0.0	0.0	20.2	0.0	0.0	19.6	8.5	8.5	0.0	17.5	17.5
LnGrp LOS	B			C			B	A	A		B	B
Approach Vol, veh/h		90			63			473			534	
Approach Delay, s/veh		18.5			20.2			9.9			17.5	
Approach LOS		B			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	25.2		11.5	9.3	16.0		9.6
Change Period (Y+Rc), s	4.0	5.1		4.6	4.0	5.1		4.6
Max Green Setting (Gmax), s	10.0	22.7		10.0	10.0	22.7		9.0
Max Q Clear Time (g_c+I1), s	0.0	5.4		4.1	3.4	8.2		3.6
Green Ext Time (p_c), s	0.0	2.1		0.2	0.0	2.7		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	14.6
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	289	133	34	31	17
Future Vol, veh/h	10	289	133	34	31	17
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	83	79	83	57	78	53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	14	439	192	72	48	38

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	523	67	86	0	-	0
Stage 1	67	-	-	-	-	-
Stage 2	456	-	-	-	-	-
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	514	997	1510	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	638	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	446	997	1510	-	-	-
Mov Cap-2 Maneuver	446	-	-	-	-	-
Stage 1	830	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	12.1	5.6	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1510	-	959	-	-
HCM Lane V/C Ratio	0.127	-	0.473	-	-
HCM Control Delay (s)	7.7	0	12.1	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.4	-	2.6	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	70	36	147	182	84	84
Future Volume (veh/h)	70	36	147	182	84	84
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	105	48	196	240	153	113
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.80	0.90	0.90	0.91	0.66	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	190	170	330	405	403	235
Arrive On Green	0.11	0.11	0.43	0.43	0.43	0.43
Sat Flow, veh/h	1774	1583	763	935	377	544
Grp Volume(v), veh/h	105	48	0	436	266	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1698	921	0
Q Serve(g_s), s	1.3	0.7	0.0	4.6	2.2	0.0
Cycle Q Clear(g_c), s	1.3	0.7	0.0	4.6	6.9	0.0
Prop In Lane	1.00	1.00		0.55	0.58	
Lane Grp Cap(c), veh/h	190	170	0	735	638	0
V/C Ratio(X)	0.55	0.28	0.00	0.59	0.42	0.00
Avail Cap(c_a), veh/h	516	461	0	1641	1242	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.0	9.7	0.0	5.1	5.6	0.0
Incr Delay (d2), s/veh	2.5	0.9	0.0	0.8	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.3	0.0	2.2	1.6	0.0
LnGrp Delay(d),s/veh	12.5	10.6	0.0	5.9	6.0	0.0
LnGrp LOS	B	B		A	A	
Approach Vol, veh/h	153		436			266
Approach Delay, s/veh	11.9		5.9			6.0
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		16.1				16.1		7.6
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 23				22.2		6.9
Max Q Clear Time (g_c+I1), s		6.6				8.9		3.3
Green Ext Time (p_c), s		2.5				1.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.0
HCM 2010 LOS	A

Notes

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	92	58	208	123	169	322
Future Volume (veh/h)	92	58	208	123	169	322
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	162	95	268	164	270	411
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	232	207	678	415	382	511
Arrive On Green	0.13	0.13	0.63	0.63	0.63	0.63
Sat Flow, veh/h	1774	1583	1083	663	430	817
Grp Volume(v), veh/h	162	95	0	432	681	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1746	1247	0
Q Serve(g_s), s	3.9	2.5	0.0	5.5	15.9	0.0
Cycle Q Clear(g_c), s	3.9	2.5	0.0	5.5	21.4	0.0
Prop In Lane	1.00	1.00		0.38	0.40	
Lane Grp Cap(c), veh/h	232	207	0	1093	893	0
V/C Ratio(X)	0.70	0.46	0.00	0.40	0.76	0.00
Avail Cap(c_a), veh/h	340	304	0	1604	1267	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	18.6	18.0	0.0	4.2	7.7	0.0
Incr Delay (d2), s/veh	3.8	1.6	0.0	0.2	1.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	1.2	0.0	2.6	7.4	0.0
LnGrp Delay(d),s/veh	22.4	19.6	0.0	4.4	9.4	0.0
LnGrp LOS	C	B		A	A	
Approach Vol, veh/h	257		432			681
Approach Delay, s/veh	21.4		4.4			9.4
Approach LOS	C		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		33.9				33.9		11.0
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 41				40.5		8.6
Max Q Clear Time (g_c+I1), s		7.5				23.4		5.9
Green Ext Time (p_c), s		3.0				4.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	10.1
HCM 2010 LOS	B

Notes

Intersection	
Intersection Delay, s/veh	11.5
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	70	36	147	182	84	84
Future Vol, veh/h	70	36	147	182	84	84
Peak Hour Factor	0.80	0.90	0.90	0.91	0.66	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	105	48	196	240	153	113
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	10.2	12.4	10.9
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	50%
Vol Thru, %	45%	0%	0%	50%
Vol Right, %	55%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	329	70	36	168
LT Vol	0	70	0	84
Through Vol	147	0	0	84
RT Vol	182	0	36	0
Lane Flow Rate	436	105	48	266
Geometry Grp	2	5	5	2
Degree of Util (X)	0.531	0.195	0.073	0.366
Departure Headway (Hd)	4.382	6.669	5.452	4.958
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	815	542	661	718
Service Time	2.441	4.369	3.152	3.033
HCM Lane V/C Ratio	0.535	0.194	0.073	0.37
HCM Control Delay	12.4	11	8.6	10.9
HCM Lane LOS	B	B	A	B
HCM 95th-tile Q	3.2	0.7	0.2	1.7

Intersection	
Intersection Delay, s/veh	45.1
Intersection LOS	E

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	92	58	208	123	169	322
Future Vol, veh/h	92	58	208	123	169	322
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	162	95	268	164	270	411
Number of Lanes	1	1	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	2
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	2	0
HCM Control Delay	13.3	19.4	73.4
HCM LOS	B	C	F

Lane	NBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	0%	100%	0%	34%
Vol Thru, %	63%	0%	0%	66%
Vol Right, %	37%	0%	100%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	331	92	58	491
LT Vol	0	92	0	169
Through Vol	208	0	0	322
RT Vol	123	0	58	0
Lane Flow Rate	432	162	95	681
Geometry Grp	2	5	5	2
Degree of Util (X)	0.667	0.348	0.172	1.053
Departure Headway (Hd)	5.7	7.943	6.711	5.562
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	640	456	538	654
Service Time	3.7	5.643	4.411	3.595
HCM Lane V/C Ratio	0.675	0.355	0.177	1.041
HCM Control Delay	19.4	14.8	10.8	73.4
HCM Lane LOS	C	B	B	F
HCM 95th-tile Q	5	1.5	0.6	18.2

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	31	53	75	94
Average Queue (ft)	25	25	44	54
95th Queue (ft)	42	62	70	90
Link Distance (ft)	2539		397	489
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	12	2		
Queuing Penalty (veh)	5	2		

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	117	55	132	202
Average Queue (ft)	61	38	82	137
95th Queue (ft)	126	66	142	206
Link Distance (ft)	2539		397	489
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	35	14		
Queuing Penalty (veh)	24	16		

Appendix F ANALYSIS: CUMULATIVE PLUS PROJECT CONDITIONS

- LOS CALCULATION SHEETS

- PEAK HOUR WARRANTS

Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	86	43	176	219	102	101
Future Vol, veh/h	86	43	176	219	102	101
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	80	90	90	91	66	89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	48	196	241	155	113

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	740	317	0	0	437	0
Stage 1	317	-	-	-	-	-
Stage 2	423	-	-	-	-	-
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	384	724	-	-	1123	-
Stage 1	738	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	328	724	-	-	1123	-
Mov Cap-2 Maneuver	328	-	-	-	-	-
Stage 1	738	-	-	-	-	-
Stage 2	564	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	20	0	5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	394	1123	-
HCM Lane V/C Ratio	-	-	0.394	0.138	-
HCM Control Delay (s)	-	-	20	8.7	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0.5	-

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	97	59	76	5	30	14	70	239	6	13	138	66
Future Volume (veh/h)	97	59	76	5	30	14	70	239	6	13	138	66
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	124	86	92	15	43	19	108	288	14	28	157	87
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.78	0.69	0.83	0.33	0.69	0.75	0.65	0.83	0.42	0.46	0.88	0.76
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	165	114	122	40	116	51	273	1271	62	0	308	162
Arrive On Green	0.23	0.23	0.23	0.12	0.12	0.12	0.15	0.37	0.37	0.00	0.14	0.14
Sat Flow, veh/h	712	494	528	345	988	436	1774	3437	166	0	2243	1181
Grp Volume(v), veh/h	302	0	0	77	0	0	108	148	154	0	122	122
Grp Sat Flow(s),veh/h/ln	1734	0	0	1769	0	0	1774	1770	1833	0	1770	1654
Q Serve(g_s), s	8.2	0.0	0.0	2.0	0.0	0.0	2.8	2.9	2.9	0.0	3.3	3.5
Cycle Q Clear(g_c), s	8.2	0.0	0.0	2.0	0.0	0.0	2.8	2.9	2.9	0.0	3.3	3.5
Prop In Lane	0.41		0.30	0.19		0.25	1.00		0.09	0.00		0.71
Lane Grp Cap(c), veh/h	402	0	0	207	0	0	273	655	678	0	243	228
V/C Ratio(X)	0.75	0.00	0.00	0.37	0.00	0.00	0.40	0.23	0.23	0.00	0.50	0.54
Avail Cap(c_a), veh/h	899	0	0	361	0	0	349	866	897	0	866	809
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	18.2	0.0	0.0	20.7	0.0	0.0	19.4	11.0	11.0	0.0	20.3	20.4
Incr Delay (d2), s/veh	2.8	0.0	0.0	1.1	0.0	0.0	0.9	0.2	0.2	0.0	1.6	2.0
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	4.3	0.0	0.0	1.1	0.0	0.0	1.4	1.4	1.5	0.0	1.7	1.7
LnGrp Delay(d),s/veh	21.0	0.0	0.0	21.8	0.0	0.0	20.3	11.2	11.2	0.0	21.9	22.4
LnGrp LOS	C			C			C	B	B		C	C
Approach Vol, veh/h		302			77			410			244	
Approach Delay, s/veh		21.0			21.8			13.6			22.2	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	23.9		16.4	11.8	12.1		10.6
Change Period (Y+Rc), s	4.0	5.1		4.6	4.0	5.1		4.6
Max Green Setting (Gmax), s	10.0	24.9		26.4	10.0	24.9		10.4
Max Q Clear Time (g_c+I1), s	0.0	4.9		10.2	4.8	5.5		4.0
Green Ext Time (p_c), s	0.0	1.5		1.7	0.1	1.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	18.4
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	70	252	120	127	50	20
Future Vol, veh/h	70	252	120	127	50	20
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	81	83	80	72	71	62
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	86	304	150	176	70	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	562	86	102	0	-	0
Stage 1	86	-	-	-	-	-
Stage 2	476	-	-	-	-	-
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	488	973	1490	-	-	-
Stage 1	937	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	433	973	1490	-	-	-
Mov Cap-2 Maneuver	433	-	-	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	625	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.6	3.5	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1490	-	762	-	-
HCM Lane V/C Ratio	0.101	-	0.512	-	-
HCM Control Delay (s)	7.7	0	14.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	3	-	-

Intersection	
Int Delay, s/veh	207.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	192	76	256	161	213	386
Future Vol, veh/h	192	76	256	161	213	386
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	68	73	93	90	75	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	282	104	275	179	284	411

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1344	365	0	0	454	0
Stage 1	365	-	-	-	-	-
Stage 2	979	-	-	-	-	-
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	~ 167	680	-	-	1107	-
Stage 1	702	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 112	680	-	-	1107	-
Mov Cap-2 Maneuver	~ 112	-	-	-	-	-
Stage 1	702	-	-	-	-	-
Stage 2	~ 243	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	$ 817	0	3.8
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	145	1107	-
HCM Lane V/C Ratio	-	-	2.665	0.257	-
HCM Control Delay (s)	-	-	$ 817	9.4	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	34.4	1	-

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	12	11	8	16	18	29	416	11	18	542	25
Future Volume (veh/h)	29	12	11	8	16	18	29	416	11	18	542	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	53	19	20	9	30	24	58	462	24	24	589	33
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.55	0.63	0.56	0.88	0.54	0.75	0.50	0.90	0.45	0.75	0.92	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	148	53	56	26	88	70	199	1538	80	0	866	48
Arrive On Green	0.15	0.15	0.15	0.11	0.11	0.11	0.11	0.45	0.45	0.00	0.25	0.25
Sat Flow, veh/h	1006	360	379	248	826	660	1774	3424	177	0	3408	191
Grp Volume(v), veh/h	92	0	0	63	0	0	58	238	248	0	305	317
Grp Sat Flow(s),veh/h/ln	1746	0	0	1734	0	0	1774	1770	1831	0	1770	1829
Q Serve(g_s), s	2.3	0.0	0.0	1.6	0.0	0.0	1.4	4.1	4.1	0.0	7.5	7.5
Cycle Q Clear(g_c), s	2.3	0.0	0.0	1.6	0.0	0.0	1.4	4.1	4.1	0.0	7.5	7.5
Prop In Lane	0.58		0.22	0.14		0.38	1.00		0.10	0.00		0.10
Lane Grp Cap(c), veh/h	257	0	0	185	0	0	199	795	823	0	450	465
V/C Ratio(X)	0.36	0.00	0.00	0.34	0.00	0.00	0.29	0.30	0.30	0.00	0.68	0.68
Avail Cap(c_a), veh/h	653	0	0	648	0	0	387	795	823	0	743	768
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	18.5	0.0	0.0	19.9	0.0	0.0	19.6	8.4	8.4	0.0	16.2	16.2
Incr Delay (d2), s/veh	0.8	0.0	0.0	1.1	0.0	0.0	0.8	0.2	0.2	0.0	1.8	1.8
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	0.0	0.0	0.8	0.0	0.0	0.8	2.0	2.1	0.0	3.9	4.0
LnGrp Delay(d),s/veh	19.3	0.0	0.0	21.0	0.0	0.0	20.4	8.6	8.6	0.0	18.0	18.0
LnGrp LOS	B			C			C	A	A		B	B
Approach Vol, veh/h		92			63			544			622	
Approach Delay, s/veh		19.3			21.0			9.9			18.0	
Approach LOS		B			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	26.7		11.7	9.4	17.3		9.7
Change Period (Y+Rc), s	4.0	5.1		4.6	4.0	5.1		4.6
Max Green Setting (Gmax), s	10.5	20.2		18.0	10.5	20.2		18.0
Max Q Clear Time (g_c+I1), s	0.0	6.1		4.3	3.4	9.5		3.6
Green Ext Time (p_c), s	0.0	2.4		0.3	0.0	2.7		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	24	366	174	41	37	30
Future Vol, veh/h	24	366	174	41	37	30
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	83	79	83	57	78	53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	463	210	72	47	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	568	76	104	0	-	0
Stage 1	76	-	-	-	-	-
Stage 2	492	-	-	-	-	-
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	484	985	1488	-	-	-
Stage 1	947	-	-	-	-	-
Stage 2	615	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	413	985	1488	-	-	-
Mov Cap-2 Maneuver	413	-	-	-	-	-
Stage 1	808	-	-	-	-	-
Stage 2	615	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	5.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1488	-	911	-	-
HCM Lane V/C Ratio	0.141	-	0.54	-	-
HCM Control Delay (s)	7.8	0	13.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.5	-	3.3	-	-

Intersection	
Int Delay, s/veh	444.8

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	272	82	262	173	223	386
Future Vol, veh/h	272	82	262	173	223	386
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	68	73	93	90	75	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	400	112	282	192	297	411

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1383	378	0	0	474	0
Stage 1	378	-	-	-	-	-
Stage 2	1005	-	-	-	-	-
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	~ 158	669	-	-	1088	-
Stage 1	693	-	-	-	-	-
Stage 2	~ 354	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 102	669	-	-	1088	-
Mov Cap-2 Maneuver	~ 102	-	-	-	-	-
Stage 1	693	-	-	-	-	-
Stage 2	~ 229	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, $	1465.3	0	4
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	125	1088	-
HCM Lane V/C Ratio	-	-	4.099	0.273	-
HCM Control Delay (s)	-	-	$ 1465.3	9.5	0
HCM Lane LOS	-	-	F	A	A
HCM 95th %tile Q(veh)	-	-	52.1	1.1	-

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	29	12	11	8	16	18	29	479	11	18	622	25
Future Volume (veh/h)	29	12	11	8	16	18	29	479	11	18	622	25
Number	7	4	14	3	8	18	5	2	12	1	6	16
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
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1900	1863	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	53	19	20	9	30	24	58	532	24	24	676	33
Adj No. of Lanes	0	1	0	0	1	0	1	2	0	0	2	0
Peak Hour Factor	0.55	0.63	0.56	0.88	0.54	0.75	0.50	0.90	0.45	0.75	0.92	0.75
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	144	52	54	26	86	69	195	1622	73	0	966	47
Arrive On Green	0.14	0.14	0.14	0.10	0.10	0.10	0.11	0.47	0.47	0.00	0.28	0.28
Sat Flow, veh/h	1006	360	379	248	826	660	1774	3450	155	0	3435	168
Grp Volume(v), veh/h	92	0	0	63	0	0	58	273	283	0	348	361
Grp Sat Flow(s),veh/h/ln	1746	0	0	1734	0	0	1774	1770	1835	0	1770	1833
Q Serve(g_s), s	2.4	0.0	0.0	1.7	0.0	0.0	1.5	4.9	4.9	0.0	8.9	8.9
Cycle Q Clear(g_c), s	2.4	0.0	0.0	1.7	0.0	0.0	1.5	4.9	4.9	0.0	8.9	8.9
Prop In Lane	0.58		0.22	0.14		0.38	1.00		0.08	0.00		0.09
Lane Grp Cap(c), veh/h	250	0	0	181	0	0	195	832	863	0	498	516
V/C Ratio(X)	0.37	0.00	0.00	0.35	0.00	0.00	0.30	0.33	0.33	0.00	0.70	0.70
Avail Cap(c_a), veh/h	344	0	0	308	0	0	350	832	863	0	792	821
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	0.00	0.00	1.00	0.00	0.00	1.00	1.00	1.00	0.00	1.00	1.00
Uniform Delay (d), s/veh	19.6	0.0	0.0	21.1	0.0	0.0	20.8	8.4	8.4	0.0	16.3	16.3
Incr Delay (d2), s/veh	0.9	0.0	0.0	1.1	0.0	0.0	0.8	0.2	0.2	0.0	1.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.0	0.0	0.9	0.0	0.0	0.8	2.4	2.5	0.0	4.6	4.8
LnGrp Delay(d),s/veh	20.5	0.0	0.0	22.2	0.0	0.0	21.6	8.6	8.6	0.0	18.1	18.0
LnGrp LOS	C			C			C	A	A		B	B
Approach Vol, veh/h		92			63			614			709	
Approach Delay, s/veh		20.5			22.2			9.9			18.1	
Approach LOS		C			C			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	0.0	28.9		11.9	9.6	19.4		9.9
Change Period (Y+Rc), s	4.0	5.1		4.6	4.0	5.1		4.6
Max Green Setting (Gmax), s	10.0	22.7		10.0	10.0	22.7		9.0
Max Q Clear Time (g_c+I1), s	0.0	6.9		4.4	3.5	10.9		3.7
Green Ext Time (p_c), s	0.0	2.9		0.2	0.0	3.3		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Intersection	
Int Delay, s/veh	10.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	37	385	189	41	37	40
Future Vol, veh/h	37	385	189	41	37	40
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	83	79	83	57	78	53
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	45	487	228	72	47	75

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	613	85	122	0	-	0
Stage 1	85	-	-	-	-	-
Stage 2	528	-	-	-	-	-
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	456	974	1465	-	-	-
Stage 1	938	-	-	-	-	-
Stage 2	592	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	382	974	1465	-	-	-
Mov Cap-2 Maneuver	382	-	-	-	-	-
Stage 1	786	-	-	-	-	-
Stage 2	592	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.7	6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1465	-	862	-	-
HCM Lane V/C Ratio	0.155	-	0.617	-	-
HCM Control Delay (s)	7.9	0	15.7	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.6	-	4.4	-	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	86	43	176	219	102	101
Future Volume (veh/h)	86	43	176	219	102	101
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	108	48	196	241	155	113
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.80	0.90	0.90	0.91	0.66	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	192	171	332	408	404	233
Arrive On Green	0.11	0.11	0.44	0.44	0.44	0.44
Sat Flow, veh/h	1774	1583	761	936	381	536
Grp Volume(v), veh/h	108	48	0	437	268	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1698	917	0
Q Serve(g_s), s	1.4	0.7	0.0	4.7	2.3	0.0
Cycle Q Clear(g_c), s	1.4	0.7	0.0	4.7	7.0	0.0
Prop In Lane	1.00	1.00		0.55	0.58	
Lane Grp Cap(c), veh/h	192	171	0	739	637	0
V/C Ratio(X)	0.56	0.28	0.00	0.59	0.42	0.00
Avail Cap(c_a), veh/h	513	457	0	1628	1228	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.1	9.8	0.0	5.1	5.6	0.0
Incr Delay (d2), s/veh	2.6	0.9	0.0	0.8	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.3	0.0	2.2	1.6	0.0
LnGrp Delay(d),s/veh	12.7	10.7	0.0	5.9	6.1	0.0
LnGrp LOS	B	B		A	A	
Approach Vol, veh/h	156		437			268
Approach Delay, s/veh	12.1		5.9			6.1
Approach LOS	B		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		16.2				16.2		7.7
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 23				22.2		6.9
Max Q Clear Time (g_c+I1), s		6.7				9.0		3.4
Green Ext Time (p_c), s		2.5				1.4		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Notes

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	192	76	256	161	213	386
Future Volume (veh/h)	192	76	256	161	213	386
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	282	104	275	179	284	411
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	332	296	691	450	362	464
Arrive On Green	0.19	0.19	0.65	0.65	0.65	0.65
Sat Flow, veh/h	1774	1583	1055	687	440	708
Grp Volume(v), veh/h	282	104	0	454	695	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1742	1149	0
Q Serve(g_s), s	10.6	3.9	0.0	8.4	30.5	0.0
Cycle Q Clear(g_c), s	10.6	3.9	0.0	8.4	38.9	0.0
Prop In Lane	1.00	1.00		0.39	0.41	
Lane Grp Cap(c), veh/h	332	296	0	1141	826	0
V/C Ratio(X)	0.85	0.35	0.00	0.40	0.84	0.00
Avail Cap(c_a), veh/h	383	342	0	1386	999	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	27.1	24.4	0.0	5.6	13.1	0.0
Incr Delay (d2), s/veh	14.8	0.7	0.0	0.2	5.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	1.8	0.0	4.0	13.1	0.0
LnGrp Delay(d),s/veh	41.9	25.1	0.0	5.8	18.7	0.0
LnGrp LOS	D	C		A	B	
Approach Vol, veh/h	386		454			695
Approach Delay, s/veh	37.4		5.8			18.7
Approach LOS	D		A			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		51.0				51.0		18.0
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 55				54.2		14.9
Max Q Clear Time (g_c+I1), s		10.4				40.9		12.6
Green Ext Time (p_c), s		3.2				4.3		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	19.6
HCM 2010 LOS	B

Notes

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	272	82	262	173	223	386
Future Volume (veh/h)	272	82	262	173	223	386
Number	3	18	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1900	1900	1863
Adj Flow Rate, veh/h	400	112	282	192	297	411
Adj No. of Lanes	1	1	1	0	0	1
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	406	363	685	466	343	415
Arrive On Green	0.23	0.23	0.66	0.66	0.66	0.66
Sat Flow, veh/h	1774	1583	1034	704	441	626
Grp Volume(v), veh/h	400	112	0	474	708	0
Grp Sat Flow(s),veh/h/ln	1774	1583	0	1738	1067	0
Q Serve(g_s), s	22.4	5.9	0.0	12.7	53.5	0.0
Cycle Q Clear(g_c), s	22.4	5.9	0.0	12.7	66.2	0.0
Prop In Lane	1.00	1.00		0.41	0.42	
Lane Grp Cap(c), veh/h	406	363	0	1151	758	0
V/C Ratio(X)	0.98	0.31	0.00	0.41	0.93	0.00
Avail Cap(c_a), veh/h	406	363	0	1163	758	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	38.4	32.0	0.0	7.9	22.7	0.0
Incr Delay (d2), s/veh	40.4	0.5	0.0	0.2	18.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.6	2.6	0.0	6.1	23.4	0.0
LnGrp Delay(d),s/veh	78.8	32.5	0.0	8.1	41.3	0.0
LnGrp LOS	E	C		A	D	
Approach Vol, veh/h	512		474			708
Approach Delay, s/veh	68.7		8.1			41.3
Approach LOS	E		A			D

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2				6		8
Phs Duration (G+Y+Rc), s		72.0				72.0		28.0
Change Period (Y+Rc), s		* 5.8				5.8		5.1
Max Green Setting (Gmax), s		* 67				66.2		22.9
Max Q Clear Time (g_c+I1), s		14.7				68.2		24.4
Green Ext Time (p_c), s		3.5				0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.3
HCM 2010 LOS	D

Notes

Intersection	
Intersection Delay, s/veh	11.4
Intersection LOS	B

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	86	43	176	219	102	101
Future Vol, veh/h	86	43	176	219	102	101
Peak Hour Factor	0.80	0.90	0.90	0.91	0.66	0.89
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	108	48	196	241	155	113
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	10.1	12.2	10.8
HCM LOS	B	B	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	67%	50%
Vol Thru, %	45%	0%	50%
Vol Right, %	55%	33%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	395	129	203
LT Vol	0	86	102
Through Vol	176	0	101
RT Vol	219	43	0
Lane Flow Rate	436	155	268
Geometry Grp	1	1	1
Degree of Util (X)	0.527	0.233	0.366
Departure Headway (Hd)	4.347	5.392	4.922
Convergence, Y/N	Yes	Yes	Yes
Cap	824	660	726
Service Time	2.4	3.479	2.986
HCM Lane V/C Ratio	0.529	0.235	0.369
HCM Control Delay	12.2	10.1	10.8
HCM Lane LOS	B	B	B
HCM 95th-tile Q	3.1	0.9	1.7

Intersection	
Intersection Delay, s/veh	74.8
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	192	76	256	161	213	386
Future Vol, veh/h	192	76	256	161	213	386
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	282	104	275	179	284	411
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	26.6	28.4	131.9
HCM LOS	D	D	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	72%	36%
Vol Thru, %	61%	0%	64%
Vol Right, %	39%	28%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	417	268	599
LT Vol	0	192	213
Through Vol	256	0	386
RT Vol	161	76	0
Lane Flow Rate	454	386	695
Geometry Grp	1	1	1
Degree of Util (X)	0.775	0.723	1.21
Departure Headway (Hd)	6.503	7.143	6.27
Convergence, Y/N	Yes	Yes	Yes
Cap	559	510	583
Service Time	4.503	5.143	4.318
HCM Lane V/C Ratio	0.812	0.757	1.192
HCM Control Delay	28.4	26.6	131.9
HCM Lane LOS	D	D	F
HCM 95th-tile Q	7.1	5.9	25.2

Intersection	
Intersection Delay, s/veh	117.1
Intersection LOS	F

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	272	82	262	173	223	386
Future Vol, veh/h	272	82	262	173	223	386
Peak Hour Factor	0.68	0.73	0.93	0.90	0.75	0.94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	400	112	282	192	297	411
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	62.9	43.8	205.3
HCM LOS	F	E	F

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	77%	37%
Vol Thru, %	60%	0%	63%
Vol Right, %	40%	23%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	435	354	609
LT Vol	0	272	223
Through Vol	262	0	386
RT Vol	173	82	0
Lane Flow Rate	474	512	708
Geometry Grp	1	1	1
Degree of Util (X)	0.881	0.976	1.384
Departure Headway (Hd)	7.341	7.54	7.036
Convergence, Y/N	Yes	Yes	Yes
Cap	498	487	524
Service Time	5.341	5.54	5.036
HCM Lane V/C Ratio	0.952	1.051	1.351
HCM Control Delay	43.8	62.9	205.3
HCM Lane LOS	E	F	F
HCM 95th-tile Q	9.6	12.5	32.7

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	98	53	77	54
Average Queue (ft)	42	29	53	39
95th Queue (ft)	82	62	73	59
Link Distance (ft)	482		81	489
Upstream Blk Time (%)			0	
Queuing Penalty (veh)			1	
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	13	3		
Queuing Penalty (veh)	5	2		

Intersection: 4: Naglee Rd & DWY

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Zone Summary

Zone wide Queuing Penalty: 9

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	162	55	97	206
Average Queue (ft)	95	34	54	171
95th Queue (ft)	150	71	100	237
Link Distance (ft)	482		81	489
Upstream Blk Time (%)			3	
Queuing Penalty (veh)			14	
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	65	4		
Queuing Penalty (veh)	49	8		

Intersection: 4: Naglee Rd & DWY

Movement	WB	NB
Directions Served	R	TR
Maximum Queue (ft)	30	96
Average Queue (ft)	13	25
95th Queue (ft)	38	92
Link Distance (ft)	156	260
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Zone Summary

Zone wide Queuing Penalty: 71

Intersection: 1: Naglee Rd & W Larch Rd

Movement	WB	WB	NB	SB
Directions Served	L	R	TR	LT
Maximum Queue (ft)	203	55	97	228
Average Queue (ft)	150	37	79	168
95th Queue (ft)	234	69	104	261
Link Distance (ft)	482		81	489
Upstream Blk Time (%)			3	
Queuing Penalty (veh)			14	
Storage Bay Dist (ft)		30		
Storage Blk Time (%)	65	5		
Queuing Penalty (veh)	53	13		

Intersection: 4: Naglee Rd & DWY

Movement	WB
Directions Served	R
Maximum Queue (ft)	30
Average Queue (ft)	8
95th Queue (ft)	30
Link Distance (ft)	156
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Zone Summary

Zone wide Queuing Penalty: 80

KD Anderson & Associates, Inc.
Transportation Engineers

March 29, 2023

Mr. Michael D. Hakeem
Hakeem, Ellis & Marengo
23414 Brookside Road
Stockton, CA 95219

RE: VEHICLE MILES TRAVELED ASSESSMENT FOR GURUDWARA SAHIB TEMPLE - TRACY, CA

Dear Mr. Hakeem:

On behalf of KD Anderson & Associates (KDA), I am pleased to submit this report presenting our assessment of vehicle miles traveled (VMT) effects of the Gurudwara Sahib Temple project in Tracy, CA. This report presents the following:

- project background information,
- our understanding of the project,
- screening criteria for VMT analysis and
- our assessment of VMT effects.

Project Background

The Gurudwara Sahib Temple project site is located at 21356 South Naglee Road, in unincorporated San Joaquin County, north of the City of Tracy, CA. The site is located southeast of the intersection of South Naglee Road and West Larch Road.

The project was the subject of a May 5, 2022 *Traffic Impact Study for the Proposed Gurudwara Sahib @ 21356 South Naglee Road, Tracy, CA* (TIA). The TIA was prepared by Advanced Mobility Group.

The TIA presents an analysis of the effects of the Gurudwara Sahib Temple project on traffic operations in the vicinity of the project site. The TIA did not address the effects of the project on VMT. To comply with recent changes to the California Environmental Quality Act (CEQA), KDA was asked to prepare the assessment of the effects of the project on VMT presented in this report.

Project Understanding

The proposed Gurudwara Sahib Temple project would provide a religious facility for the Sikh community. The project would generate person trips and vehicle trips. The number of trips generated would vary by day of the week, and would include trips associated with a limited number of special events.

The following is a description of person trips per day that would be generated by the project. The following values are primarily based on data presented in the TIA, with clarification provided by you during a March 28, 2023 telephone conversation. The project would generate:

- 700 person trips per day during four special events per year,
- 250 person trips per day on Saturdays,
- 300 person trips per day on Sundays, and
- 200 person trips per day on weekdays.

For this report, the estimated number of person trips was used to estimate the number of vehicle trips. The TIA notes,

> "Based on the ITE Parking Generation Manual (5th Edition) rates for a religious facility (such as a church), an average peak period parking demand of 0.48 vehicles per attendee is expected. This seems reasonable considering that typically a family goes to a religious event together as opposed to driving individually and the previously approved Sikh Temple study indicated that 'staff observed that the majority of the vehicles that arrived at these sites carried more than two persons in each car ...' It should be noted that the manual does not have parking survey data for a Sikh temple or a Hindu temple."

The 0.48 vehicles per attendee rate from the TIA is applied for this report.

Screening Criteria

As noted in the California Governor's Office of Planning and Research (OPR) document *Technical Advisory on Evaluating Transportation Impacts in CEQA*,

> "Senate Bill 743 (Steinberg, 2013), which was codified in Public Resources Code section 21099, required changes to the guidelines implementing CEQA (CEQA Guidelines) (Cal. Code Regs., Title 14, Div. 6, Ch. 3, § 15000 et seq.) regarding the analysis of transportation impacts. . . OPR has proposed, and the California Natural Resources Agency (Agency) has certified and adopted, changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. With the California Natural Resources Agency's certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by 'level of service' and

KDA

> other similar metrics, generally no longer constitutes a significant environmental effect under CEQA. (Pub. Resources Code, § 21099, subd. (b)(3).)"

The OPR Technical Advisory presents a series of VMT screening criteria for several land development project categories, including:

- small projects,
- local serving retail,
- local-serving public uses, and
- affordable housing.

The OPR Technical Advisory screening criteria for small projects would be applicable to the Gurudwara Sahib Temple project: The Technical Advisory notes,

> " . . . projects that generate or attract fewer than 110 trips per day generally may be assumed to cause a less-than-significant transportation impact."

The County of San Joaquin provides an internet-based screening tool to analyze the VMT effects of land development projects. The screening tool can be accessed at the following internet address https://experience.arcgis.com/experience/c780f026116446dda481f4c40b6f6b1b. The County VMT screening tool can be applied to several general types of land use development. The screening tool does not include a category for religious facilities. However, for single-family residential, multi-family residential, office, industrial and warehousing categories, the screening tool notes,

> "Projects that generate less than 110 automobile trips per day are presumed to have a less than significant impact on VMT and are screened out from requiring a full VMT analysis."

The screening criteria of 110 trips per day from both the OPR Technical Advisory and the County of San Joaquin screening tool is applied in this report

VMT Assessment

As noted earlier in this report, the number of trips generated by the Gurudwara Sahib Temple would vary by day of the week, and would include trips associated with a limited number of special events. Neither the OPR Technical Advisory nor the County of San Joaquin screening tool specifies whether the 110 trips per day criteria applies to:

- an average weekday;
- an annual average day including weekends, but not special events; or
- an annual average day including weekends and special events.

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Based on information presented in the *Project Understanding* section of this report, the enclosed table presents estimates of vehicle trips per day that would be generated by the Gurudwara Sahib Temple. The table presents estimates for each of the three types of day listed immediately above.

As shown in the enclosed table, the Gurudwara Sahib Temple would generate:

- 96 vehicle trips per day on an average weekday;
- 106 vehicle trips per day on an annual average day including weekends, but not special events; and
- 108 vehicle trips per day on an annual average day including weekends and special events.

Each of the three values listed immediately above is less than 110 trips per day. Therefore, based on the screening criteria described earlier in this report, the Gurudwara Sahib Temple is considered to have a less-than-significant impact on VMT.

Thank you for providing KD Anderson & Associates with the opportunity to conduct this VMT assessment. Please feel free to contact me if you have any questions.

Sincerely yours,
KD Anderson & Associates, Inc.

Wayne Shijo
Project Manager

enclosure

KDA

Gurudwara Sahib Temple - Tracy
Estimate of Annual Average Daily Trip Generation

365	Days per Year
4	Special Events per Year
700	Person Trips per Special Event
2,800	Annual Total Person Trips for Special Events
50	Saturdays per Year (Less Two Special Events per Year)
250	Person Trips per Saturday
12,500	Annual Total Person Trips for Saturdays
50	Sundays per Year (Less Two Special Events per Year)
300	Person Trips per Sunday
15,000	Annual Total Person Trips for Sundays
261	Weekdays per Year
200	Person Trips per Weekday
52,200	Annual Total Person Trips for Weekdays
0.48	Vehicles per Attendee
200	Weekday Average Person Trips per Day
96	**Annual Average Vehicle Trips per Day**
221	Annual Average Person Trips per Day (Not Including Events)
106	**Annual Average Vehicle Trips per Day (Not Including Events)**
226	Annual Average Person Trips per Day (Including Events)
108	**Annual Average Vehicle Trips per Day (Including Events)**