APPENDICES

APPENDIX A:

NOTICE OF PREPARATION (NOP), DRAFT INITIAL STUDY, AND PUBLIC COMMENTS

Date of Mailing: January 12, 2012

Notice of Preparation

To: Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 212
Sacramento, CA 95814

From: City of Tracy
Development and Engineering
Services Department
333 Civic Center Plaza
Tracy, CA 95376
Attn.: William Dean, Assistant Director

Responsible and Trustee Agencies,
Utility Providers, Organizations,
Neighboring Property Owners/Occupants,
and Interested Parties

Subject: Notice of Preparation of an Environmental Impact Report

The City of Tracy will be the lead agency and will prepare an environmental impact report (EIR) for the proposed Citywide Transportation Master Plan (TMP). This Notice of Preparation is sent pursuant to Section 15082 of the California Environmental Quality Act (CEQA) Guidelines to announce the initiation of the EIR process and to solicit comments from responsible and trustee agencies, utility providers, organizations, neighboring property owners, and interested parties concerning the scope of issues to be addressed in the EIR. Refer to the Probable Environmental Effects listed below to determine whether your concerns have already been identified. Please focus your comments on the Project's potential environmental impacts and recommendations for methods of avoiding, reducing or otherwise mitigating those impacts. If you are a governmental agency with discretionary authority over initial or subsequent aspects of this Project, describe that authority and provide comments regarding potential environmental effects that are germane to your agency's area of responsibility.

Project Title: Citywide Transportation Master Plan

Project Location: The proposed TMP includes improvements throughout the City and within the City's Sphere of Influence (SOI). Tracy is located in San Joaquin County within the Central Valley region of California approximately 60 miles east of the San Francisco Bay Area (refer to Figure 1 of the Initial Study).

Project Description: The proposed TMP provides a comprehensive review of the City's transportation system and identifies improvements and expansions to the existing system required to accommodate future growth anticipated by the General Plan (February 2011). The TMP builds upon the goals and objectives contained in the Circulation Element of the General Plan and the City's Sustainability Action Plan (February 2011). The traffic analysis contained in the General Plan is based on a future horizon year of 2030. The TMP looks out another five years beyond the General Plan horizon year of 2030 to the year 2035 to provide the maximum possible infrastructure planning and to be consistent with the most recent San Joaquin Council of Governments travel demand model.

The intent of the TMP is to provide the City with a "blueprint" than can be utilized to identify, prioritize and implement required improvements to the current and future roadway network for all modes of

transportation. The TMP balances existing and future transportation infrastructure needs with safe access for all user groups (i.e., motorists, pedestrians, bicyclists and transit users) by incorporating strategies, principles and design elements such as Smart Growth design elements, Context-Sensitive design and Complete Streets guidelines.

In general, new development projects would be required to contribute to the City's transportation impact fee program in order to implement the specific improvements identified in the draft TMP. Modifications and refinements to the TMP may be considered by the City during the Specific Plan and development review process for new development. However, any significant modifications to the elements of the TMP must be approved by the City and will require that a formal amendment be adopted by the City Council.

The proposed TMP includes the following components:

- **Railroad Facilities** – Maintain and improve five existing at-grade railroad crossings, provide five new grade-separated crossings, and close or relocate three crossings.
- **Intersections** – Improve traffic operations at 65 intersections. Future improvements would include signal control, lane reconfiguration, roundabouts, and widening of intersection approaches.
- **Bicycle and Pedestrian Facilities** – Provide bike lanes and pedestrian facilities in future development areas that complement and connect the existing bike and pedestrian system.
- **Over/Underpass Facilities, Bridges and Culverts** – Maintain and improve 13 existing over/underpass facilities, ten existing bridges, and five existing culverts. Provide two new over/underpass facilities, one new bridge and three new culverts. Improvements to existing facilities include widening or replacement.
- **Roadway Classification** – Establish roadway hierarchy, functionality, operations and typical cross sections.
- **Park and Ride Facilities** – Provide new park and ride facilities.
- **Intelligent Transportation System** – Provide Citywide state-of-the-art reliable and consistent Intelligent Transportation System to manage traffic at intersections and along roadway segments.
- **Truck Routes** – Maintain and improve existing truck routes, and provide new truck routes.

Probable Environmental Effects: The purpose of the EIR is to provide full disclosure, in advance, of the potential environmental impacts that would result from implementation of the proposed Project. The EIR will analyze the extent to which the Project would result in significant environmental impacts and will identify appropriate Project modifications or mitigation measures to reduce or eliminate these impacts. Based on an Initial Study prepared for the proposed TMP, issues that will be examined in the EIR include the following:

- Air Quality/Greenhouse Gas Emissions – Short-term construction and long-term-operational impacts to air quality. Global climate change impacts.

Scoping: The City invites written comments on the scope of the EIR and alternatives that should be considered. Due to the time limits mandated by state law, your response must be sent at the earliest possible date, **but no later than 30 days after receipt of this notice**. Written comments should be sent to Bill Dean, Assistant Director, Development and Engineering Services Department, at the mailing address above by **5:00 p.m. on Monday, February 13, 2012**. Copies of the Initial Study prepared for the project can be obtained by calling Elizabeth Silva at 209-831-6421 or from the City's website www.ci.tracy.ca.us.

Comments should focus on identifying specific environmental impacts to be evaluated during the EIR

process and suggesting Project modifications or alternatives that would be less environmentally damaging while achieving similar Project objectives. Scoping comments should focus on issues and alternatives to be studied, not on expressing a preference for a particular alternative.

If you wish to be placed on a mailing list to receive further information as the Project progresses, please contact Bill Dean at (209) 831-6400, william.dean@ci.tracy.ca.us or the mailing address above.

Date: January 12, 2012 Signature:

Title: Bill Dean, Assistant Director, Development and Engineering Services Department

Reference: California Code of Regulations, Title 14, (State CEQA Guidelines) Sections 15082(A), 15103, 15375

ENVIRONMENTAL CHECKLIST

A. SUMMARY INFORMATION

1. Project Title:
City of Tracy Citywide Transportation Master Plan

2. Lead Agency Name and Address:
City of Tracy
Department of Development and Engineering Services
333 Civic Center Drive
Tracy, CA 95376

3. Contact Person and Phone Number:
William Dean, Assistant Director, Development and Engineering Services Department
(209) 831-6000

4. Project Location and Setting:
The City of Tracy (City) is located in San Joaquin County within the Central Valley region of California. Located approximately 60 miles east of the San Francisco Bay Area, the City is separated from the Central Valley by the Coastal Range. The southwestern portion of San Joaquin County is located within the Diablo Range, and generally consists of rolling hills cut by drainage channels. Refer to Exhibit 1, *Regional Location Map.*

The City is regionally connected by three major highways; Interstate 580 (I-580) is less than one mile to the west of the City, State Route 205 (SR-205) bisects the northerly portion of the City and Interstate 5 (I-5) is approximately eight miles to the east. The nearest urban areas are the cities of Lathrop and Manteca.

The region is characterized as having an "inland Mediterranean" climate (a semi-arid environment with cool winters, dry summers and moderate rainfall). The climate includes moderate temperatures and comfortable humidity with precipitation limited to a few storms during the winter months (November through April). The average annual temperature varies little throughout the region, and the summer high averages 90 degrees Fahrenheit.

The proposed Transportation Master Plan (TMP) includes improvements located throughout the City boundaries as well as the City's Sphere of Influence (SOI) boundaries. Refer to Exhibit 2, *Study Area Map.*

5. General Plan Designation and Zoning Classification:
Various.

6. Surrounding Land Uses:
Various.

B. STATUARY AUTHORITY AND REQUIREMENTS

Section 15152 of the *CEQA Guidelines* indicates that tiering is appropriate when the sequence of analysis is from an EIR prepared for a general plan, policy, or program to an EIR or negative declaration for another plan, policy, or program of lesser scope, or to a site specific EIR or

negative declaration if additional analysis is necessary. The later EIR or negative declaration incorporates by reference the general discussions from the broader EIR and concentrates on the issues specific only to the later project. Section 15183 of the *CEQA Guidelines*, enables public agencies to streamline the environmental review of subsequent projects that are consistent with the development density established by existing zoning, community plan, or general plan policies for which an EIR was certified by limiting its examination of environmental effects to those which the agency determines, in an initial study or other analysis:

(1) Are peculiar to the project or the parcel on which the project would be located;

(2) Were not analyzed as significant effects in a prior EIR on the zoning action, general plan, or community plan, with which the project is consistent;

(3) Are potentially significant off-site impacts and cumulative impacts which were not discussed in the prior EIR prepared for the general plan, community plan or zoning action; or,

(4) Are previously identified significant effects which, as a result of substantial new information which was not known at the time the EIR was certified, are determined to have a more severe adverse impact than discussed in the prior EIR.

As noted below, under the description of the project characteristics, the TMP addresses the effects of an additional five years of growth on the City's transportation system, beyond what was modeled and analyzed in the City of Tracy General Plan EIR (General Plan EIR) for transportation and circulation. The purpose of extending an additional five years beyond the General Plan was to establish consistency with the most recent San Joaquin Council of Governments (SJCOG) land use development, employment forecasts and the subsequent update to their travel demand model for the 2035 horizon year. The City of Tracy geographic location emphasizes its regional significance; various modes of transport travel to, from and through the City on a daily basis. Utilizing the most recent SJCOG model for analysis, results in consistency in identifying improvements that are consistent between the regional agencies, who are responsible for the freeways, CMA roads, local roads, and transit services.

Because the TMP extends an additional five years beyond the *modeled* assumptions in the General Plan EIR, the development density assumed by the TMP is greater than the General Plan or General Plan EIR. As such, for the purposes of this Initial Study, the City has determined that it will not rely on streamlining provisions of Section 15183 of the *CEQA Guidelines*. The focus of the analysis in this initial study is on the effects that the additional five years of growth contemplated by the TMP would have on the City's transportation system, as this was not contemplated by the City of Tracy General Plan (General Plan), nor examined in the General Plan EIR. It should be noted that aside from transportation/circulation, the description of impacts in the General Plan EIR is not limited to the year 2030. Thus, where appropriate and based on the provisions of Section 15152 of the *CEQA Guidelines*, this Initial Study does tier off of and incorporates by reference the General Plan EIR regarding descriptions of environmental settings, future development-related growth, and cumulative impacts. The purpose of this initial study is to determine the appropriate environmental document for the implementation of the TMP.

C. Background and History

The City's transportation system is a key element in maintaining historical growth and accommodating future development. Transportation modes include: 1) three major freeways; 2) several active rail lines; 3) local and regional truck routes; 4) arterial, collector and residential streets; and 5) bicycle, pedestrian and transit facilities. The City is responsible for ensuring that the transportation system provides adequate and efficient access for all modes. The City's most recent TMP was approved in 1994. Between 1990 and 2000, the City's population increased by more than 70 percent from approximately 33,558 to 56,929, and is currently 82,107 ((California Department of Finance, 2011). Due to this growth and the City's recently adopted update to the *General Plan* (February 2011) that identifies new development areas and additional growth, the City determined that an update to the 1994 TMP is required.

D. Project Characteristics

The proposed TMP provides a comprehensive review of the City's transportation system and identifies improvements and expansions to the existing system required to accommodate future growth anticipated by the *General Plan*. The TMP builds upon the goals and objectives contained in the Circulation Element of the *General Plan* and the City's Sustainability Action Plan (February 2011). The traffic analysis contained in the *General Plan EIR* is based on a future horizon year of 2030. The TMP looks out another five years to 2035 to provide the maximum possible infrastructure planning and to be consistent with the most recent SJCOG travel demand model.

The TMP balances existing and future transportation infrastructure needs with safe access for all user groups (i.e., motorists, pedestrians, bicyclists and transit users) by incorporating strategies, principles and design elements such as Smart Growth design elements, Context-Sensitive design and Complete Streets guidelines.

In general, new development projects would be required to contribute to the City's transportation impact fee program in order to implement the specific improvements identified in the draft TMP.

Exhibit 3, *Year 2035 Roadway Network,* identifies the improvement proposed as part of the TMP. The proposed TMP includes the following components:

- **Railroad Facilities** – Maintain and improve five existing at-grade railroad crossings, provide five new grade-separated crossings, and close or relocate three crossings.
- **Intersections** – Improve traffic operations at 65 intersections. Future improvements would include signal control, lane reconfiguration, roundabouts, and widening of intersection approaches.
- **Bicycle and Pedestrian Facilities** – Provide bike lanes and pedestrian facilities in future development areas that complement the existing bike and pedestrian system.
- **Over/Underpass Facilities, Bridges and Culverts** – Maintain and improve 13 existing over/underpass facilities, ten existing bridges, and five existing culverts. Provide two new over/underpass facilities, one new bridge and three new culverts. Improvements to existing facilities include widening or replacement.
- **Roadway Classification** – Establish roadway hierarchy, functionality, operations and typical cross sections.

Exhibit 1 (Regional Location Map)

Exhibit 2 (Study Area Map)

Exhibit 3 (Year 2035 Roadway Network)

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- **Park and Ride Facilities** – Provide new park and ride facilities.
- **Intelligent Transportation System** – Provide Citywide state-of-the-art reliable and consistent Intelligent Transportation System to manage traffic at intersections and along roadway segments.
- **Truck Routes** – Maintain and improve existing truck routes, and provide new truck routes.

Existing and proposed improvements to the City's transportation system reflects the needs of the City to serve the SOI.

E. 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 & Forest Resources	☒	Air Quality
☐	Biological Resources	☐	Cultural Resources	☐	Geology and Soils
☒	Greenhouse Gas Emissions	☐	Hazards & Hazardous Materials	☐	Hydrology & Water Quality
☐	Land Use & Planning	☐	Mineral Resources	☐	Noise
☐	Population & Housing	☐	Public Services	☐	Recreation
☐	Transportation/Traffic	☐	Utilities & Service Systems	☐	Mandatory Findings of Significance

F. DETERMINATION

On the basis of this initial evaluation:

☐	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
☐	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
☐	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
☒	I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature Date

G. EVALUATION OF ENVIRONMENTAL IMPACTS

The environmental issues evaluated in this Initial Study include the following:

- Aesthetics
- Agricultural & Forest Resources
- Air Quality
- Biological Resources
- Cultural resources
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation/Traffic
- Utilities and Service Systems

The environmental analysis in this Initial Study is patterned after the Environmental Checklist recommended by the *CEQA Guidelines*. For the preliminary environmental assessment undertaken as part of this Initial Study's preparation, a determination that there is a potential for significant effects indicates the need to more fully analyze the development's impacts and to identify mitigation.

For the evaluation of potential impacts, the questions in the Initial Study Checklist are stated and an answer is provided according to the analysis undertaken as part of the Initial Study. The analysis considers the long-term, direct, indirect, and cumulative impacts of the development. To each question, there are four possible responses:

- **No Impact.** The development will not have any measurable environmental impact on the environment.
- **Less Than Significant Impact.** The development will have the potential for impacting the environment, although this impact will be below established thresholds that are considered to be significant.
- **Less Than Significant With Mitigation Incorporated.** The development will have the potential to generate impacts, which may be considered as a significant effect on the environment, although mitigation measures or changes to the development's physical or operational characteristics can reduce these impacts to levels that are less than significant.
- **Potentially Significant Impact**. The development could have impacts, which may be considered significant, and therefore additional analysis is required to identify mitigation measures that could reduce potentially significant impacts to less than significant levels.

Where potential impacts are anticipated to be significant, mitigation measures will be required, so that impacts may be avoided or reduced to insignificant levels.

H. ENVIRONMENTAL ANALYSIS

This section analyzes the potential environmental impacts that may result from the proposed Project. For the evaluation of potential impacts, the questions in the Environmental Checklist are stated and answers are provided according to the analysis undertaken as part of the Initial Study. The analysis considers the Project's short-term impacts (construction-related), and long-term impacts (operational-related).

I. AESTHETICS

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
AESTHETICS -- 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) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☑	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☑	☐

Would the Project:

a) Have a substantial adverse effect on a scenic vista? ***Determination: Less Than Significant Impact.***

Discussion

Scenic resources within the City and SOI are associated with open space and agricultural lands, and are a valued asset to the community. Farming and grazing lands and the grassy hillsides of the Diablo Range are identified as scenic resources in the *General Plan* and contribute to the area's heritage. Specifically, scenic resources in the Tracy Planning Area include:

- **Views of the Diablo Range**. Rising from the southwest portion of the Tracy Planning Area, the Diablo Range extends from near sea level to 1,652 feet and provides a visual barrier between the Central Valley and the San Francisco Bay Area. Generally, the eastern slopes visible from Tracy have not been developed and contain sporadic tree groupings.
- **Natural Landscapes Surrounding the Paradise Cut, Old River and Tom Paine Sloughs**. Located on the north side of the Tracy Planning Area, these landscapes are represented by streamside vegetation that provides visual contrast as they run through the relatively flat agricultural lands.
- **Expansive Agricultural Lands**. The land surrounding the City contains agricultural lands that are used for row crops and grazing.
- **Electricity-Generating Windfarms.** Located on the ridgetops west of the City and close to the Altamont Pass, windfarms are visible from Tracy on clear days.

Implementation of improvements identified in the TMP would involve construction of new infrastructure and ongoing operation of these facilities, which have the potential to impact scenic resources and the overall visual character and quality of some areas within the City and SOI. During short-term construction activities, view sheds may be temporarily altered by site disturbance, vegetation removal, and the placement of construction equipment, signage and warning markers. However, construction impacts would be temporary in nature and, therefore, would be less than significant.

With the exception of grade-separated railroad crossings, and overpasses and bridges, the majority of improvements identified in the TMP would occur at ground level within existing rights-of-way and would not alter view sheds. While the construction of above-ground infrastructure has the potential to change the appearance of some areas, long distance views of scenic resources would not be significantly altered because proposed improvements would not introduce structures that are substantially different than those already existing in the area of the improvements and would not block views. Therefore, impacts to scenic vistas would be less than significant.

b) *Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?* ***Determination: Less Than Significant Impact.***

Discussion

Interstate 580 (I-580) is a state-designated scenic highway that stretches approximately 15 miles from I-5 to SR-205 within the City. Implementation of improvements identified in the TMP would involve the construction and operation of infrastructure in the vicinity of I-580, including a new freeway interchange and a park and ride facility. Short-term construction activities and ongoing operation of these improvements have the potential to alter views within the I-580 corridor. During short-term construction activities, views may be temporarily altered by site disturbance, vegetation removal, and the placement of construction equipment, signage and warning markers. However, construction impacts would be temporary in nature and, therefore, would be less than significant.

As discussed in the *General Plan EIR*, despite policies in the *General Plan* to protect scenic resources, including those along state designated scenic highways, a significant and unavoidable impact would occur with regards to scenic resources along state designated scenic routes at buildout of the *General Plan*. Construction of a new freeway interchange and a park and ride facility along I-580 would incorporate aesthetic treatments and landscaping to reduce visual impacts. Distant views of scenic resources from I-580 would not be significantly altered by these features as they would be well designed and integrated with the highway system or located immediately adjacent to it. Furthermore, such features are often expected by drivers and would not be noticeably different than other interchanges or park and ride facilities along similar stretches of state scenic highway. For these reasons, impacts would not be any greater than those identified in the *General Plan EIR* and impacts associated with the proposed TMP would be less than significant.

c) *Substantially degrade the existing visual character or quality of the site and its surroundings?* ***Determination: Less Than Significant Impact.***

Discussion

Refer to Response I(a), above.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area? ***Determination: Less Than Significant Impact.***

Discussion

Implementation of improvements identified in the TMP could create new sources of light and glare during short-term construction activities as a result of security lighting at job sites. Long-term operational impacts could include light and glare from new street lighting and traffic signals. Both short-term construction and long-term sources of light and glare could adversely affect day or nighttime views in the area.

City Standard Plan #154 establishes minimum requirements for light illumination, but does not have regulations limiting glare. Light and glare issues would be addressed by the City on a project-by-project basis and would include requirements that security lighting at construction sites and new street lighting be shielded to prevent light spillover onto private property. Adherence to required City lighting standards would reduce potential impacts to less than significant.

For this reason, impacts would not be any greater than those identified in the *General Plan EIR* and impacts associated with the proposed TMP would be less than significant.

II. AGRICULTURE RESOURCES

AGRICULTURE RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
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 non-agricultural 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?	☐	☐	☑	☐

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 non-agricultural use? ***Determination: Less Than Significant Impact.***

Discussion

According to the *General Plan,* there are a total of 41,087 acres of land identified as Prime Farmland, Unique Farmland, Farmland of Statewide Importance and Farmland of Local Importance within the Tracy Planning Area, SOI and City limits combined. Of this amount, 29,125 acres are located within the Tracy Planning Area outside the SOI, 7,072 acres are within the SOI outside the City limits, and 4,890 acres are located within the City limits. Farmland along the I-580 corridor and the south side of the City is designated as Farmland of Local Importance, which is defined as land of importance to the local economy. The City does not anticipate that improvements proposed as part of the TMP would convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use. The majority of proposed improvements would occur within existing public rights-of-way or undeveloped land. Therefore, impacts would be less than significant.

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract? ***Determination: Less Than Significant Impact.***

Discussion

There are approximately 15,289 acres of agricultural land under Williamson Act contracts within the Tracy Planning Area, 3,781 acres within the SOI and 1,489 acres within the City limits. The City does not anticipate that improvements proposed as part of the TMP would conflict with existing zoning for agricultural use, or a Williamson Act contract as the majority of improvements would occur within existing public rights-of-way or on private land proposed for development.

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))? ***Determination: No Impact.***

Discussion

No land located within the SOI or City limits is currently classified as forest land, timberland, or timberland zoned for production. Therefore, improvements proposed as part of the TMP would

not conflict with existing zoning or cause rezoning of any such land. Therefore, no impact would result.

d) Result in the loss of forest land or conversion of forest land to non-forest use? ***Determination: No Impact.***

Discussion
Refer to Response II(c), above. No impact would result.

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? ***Determination: Less Than Significant Impact.***

Discussion
Refer to Response II(a), above. Impacts would be less than significant.

III. AIR QUALITY

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:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Conflict with or obstruct implementation of the applicable air quality plan?	☑	☐	☐	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☑	☐	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☑	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☑	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☑	☐	☐	☐

Would the Project:

a) Conflict with or obstruct implementation of the applicable air quality plan (San Joaquin Valley Air Pollution Control District)? ***Determination: Potentially Significant Impact.***

Discussion

The City of Tracy is located within the San Joaquin Valley Air Basin (Basin). The San Joaquin Valley Air Pollution Control District (SJVAPCD) has jurisdiction over most air quality matters in the Basin and is tasked with implementing programs and regulations required by the federal and state Clean Air Acts.

Air Quality Plans (AQPs) applicable to the proposed TMP include SJVAPCD's Ozone Plans (One-Hour and Eight-Hour) and Particulate Matter Plans (PM_{10} and $PM_{2.5}$), which are part of the State Implementation Plan (SIP). The Basin is considered a non-attainment area for ozone and respirable particulate matter (PM_{10} and $PM_{2.5}$).

The California Clean Air Act (CCAA) requires non-attainment areas with severe to extreme air quality problems to provide for a five percent reduction of non-attainment emissions per year. The AQPs for ozone and PM_{10} prepared for the Basin by the SJVAPCD fulfill this requirement. Banked emission reduction credits are included in the emissions inventories and provide an additional means to attaining the required five percent reduction in these inventories per year.

Air quality conformity to an implementation plan as required in CCAA Section 176(c) is defined as: "Conformity to the plan's purpose of eliminating or reducing the severity and number of violations of the national ambient air quality standards and achieving expeditious attainment of such standards; and that such activities would not (i) cause or contribute to any new violation of any standard in any area; (ii) increase the frequency or severity of any existing violation of any standard in any area; or (iii) delay timely attainment of any standard or any required interim emission reductions or other milestones in any area." The Air Quality Conformity document adopted July 20, 2006, demonstrates that the federally approved Regional Transportation Plan (RTP) and the Federal Transportation Improvement Program (FTIP) conform to the SIP for controlling air pollution sources.

If a project is found to interfere with the region's ability to comply with federal and state air quality standards, local governments then need to consider project modifications or provide mitigation measures to eliminate the inconsistency of the project plans. In order for a project to be considered "consistent" with the latest AQP, the proposed project must be consistent with the goals, objectives, and assumptions in the respective plan to achieve federal and state air quality standards.

Although the proposed TMP includes plans, policies and programs that would be implemented to provide necessary transportation infrastructure for anticipated population growth at future horizon year 2035, this growth would result in greater vehicle miles traveled (VMT) than studied in the *General Plan EIR*. Thus, the TMP could result in a conflict with SJVAPCD AQPs and a potentially significant air quality impact, which will be studied in an EIR.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation? ***Determination: Potentially Significant Impact.***

Discussion
Refer to Response III(a), above. The proposed TMP could result in potentially significant air quality impacts that will be studied in an EIR.

c) *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?* ***Determination: Potentially Significant Impact.***

Discussion
Refer to Response III(a), above. The proposed TMP could result in potentially significant air quality impacts that will be studied in an EIR.

d) *Expose sensitive receptors to substantial pollutant concentrations?* ***Determination: Potentially Significant Impact.***

Discussion
Refer to Response III(a), above. The proposed TMP could result in potentially significant air quality impacts that will be studied in an EIR.

e) *Create objectionable odors affecting a substantial number of people?* ***Determination: Potentially Significant Impact.***

Discussion
Refer to Response III(a), above. The proposed TMP could result in potentially significant air quality impacts that will be studied in an EIR.

IV. BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
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 federally protected wetlands as defined by Section 404 of the Clean Water Act (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?	☐	☐	☑	☐

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?* ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion

H.T. Harvey and Associates prepared a Biotic Resources Report for the proposed TMP in January 2012. The study area is located within the jurisdiction of the San Joaquin County Multi-species Habitat Conservation and Open Space Plan (SJMSCP), and the City is an eligible SJMSCP participant. This plan outlines mitigation measures for species and habitats known or likely to occur in the region. The species covered by the SJMSCP were reviewed prior to a reconnaissance field survey and cross referenced with California Natural Diversity Data Base (CNDDB) records. Particular attention was given to federally and/or state-listed species, plants considered rare by the California Native Plant Society (CNPS 2010), protected wildlife, and wildlife species of special concern.

The following ten federal and state endangered and threatened plant and wildlife species have the potential to occur: large-flowered fiddleneck, conservancy fairy shrimp, longhorn fairy shrimp, vernal pool fairy shrimp, valley elderberry longhorn beetle, California tiger salamander, California red-legged frog, giant garter snake, Swainson's hawk, and San Joaquin kit fox. "Take" of one or more of these species could occur during construction of improvements identified in the proposed TMP. Take of individuals of any of these species would constitute a significant

impact under CEQA. However, implementation of the Mitigation Measures BIO-1 and BIO-2 would reduce impacts to these species to less than significant and fully comply with the SJMSCP.

BIO-1: **Pre-Construction Surveys and SJMSCP Coordination. Pre-construction surveys shall be conducted by the Joint Powers Authority (JPA) prior to any project-related activities that may impact special-status species identified in Table 3 of the SJMSCP. If construction activities would result in impacts to any of these species, the mitigation measures specified for that particular species in Table 1 or Table 2, below, shall be implemented.**

BIO-2: **Incidental Take Minimization Measures for FESA and CESA Listed Species. Incidental take minimization measures shall be completed per the requirements of the SJMSCP, as outlined in Table 1. Implementation of these measures would reduce the potential of take of federal and state endangered and threatened wildlife species to less than significant levels and fully comply with the SJMSCP.**

Table 1
Incidental Take Minimization Measures – FESA and CESA Species

Species	Status	Incidental Take Minimization Measures
Large-flowered fiddleneck (Amsinckia grandiflora)	FE, SE, CNPS 1B.1	Pre-construction surveys will need to be performed as detailed in Section 5.2.2.1(A, B, and D) and 5.2.2.2 through 5.2.2.5 of the SJMSCP. If large-flowered fiddleneck if found, the SJMSCP requires complete avoidance of plant populations onsite in accordance with the identified measures in Section 5.5.2.1 and 5.5.9(F).
Conservancy fairy shrimp (Branchinecta conservatio)	FE	Delay construction until pools are dry, collect and store soil samples, and conduct pre-construction surveys, as described in Section 5.2.4.4 of the SJMSCP.
Longhorn fairy shrimp (Branchinecta longiantenna)	FE	Delay construction until pools are dry, collect and store soil samples, and conduct pre-construction surveys, as described in Section 5.2.4.4 of the SJMSCP.
Vernal pool fairy shrimp (Branchinecta lynchi)	FT	Delay construction until pools are dry, collect and store soil samples, as described in Section 5.2.4.4 of the SJMSCP.
Valley elderberry longhorn beetle (Desmocerus californicus dimorphus)	FT	Survey site for presence of elderberry shrubs; if elderberry shrubs present, implement measures in Section 5.2.4.25 of the SJMSCP.
California tiger salamander (Ambystoma californiense)	FT, ST	Project implementation could be delayed due to species lengthy presence/ absence surveys at sites indicated. See Sections 5.2.4.5 and 5.2.4.6 of the SJMSCP.
California red-legged frog (Rana draytonii)	FT, CSSC	Establish a 300-foot setback around occupied habitat, as described in Section 5.2.4.7 of the SJMSCP.
Swainson's hawk (Buteo swainsoni)	ST	Retention of nest trees or removal of such trees between September 1 and February 15, as detailed in Section 5.2.4.11 of the SJMSCP.

Species	Status	Incidental Take Minimization Measures
Giant garter snake (Thamnophis gigas)	FT, ST	Full avoidance of giant garter snake known occupied habitat is required. Implement the nine avoidance and minimization measures detailed in Section 5.2.4.25 of the SJMSCP.
San Joaquin kit fox (Vulpes macrotis mutica)	FE, ST	Pre-construction surveys prior to commencement of ground disturbance for projects located in the Southwest Zone or Southwest/Central transition Zone, as detailed in Section 5.2.4.1 of the SJMSCP.

Table 2
SJMSCP Compensation Ratios

Habitat type converted from open space use	Required Compensation Ratio	Description
Agricultural Habitat Lands	1:1	One acre of preserve acquired, enhanced and managed in perpetuity for each acre of habitat converted from Open Space use.
Natural Lands - Non-Wetlands (e.g., oak woodlands)	3:1	Three acres of preserve acquired, enhanced and managed in perpetuity for each acre of habitat converted from Open Space use.
Natural Lands - Vernal Pools within Vernal Pool Zone	2:1 Preservation plus 1:1 Creation (3:1 total)	Create one acre of habitat and preserve two acres of existing habitat for each acre converted from Open Space use resulting in three total acres of preserve. Preserves include both wetted surface area and upland grasslands surrounding vernal pools and protecting their watersheds. Creation component shall emphasize restoration of pre-existing vernal pools, wherever feasible.
Natural Lands - Wetlands Other than Vernal Pools	At least 1:1 Creation Plus 2:1 Preservation (3:1 total)	SJMSCP may: (1) create one acre habitat, preserve two existing acres of habitat; (2) create two acres habitat, preserve one acre existing habitat; or (3) create three acres of habitat, preserve zero acres of existing habitat. All options result in three acres of preserve.

Proposed improvements have the potential to result in loss for habitat of federal and state endangered and threatened plant and wildlife species covered under the SJMSCP. Losses of habitat occupied by any these species would constitute a significant impact under CEQA. However, implementation of Mitigation Measure BIO-3 would reduce impacts to these species to less than significant and fully comply with the SJMSCP.

BIO-3: **Purchase Compensation Habitat to Offset Losses of Habitat for Special-Status Species. Under the SJMSCP, mitigation for loss of habitat of federal and state endangered and threatened plant and wildlife species allows for a fee based approach based on the habitat type that is to be converted from open space uses. The City shall pay to offset losses of habitat for special-status species according to the latest SJMSCP fee structure.**

The following 23 state species of special concern, state fully protected, and other SJMSCP covered plant and wildlife species have the potential to occur within the study area: slough thistle, diamond-petaled California poppy, showy golden madia, caper-fruited tropidiocarpum,

midvalley fairy shrimp, western spadefoot, western pond turtle, San Joaquin coachwhip, coast horned lizard, burrowing owl, Cooper's hawk, western grebe, tri-colored blackbird, short-eared owl, northern harrier, white-tailed kite, California horned lark, loggerhead shrike, western mastiff bat, western red bat, long-eared myotis, Yuma myotis, and American badger. Injury or mortality of one or more of these species could occur during construction of improvements identified in the proposed TMP. Injury or mortality of significant numbers of individuals of species of special concern, state fully protected, and other SJMSCP covered species would constitute a significant impact under CEQA. However, implementation of Mitigation Measure BIO-1 in addition to the following mitigation measure would reduce impacts to these species to less than significant and fully comply with the SJMSCP.

BIO-4: **Incidental Take Minimization Measures for Sensitive and Special-Status Species. Incidental take minimization measures shall be completed per the requirements of the SJMSCP, as outlined in Table 3. Implementation of these measures would reduce the potential of injury or mortality of state species of special concern, state fully protected, and other SJMSCP-covered wildlife species to less than significant levels and fully comply with the SJMSCP.**

Table 3
Incidental Take Minimization Measures – CSSC, State Fully Protected and SJMSCP Covered Species

Name	Status	Incidental Take Minimization Measures
Slough thistle (Cirsium crassicaule)	CNPS 1B.1	Pre-construction surveys shall be performed as detailed in Section 5.2.2.1(A, B, and D) and 5.2.2.2 through 5.2.2.5 of the SJMSCP. If slough thistle is found, complete avoidance of plant populations on site is required in accordance with the identified measures in Section 5.5.2.1 and 5.5.9(F).
Diamond-petaled California poppy (Eschscholzia rhombipetala)	CNPS 1B.1	Pre-construction surveys shall be performed as detailed in Section 5.2.2.1(A, B, and D) and 5.2.2.2 through 5.2.2.5 of the SJMSCP. If diamond-petaled California poppy is found, complete avoidance of plant populations on site is required in accordance with the identified measures in Section 5.5.2.1 and 5.5.9(F).
Showy golden madia (Madia radiate)	CNPS 1B.1	Pre-construction surveys shall be performed as detailed in Section 5.2.2.1(A, B, and D) and 5.2.2.2 through 5.2.2.5 of the SJMSCP. If showy golden madia is found, complete avoidance of plant populations on site is required in accordance with the identified measures in Section 5.5.2.1 and 5.5.9(F).
Caper-fruited tropidiocarpum (Tropidiocarpum capparideum)	CNPS 1B.1	Pre-construction surveys shall be performed as detailed in Section 5.2.2.1(A, B, and D) and 5.2.2.2 through 5.2.2.5 of the SJMSCP. If caper-fruited tropidiocarpum is found, Section 5.2.4.29C of the SJMSCP specifies acquisition or consultation measures required.
Midvalley fairy shrimp (Branchinecta mesovallensis)	SJMSCP	Delay construction until pools are dry, collect and store soil samples, as described in Section 5.2.4.4 of the SJMSCP.

Name	Status	Incidental Take Minimization Measures
Western spadefoot (Spea hammondii)	CSSC	Conduct species surveys in accordance with current Technical Advisory Committee (TAC)-approved protocol, as described in sections 5.2.4.5 and 5.2.4.6 of the SJMSCP.
Western pond turtle (Actinemys marmorata)	CSSC	300-400 foot buffer area required from known nesting sites, as described in Section 5.2.4.10 of the SJMSCP.
San Joaquin coachwhip (whipsnake) (Masticophis flagellum ruddocki)	CSSC	Incidental take measures to be formulated by TAC if discovered on a project site, as described in Section 5.2.4.10 of the SJMSCP.
Coast (California) horned lizard (Phrynosoma blainvillii)	CSSC	Incidental take measures to be formulated by TAC if discovered on a project site, as described in Section 5.2.4.10 of the SJMSCP.
Burrowing owl (Athene cunicularia)	CSSC	Allow growth of vegetation onsite to a height of 36 inches prior to construction, disk site to prevent colonization by owls, or evict resident owls, if present, as detailed in Section 5.2.4.15 of the SJMSCP.
Cooper's hawk (Accipiter cooperii)	SJMSCP	Establish 100-foot setback from nesting areas, as described in Section 5.2.4.19 of the SJMSCP.
Western grebe (Aechmophorus occidentalis)	SJMSCP	Establish a 500-foot setback from nesting areas during the nesting season, as described in Section 5.2.4.17 of the SJMSCP.
Tricolored blackbird (Agelaius tricolor)	CSSC	Avoid breeding colonies whenever possible. Otherwise, establish a 500-foot buffer during the nesting season, as described in Section 5.2.4.16 of the SJMSCP.
Short-eared owl (Asio flammeus)	CSSC	Establish a 500-foot setback from nesting areas during the nesting season, as described in Section 5.2.4.17 of the SJMSCP.
Northern harrier (Circus cyaneus)	CSSC	Establish a 500-foot setback from nesting areas during the nesting season, as described in Section 5.2.4.17 of the SJMSCP.
White-tailed kite (Elanus leucurus)	SP	Conduct pre-construction surveys, as described in Section 5.2.4.19 of the SJMSCP.
California horned lark (Eremophila alpestris actia)	SJMSCP	Establish a 500-foot setback from nesting areas during the nesting season, as described in Section 5.2.4.17 of the SJMSCP.
Loggerhead shrike (Lanius ludovicianus)	CSSC	Establish a 100-foot setback from nesting areas, as described in Section 5.2.4.16 of the SJMSCP.
Western mastiff bat (Eumops perotis californicus)	CSSC	Remove colonial roosting trees only outside the nursery/hibernation season and only after dusk, as described in Section 5.2.4.28 of the SJMSCP.
Western red bat (Lasiurus blossevillii)	CSSC	Remove colonial roosting trees only outside the nursery/hibernation season and only after dusk, as described in Section 5.2.4.28 of the SJMSCP.

Name	Status	Incidental Take Minimization Measures
Long-eared myotis (Myotis evotis)	SJMSCP	Remove colonial roosting trees only outside the nursery/hibernation season and only after dusk, as described in Section 5.2.4.28 of the SJMSCP.
Yuma myotis (Myotis yumanensis)	SJMSCP	Remove colonial roosting trees only outside the nursery/hibernation season and only after dusk, as described in Section 5.2.4.28 of the SJMSCP.
American badger (Taxidea taxus)	CSSC	Monitor occupied dens and destroy only when burrow is unoccupied; establish a 200-foot buffer around natal dens, as described in Section 5.2.4.26 of the SJMSCP.

The following species are not covered in the SJMSCP: California androsace, big tarplant, round-leaved filaree, Lemmon's jewelflower, Parry's red tarplant, gypsum-loving larkspur, and hogwallow starfish. However, they are tracked by the CNDDB and CNPS. These species could be harmed during construction activities. Mitigation Measure BIO-5 would reduce the potential impact on these species to less than significant. If any of the CNPS-listed plant species are found within or directly adjacent to the proposed work area, a species-specific determination of potential significance would be conducted for each plant species by a qualified plant ecologist. If project activities would result in the loss of: (a) suitable habitat for less than five percent of the known individual plants of the species documented as occurring within 50 miles of the impact location, if known; or (b) less than five percent of the known populations of the species if the total number of individuals is unknown, then impacts would be deemed less than significant and no further mitigation measures would be required. This impact would be considered less than significant because regional populations would remain abundant following project implementation and the project would not substantially reduce the number or range of these species.

If project activities would result in loss of habitat for more than five percent populations or individuals of these species regionally documented as occurring within 50 miles of the impact location, project proponents would be required to implement Mitigation Measures BIO-5 and BIO-7.

It is likely that if found, impacts to small populations of List 4 species would be considered less than significant. These plant species are widely distributed, with many known, extant populations occurring in many counties. In other cases, the species are considered to be more rare but the amount of suitable habitat present onsite is limited, meaning that any potentially present populations are likely to be small in size and, therefore, impacts to these would likely also be less-than-significant. However, impacts to populations of more restricted, rare, or declining species are likely to be considered significant unless mitigated. Finally, for those species that have a potential to occur onsite as a large population due to the abundance of potentially suitable habitat onsite, impacts to a large population of so-called "watch-list" (i.e. CNPS List 3 and 4) species may be considered significant unless mitigated.

BIO-5: **Pre-Construction Surveys. The SDMP project site shall be surveyed for special-status plant species in a year with rainfall totals within the normal range for the area. Surveys shall be floristic in nature and be conducted in accordance with the most current USFWS, CDFG, and CNPS guidelines. Surveys shall cover all areas intended for both development and compensatory mitigation.**

BIO-6: **<u>Avoidance.</u> Potentially significant impacts to special-status plants shall be avoided to the extent feasible. In consultation with a plant ecologist, TMP improvements shall, to the extent feasible, be designed, constructed, and operated to reasonably avoid direct and indirect impacts to special-status plant populations.**

BIO-7: **<u>Compensation.</u> To compensate for permanent impacts to special-status plant species, habitat that is not already public land shall be preserved and managed in perpetuity at a 1:1 mitigation ratio (one acre preserved for each acre impacted). Impacts could include direct impacts resulting from loss of habitat or indirect impacts if a significant population or portion thereof is unable to be avoided. The preserved habitat for significantly impacted plant species shall be of equal or greater habitat quality to the impacted areas in terms of soil features, extent of disturbance, vegetation structure, and dominant species composition, and shall contain verified extant populations of the special-status species impacted. The permanent protection and management of mitigation lands shall be ensured through an appropriate mechanism, such as a conservation easement or fee title purchase. A conservation easement could be held by the California Department of Fish and Wildlife (CDFG) or an approved land management entity and shall be recorded within a time frame agreed upon by CDFG.**

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 U.S. Fish and Wildlife Service? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion

Ephemeral drainages located within the study area may meet the definition of a stream and fall under the jurisdiction of CDFG. These features in addition to all canals, ditches and other irrigation features along Road 224 potentially qualify as “waters of the state” and are subject to regulation by the Regional Water Quality Control Board (RWQCB). The California Fish and Game Commission maintains a “no net loss” policy related to wetlands. Construction activities that impact areas defined as “wetlands” may be considered significant under CEQA. Mitigation Measure BIO-3 identified above and Mitigation Measure BIO-8 would reduce any possible impacts to this habitat to less than significant.

BIO-8: **<u>Pre-Construction Surveys and SJMSCP Coordination.</u> Pre-construction surveys shall be conducted prior to any project related activities that may encroach into regulated habitats or disturb native vegetation to identify significant impacts. If regulated habitats are impacted by project activities planned activities can either avoid these resources or work in conjunction with the regulatory agencies to minimize, mitigate, and permit the activities. A Streambed Alteration Agreement typically can be obtained within 90 days of submittal of a complete application, including a permit fee. Project activities that reduce the cross-sectional area of a stream and/or remove riparian and wetland vegetation require compensatory mitigation and monitoring. Moreover, CDFG agreements for projects in agricultural and native settings frequently include pre-construction surveys and reporting and construction monitoring to ensure protection of wildlife resources.**

Activities that result in impacts to waters of the state, may require that the project applicant file a Report of Waste Discharge with the RWQCB.

c) *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?* ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion

A detailed wetland delineation was not conducted for the proposed TMP. A review of the *United States Fish and Wildlife Service Wetlands Geodatabase* indicated the presence of several potential jurisdictional wetlands near the study area. However, the vernal pool habitat is isolated from other waters and ephemeral drainages are isolated, intermittent watercourses with no obvious hydrologic connection to any navigable or perennial surface water source or tributary. Therefore, these features would not likely be subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE) under provisions of Section 404 of the Clean Water Act (1972) and Section 10 of the Rivers and Harbors Act (1899). The Delta Mendota Canal and the California Aqueduct may be subject to the jurisdiction of the USACE. The Project could affect these canals. Implementation of Mitigation Measure BIO-9 would reduce impacts to wetlands to less than significant.

BIO-9: **Implement SJMSCP Clean Water Act Requirements. Section 5.6 of the SJMSCP states that until such time that the Clean Water Act regional general permit or its equivalent is issued for coverage under the SJMSCP, acquisition of a Section 404 permit by project proponents will continue to occur as required by existing regulations. Project proponents shall comply with all requirements for protecting federally protected wetlands.**

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?* ***Determination: Less Than Significant Impact.***

Discussion

Improvements that could affect nursery sites are addressed in impact discussions associated with take of federal and state endangered and threatened wildlife species and injury or mortality of state species of special concern, state fully protected, and other SJMSCP-covered wildlife species, above. Implementation of Mitigation Measures BIO-1 and BIO-3 would incorporate the implementation of the relevant incidental take minimization measures detailed in the SJMSCP. Implementation of Mitigation Measures BIO-1 and BIO-3 would reduce impacts to nursery sites to less than significant and fully comply with the SJMSCP.

e) *Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?* ***Determination: Less Than Significant Impact.***

Discussion

The City has a tree ordinance (Tracy Municipal Code [T.M.C.] (Chapter 7.08) that protects "street trees" planted within rights-of-way or planting easements. Any trees that would need to be removed for any improvements proposed as part of the TMP would be required to adhere to the rules and regulations set forth in Chapter 7.08 of the T.M.C. The proposed TMP would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. Therefore, impacts would be less than significant.

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? ***Determination: Less Than Significant Impact.***

Discussion

The entire Project area is located within the jurisdiction of the SJMSCP. Implementation of Mitigation Measures BIO-1 through BIO-9, described above, would ensure that any potential impacts to special-status species or habitats, which may be associated with the Project, are addressed according to the provisions of the SJMSCP. Therefore, the Project would not conflict with the provisions of an adopted habitat conservation plan, natural communities conservation plan, or other approved local, regional, or state habitat conservation plan, including the SJMSCP, and impacts would be less than significant.

V. CULTURAL RESOURCES

CULTURAL RESOURCES -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in '15064.5?	☐	☑	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to '15064.5?	☐	☑	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☑	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☑	☐

Would the Project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines § 15064.5? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion

Historic resources generally consist of buildings, structures, improvements, and remnants associated with a significant historic event or person(s) and/or represent a historically significant style, design, or achievement. Damage to or demolition of such resources is typically considered to be a significant impact. Impacts to historic resources can occur through direct impacts, such as destruction or removal, and through indirect impacts, such as a change in the setting of a historic resource. No transportation improvements are proposed in areas that currently contain known historic resources. However, during construction, unknown and/or undocumented historic resources may be uncovered. For these reasons, impacts would not be

any greater than those identified in the *General Plan EIR* and impacts associated with the proposed TMP would be less than significant with the incorporation of Mitigation Measure CUL-1.

CUL-1: **If during ground-disturbance activities, unique cultural resources are discovered, the following procedures shall be followed. Unique cultural resources are defined, for this condition, as being multiple artifacts in close association with each other, but may include fewer artifacts if the area of the find is determined to be of significance due to its sacred or cultural importance.**

1. **All ground disturbance activities within 100 feet of the discovered cultural resource shall be halted until a meeting is convened between the City and a qualified archaeologist to discuss the significance of the find.**
2. **The archaeologist shall recommend appropriate actions, in cooperation with the City and contractor.**
3. **Grading or further ground disturbance shall not resume within the area of the discovery until a determination has been reached by the City as to the appropriate mitigation.**

b) *Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines § 15064.5?* ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion

Archaeological sites are locations that contain resources associated with former human activities, and may contain such resources as human skeletal remains, waste from tool manufacture, tool concentrations, and/or discoloration or accumulation of soil or food remains. The Tracy Planning Area likely contains undiscovered archaeological sites, particularly in undeveloped areas. Construction activities associated with implementation of the proposed TMP may result in adverse effects on unknown archaeological sites, which is not any greater of an impact than identified in the *General Plan EIR* and implementation of Mitigation Measure CUL-2 would reduce this potential impact to less than significant.

CUL-2: **Prior to the issuance of a grading permit for individual projects, an archaeological resource monitoring plan shall be developed by a qualified archaeologist and submitted to the City for review and approval. This plan shall include a grading observation schedule to be maintained when grading occurs on and offsite in upper soils to identify and further evaluate cultural resources that may be discovered in the proposed project area. A qualified archaeologist shall be retained to attend pregrade meetings and to monitor earth moving activities, including clearing, grubbing, cutting, and trenching at the site. The archaeologist shall carefully inspect these areas to assess the potential for significant prehistoric or historic remains. If potential archaeological and historical resources are uncovered, the construction contractor shall cease grading operations in the vicinity of the find until further evaluation is undertaken to assess the discovery. Further subsurface investigation may be needed if the resource is determined unique or important for its prehistoric or historic information.**

c) *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?* ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion

Paleontological resources are the preserved fossilized remains of plants and animals. Fossils and traces of fossils are preserved in sedimentary rock units, particularly fine- to medium-grained marine, lake, and stream deposits, such as limestone, siltstone, sandstone, or shale, and in ancient soils (paleosols). They are also found in coarse-grained sediments, such as conglomerates or coarse alluvium sediments. Fossils are rarely preserved in igneous or metamorphic rock units. Fossils may occur throughout a sedimentary unit and, in fact, are more likely to be preserved subsurface, where they have not been damaged or destroyed by previous ground disturbance, amateur collecting, or natural causes such as erosion. In contrast, archaeological and historic resources are often recognized by surface evidence of their presence. Construction activities associated with implementation of the proposed TMP may result in adverse effects on unknown paleontological resources which is not any greater of an impact than identified in the *General Plan EIR*. Implementation of Mitigation Measure CUL-3 would reduce this potential impact to less than significant.

CUL-3: **A trained paleontological monitor shall be present during individual project excavation activities greater than 5.0 feet in depth. Excavations below 5.0 feet have a high likelihood of encountering older alluvial wash deposits, which may contain paleontological resources. The monitoring for paleontological resources shall be conducted on a half-time basis, and on a full-time basis during excavation greater than 5.0 feet in depth. If paleontological resources are located during excavation, the monitoring program would change to full-time. The monitor shall be empowered to temporarily halt or redirect construction activities to ensure avoidance of adverse impacts to paleontological resources. The monitor shall be equipped to rapidly remove any large fossil specimens encountered during excavation. During monitoring, samples shall be collected and processed to recover micro-vertebrate fossils. Processing shall include wet-screen washing and microscopic examination of the residual materials to identify small vertebrate remains.**

d) *Disturb any human remains, including those interred outside of formal cemeteries?* ***Determination: Less Than Significant Impact.***

Discussion

Ground-disturbing activities, such as grading or excavation, have the potential to disturb human remains. If human remains are found, those remains would require proper treatment, in accordance with applicable laws. The Native American Graves Protection and Repatriation Act (NAGPRA) includes provisions for unclaimed and culturally unidentifiable Native American cultural items, intentional and inadvertent discovery of Native American cultural items on federal and tribal lands, and penalties for noncompliance and illegal trafficking. California Public Resources Health and Safety Code Section 7050.5-7055 describes the general provisions regarding human remains, including the requirements if any human remains are accidentally discovered during excavation of a site. As required by state law, the requirements and procedures set forth in Section 5097.98 of the California Public Resources Code would be implemented, including notification of the County Coroner, notification of the Native American

Heritage Commission and consultation with the individual identified by the Native American Heritage Commission to be the "most likely descendant." If human remains are found during excavation, excavation must stop in the vicinity of the find and any area that is reasonably suspected to overlie adjacent remains until the County Coroner has been called out, and the remains have been investigated and appropriate recommendations have been made for the treatment and disposition of the remains. Following compliance with federal and state regulations, which detail the appropriate actions necessary in the event human remains are encountered, impacts would not be any greater than those identified in the *General Plan EIR*. Thus, the proposed TMP would result in less than significant impacts in this regard.

VI. GEOLOGY AND SOILS

GEOLOGY AND SOILS -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☑	☐
ii) Strong seismic ground shaking?	☐	☐	☑	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☑	☐
iv) Landslides?	☐	☐	☑	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☑	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☑	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (2004), creating	☐	☑	☐	☐

substantial 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?	☐	☐	☐	☑

Would the Project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42. ***Determination: Less Than Significant Impact.***

Discussion

The California Geologic Survey does not list the City on its list of cities affected by Alquist Priolo Earthquake Fault Zones. Therefore, the probability of ground surface rupture within the Tracy Planning Area is considered remote. For this reason, impacts would not be any greater than those identified in the *General Plan EIR* and impacts associated with the proposed TMP would be less than significant.

ii) Strong seismic ground shaking? ***Determination: Less Than Significant Impact.***

Discussion

Major active faults that are closest to, but outside of the Tracy Planning Area, have historically been the source of earthquakes felt in Tracy. These faults include the San Andreas, Calaveras, Hayward, and Greenville faults. According to the *General Plan EIR*, data from the State Department of Conservation and the U.S. Geological Survey indicate that there are six faults in the Tracy Planning Area, five of which are located near the edges of the SOI. The Tracy-Stockton fault passes beneath the City in the deep subsurface and is considered inactive. The five other faults are located in the southwestern portion of the Tracy Planning Area: the Black Butte fault, the Midway fault, the San Joaquin fault, the Carnegie/Corral Hollow fault, and the Elk Ravine fault, and are also considered inactive. The City has a low to moderate seismic history. However, the City has the potential to experience groundshaking. Therefore, potential impacts from groundshaking caused by seismic activity on nearby faults could result. To minimize damage to the proposed transportation improvements caused by groundshaking, all construction would comply with the latest California Building Code standards, as required by the City Municipal Code 9.04.030. Implementation of the California Building Code standards, which include provisions for seismic design, would ensure that impacts associated with groundshaking would not be any greater than those identified in the *General Plan EIR* and impacts associated with the proposed TMP would be less than significant.

iii) Seismic-related ground failure, including liquefaction? ***Determination: Less Than Significant Impact.***

Discussion
The northern portion of the City has surficial soils that have low liquefaction potential. However, the underlying soils are relatively clean, water-saturated sands and peats, which have higher liquefaction potential. The southern portion of the City is considered to be moderately susceptible to liquefaction due to loose, coarse-grained deposits. The Safety Element of the *General Plan* includes Objective SA-1.1, Policy 1, which requires that geotechnical engineering studies be undertaken for any development in areas where potentially serious geologic risks exist. Implementation of this policy would reduce the potential risk of liquefaction and impacts would not be any greater than those identified in the *General Plan EIR*. Impacts associated with the proposed TMP would be less than significant.

iv) Landslides? ***Determination: Less Than Significant Impact.***

Discussion
The landslide risk in Tracy is low in most areas. In the wider Tracy Planning Area, some limited potential for risk exists in the foothills and mountain terrain of the upland areas in the southwest. The potential for small scale slope failures along river banks also exists. No transportation improvements are proposed within these types of areas. Therefore, impacts would not be any greater than what was identified in the *General Plan EIR* and the proposed TMP would result in less than significant impacts. .

b) Result in substantial soil erosion or the loss of topsoil? ***Determination: Less Than Significant Impact.***

Discussion
Soil erosion is defined as the detachment and movement of soil particles by the erosive forces of wind or water. The majority of Tracy is on flat land with little risk of erosion. However, there is potential for the loss of topsoil with any development that occurs on hillsides because removal of vegetation can increase erosion. No transportation improvements are proposed within hillside areas and, therefore, impacts would not be any greater than those identified in the *General Plan EIR*. Impacts associated with the proposed TMP would be less than significant.

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? ***Determination: Less Than Significant Impact.***

Discussion
Refer to Responses VI(a)(ii) through VI(a)(iv), above. Impacts would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (2004), creating substantial risks to life or property? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
Expansive soils are those that undergo volume changes as moisture content fluctuates; swelling substantially when wet or shrinking when dry. Expansion is a characteristic of clay type soils such as those found in a large portion of the City. Soil expansion can damage structures by cracking foundations, causing settlement and distorting structural elements, which is not any greater of an impact than identified in the *General Plan EIR*. Implementation of Mitigation Measure GEO-1, which requires that a certified geotechnical engineer be retained during

construction activities, would ensure that soils are evaluated for expansive potential. Therefore, with implementation of Mitigation Measure GEO-1, impacts would be less than significant.

GEO-1 **During excavation activities, a certified geotechnical engineer shall be retained by the future project applicants to evaluate subgrade soils for the extent of their expansive potential. For areas found to contain soft, potentially expansive clays, the soil shall be removed (i.e., over excavated) and/or stabilized prior to the placement and compaction of fill. Stabilization techniques include, but are not limited to, the placement of 18 inches of ½-inch to ¾-inch crushed rock over stabilization fabric (such as Mirafi 500X or equivalent), placement of larger, angular stabilization rock (1-inch to 3-inch, clean) and use of chemical treatments such as lime to reduce the soil's expansive potential. In addition, building construction alternatives, such as the use of alternative foundation types (i.e., post-tension, piles, etc.) versus end-bearing foundations, shall be considered and implemented where appropriate. Final techniques shall be: (a) developed by a certified geotechnical engineer or engineering geologist: and (b) reviewed and approved by the City prior to issuance of a grading permit.**

e) *Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?* ***Determination: No Impact.***

Discussion

The proposed TMP does not include the use of septic tanks or alternative wastewater disposal systems. The need for wastewater disposal would not be required. Therefore, no impacts would result.

VII. GREENHOUSE GAS EMISSIONS

GREENHOUSE GAS EMISSIONS - Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☑	☐	☐	☐

Would the Project:

a) *Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?* ***Determination: Potentially Significant Impact.***

Discussion

Greenhouse gases (GHGs) are gases in the atmosphere that absorb and emit radiation. The greenhouse effect traps heat in the troposphere through a three-fold process, summarized as follows: short wave radiation emitted by the Sun is absorbed by the Earth; the Earth emits a portion of this energy in the form of long wave radiation; and GHGs in the upper atmosphere absorb this long wave radiation and emit this long wave radiation into space and toward the Earth. This "trapping" of the long wave (thermal) radiation emitted back toward the Earth is the underlying process of the greenhouse effect. The main GHGs in the Earth's atmosphere are water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone (O_3), hydrofluorocarbons (HCFs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6).

Direct GHG emissions include emissions from construction activities, area sources, and mobile (vehicle) sources. Typically, mobile sources make up the majority of direct emissions. Indirect GHG emissions are generated by incremental electricity consumption and waste generation. Electricity consumption is responsible for the majority of indirect emissions.

Regulatory Environment

In June 2005, California established GHG emissions reduction targets in Executive Order S-3-05. The Executive Order established the following goals: GHG emissions should be reduced to 2000 levels by 2010; GHG emissions should be reduced to 1990 levels by 2020; and GHG emissions should be reduced to 80 percent below 1990 levels by 2050. In 2007, California further solidified its dedication to reducing GHGs by setting a new Low Carbon Fuel Standard for transportation fuels sold within the state with Executive Order S-1-07. Executive Order S-1-07 sets a declining standard for GHG emissions measured in CO_2 equivalent gram per unit of fuel energy sold in California.

In response to the transportation sector accounting for more than half of California's CO_2 emissions, Assembly Bill (AB) 1493 (AB 1493, Pavley) was enacted on July 22, 2002. AB 1493 required the California Air Resources Board (CARB) to set GHG emission standards for passenger vehicles, light duty trucks, and other vehicles whose primary use is noncommercial personal transportation in the state. Additionally, the California legislature enacted AB 32 (AB 32, Nuñez) in 2006 to further the goals of Executive Order S-3-05. AB 32 represents the first enforceable statewide program to limit GHG emissions from all major industries, with penalties for noncompliance.

CARB adopted the *AB 32 Climate Change Scoping Plan* (Scoping Plan) in December 2008 to achieve reductions in GHG emissions in California pursuant to the requirements of AB 32. The Scoping Plan contains the main strategies California will use to reduce GHG emissions. AB 32 requires California to reduce its GHG emissions by approximately 28 to 33 percent below business as usual (BAU). CARB has identified reduction measures to achieve this goal as set forth in the Scoping Plan.

The proposed TMP provides a comprehensive review of the City's transportation system and identifies improvements and expansions to the existing system required to accommodate future growth anticipated by the *General Plan*. As a result, the proposed project could generate GHG emissions that may have a significant impact on the environment. Therefore, this issue will be analyzed in more detail in an EIR.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? ***Determination: Potentially Significant Impact.***

Discussion

On February 1, 2011, the City adopted a Sustainability Action Plan in response to AB 32. Consistent with the recommendations of the CARB Scoping Plan, the City's Sustainability Action Plan establishes a GHG reduction goal of 29 percent of community and municipal GHG emissions from 2020 BAU projected levels. To achieve the reduction goal, the Sustainability Action Plan provides various goals and best practices that focus on energy, transportation and land use, solid waste, water use, agriculture and open space, biological resources, air quality, public health, and economic development. The Sustainability Action Plan goals and best practices are incorporated in the General Plan. GHG emissions associated with the TMP will be addressed and reviewed in an EIR in the context of the Sustainability Action Plan and General Plan to determine the significance of potential impacts.

VIII. HAZARDS AND HAZARDOUS MATERIALS

HAZARDS AND HAZARDOUS MATERIALS - Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
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 for people residing or working in the project area?	☐	☐	☐	☑

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☑
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☑	☐	☐
h) Expose people or structures 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?	☐	☑	☐	☐

Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? ***Determination: Less Than Significant Impact.***

Discussion

Proposed improvements identified in the TMP could result in short-term construction impacts involving the transport of debris from grubbing and clearing undeveloped land and possibly the demolition of structures, which may contain hazardous substances such as fertilizers, pesticides, herbicides, petroleum products, asbestos, and lead that could be harmful if accidentally released. However, this is unlikely, as proposed improvements would be sited within existing rights-of-way or on undeveloped land. In addition, site clearing would be conducted within a short time frame; thus, the transport of potentially hazardous material would not be "routine."

During project operation, transport of hazardous material would occur on public roads subject to Occupational Health and Safety Standards Guidelines (Hazardous Waste Operations and Emergency Response Standard, Title 29 Code of Federal Regulations (CFR) Part 1910.120), as well as the Department of Toxic Substances Control (DTSC). Unless specifically exempted, hazardous waste transporters must comply with the California Highway Patrol Regulations; the California State Fire Marshal Regulations; and the U.S. Department of Transportation Regulations. In addition, hazardous waste transporters must comply with Division 20, Chapter 6.5, Article 6 and 13 of the California Health and Safety Code and the Title 22, Division 4.5, Chapter 13, of the California Code of Regulations, which are administered by DTSC (http://www.dtsc.ca.gov/HazardousWaste/Transporters.html). All of these regulations are designed to minimize the danger of hazardous materials being released and causing a significant hazard to the public or the environment.

It is not anticipated that chemicals would be used regularly and, therefore, be routinely transported. For these reasons, impacts would not be any greater than those identified in the *General Plan EIR*. Adherence to guidelines discussed above would reduce potential impacts associated with the proposed TMP to less than significant.

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? ***Determination: Less Than Significant Impact.***

Discussion
Refer to Response VIII(a), above. Impacts would be less than significant impacts.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? ***Determination: Less Than Significant Impact.***

Discussion
Proposed improvements identified in the TMP would be located within one-quarter mile of schools throughout the City. However, as stated in Response VIII(a), implementation of the proposed improvements would not involve the routine use of hazardous materials and, thus, the potential to emit hazardous materials near schools would not be any greater than identified in the *General Plan EIR* and impacts associated with the proposed TMP would be less than significant.

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? ***Determination: No Impact.***

Discussion
The Environmental Protection Agency (EPA) has listed two hazardous waste sites on the Superfund National Priorities List (NPL) within the Tracy Planning Area. One is the Tracy Defense Depot, which is located on the east side of Tracy, on Chrisman Road between Valpico and Schulte Roads. The second is the Lawrence Livermore National Lab, which is located in the southwest corner of the Tracy Planning Area. Both sites currently have human exposure under control, but have not yet mitigated effects to groundwater migration. No proposed improvements would be located within these two sites. For these reasons, impacts would not be any greater than those identified in the General Plan EIR and no impacts would result.

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 for people residing or working in the project area? ***Determination: No Impact.***

Discussion
The Tracy Municipal Airport (TMA) is a general aviation airport owned by the City and managed by the Parks and Community Services Department. It is located in the southern portion of the City. Proposed improvements identified in the TMP would be constructed within two miles of the TMA. However, the majority of improvements would occur within existing rights-of way and would not result in a safety hazard for people residing or working in the area. For these reasons, impacts would not be any greater than those identified in the General Plan EIR and no impacts would result.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? ***Determination: No Impact.***

Discussion
There are no private airstrips located within the Tracy Planning Area. For this reason, impacts would not be any greater than those identified in the *General Plan EIR* and no impacts would result.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? ***Determination: Less Than Significant with Mitigation Incorporated.***

Discussion
Proposed improvements identified in the TMP would not impair implementation or physically interfere with the City's emergency response plan and would likely improve emergency response. However, during construction of proposed improvements, short-term impacts could occur. Mitigation implementing a Traffic Management Plan would allow continued vehicular use of the existing roadways or relegate traffic to agency-approved detour routes around construction sites. Construction of improvements located outside of urbanized areas would not produce adverse impacts in this regard. Therefore, with implementation of Mitigation Measure HAZ-1, impacts would be less than significant.

HAZ-1 **A Traffic Management Plan shall be prepared and implemented to the satisfaction of the City of Tracy where construction would affect roadways. The TMP shall include, but not limited to, the following measures:**

- **Limit construction to one side of the road or out of the roadbed where possible.**
- **Provision of continued access to commercial and residential properties adjacent to construction sites.**
- **Provide alternate bicycle routes where existing bicycle routes are disrupted by construction activities.**
- **Submit a truck routing plan, for approval by the City of Tracy in order to minimize impacts form truck traffic during material delivery and disposal.**
- **Where construction is proposed for two-lane roadways, confine construction to one half of the pavement width. Establish one lane of traffic on the other half of the roadway using appropriate construction signage and flagmen, or submit a detour plan for approval by the City Traffic Engineer.**

h) Expose people or structures 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? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
Proposed improvements identified in the TMP would be located throughout the City, including within urbanized and undeveloped land. Those improvements located adjacent to or within undeveloped wildland areas have the potential to increase fire hazards. Depending on the proximity of a proposed improvement project to areas of high susceptibility to wildfires, the project may result in significant impacts due to wildfires. For these reasons, impacts would not

be any greater than those identified in the General Plan EIR. Implementation of Mitigation Measure HAZ-2, which includes requirements for fuel-modification zones, fire equipment access, and emergency preparedness protocol, would reduce these impacts to less than significant.

HAZ-2 **Prior to approval of site design, transportation infrastructure projects located within areas of high susceptibility to wildfire hazards shall include fuel-modification zones, road standards that provide for fire equipment access, the assured provision of minimum water supply reserves for emergency fire use, fuel breaks and greenbelts, clearances around structures, and emergency preparedness protocol and procedures as recommended by the *General Plan*.**

IX. HYDROLOGY AND WATER QUALITY

HYDROLOGY AND WATER QUALITY -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☑	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☑	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☑	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☑	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage	☐	☐	☑	☐

systems or provide substantial additional sources of polluted runoff?				
f) Otherwise substantially degrade water quality?	☐	☐	☑	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☑
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☑	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☑	☐
j) Inundation by seiche, tsunami, or mudflow?	☐	☐	☑	☐

Would the Project:

a) Violate any water quality standards or waste discharge requirements? ***Determination: Less Than Significant Impact.***

Discussion

Short-term water quality impacts during construction of proposed improvements identified in the TMP could result from sediment from grading operations, oil and grease from equipment, trash from worker and construction activities, nutrients from fertilizers, heavy metals, pathogens, and other substances. The State Water Resources Control Board (SWRCB) has adopted General Permit No. CAS000002- *Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity* (General Permit) that applies to most construction-related storm water discharges within California. The General Permit requires that projects disturbing greater than one acre develop and implement a Storm Water Pollution Prevention Plan (SWPPP) that specifies Best Management Practices (BMPs) to prevent all construction pollutants from contacting storm water with the intent of keeping all products of erosion from moving offsite into receiving waters. Projects associated with implementation of the TMP would be subject to the provisions of the General Permit, and would be required to submit a SWPPP to the SWRCB, Central Valley Region (Regional Board); therefore, short-term construction activities would not violate any water quality standards or discharge requirements and impacts would be less than significant.

Future transportation infrastructure projects would add impervious surfaces to the Tracy Planning Area, which would increase storm water runoff and introduce pollutants into the storm drainage system. Pollutants would be washed by rainwater from roadways, bridges, sidewalks and other impervious surfaces. Potential pollutants include oil, grease and heavy metals from automobiles, and petroleum hydrocarbons from fuels. The introduction of polluted runoff into receiving waters would be a potentially significant impact. However, projects associated with

implementation of the TMP would be required to comply with applicable City policies and regulations, which would reduce this impact to less than significant.

In particular, proposed improvements would be required to implement BMPs identified in the City's Storm Water Management Plan (SWMP), which limit the discharge of pollutants to the City storm drainage system to the maximum extent practicable. Moreover, projects would be required to comply with the general site design control measures for low impact development (LID) identified in the City's Storm Water Quality Control (SWQC) Manual, as well as appropriate source and treatment control measures. LID measures would help filter pollutants and provide effective water quality treatment. Therefore, for these reasons, impacts would not be any greater than those identified in the General Plan EIR and the proposed TMP would have less than significant impacts on water quality during construction and operation.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? ***Determination: Less Than Significant Impact.***

Discussion

The proposed TMP includes improvements to railroad crossings, intersections, bicycle and pedestrian facilities, bridges, and park and ride facilities. The majority of these improvements would be constructed within existing rights-of-way. Therefore, implementation of the TMP would not deplete groundwater supplies or interfere with groundwater recharge and impacts would be less than significant.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner, which would result in substantial erosion or siltation on- or off-site? ***Determination: Less Than Significant with Mitigation Incorporated.***

Discussion

Construction of proposed improvements identified in the TMP has the potential to alter existing drainage patterns, primarily due to runoff from construction activities, increases in impervious surfaces, and vegetation removal. For example, proposed improvements may disturb existing creeks or drainages as a result of grading, trenching or earth-moving activities. Implementation of Mitigation Measure HYD-1 would require minimization of time periods in which natural drainages are disturbed. Therefore, with the implementation of Mitigation Measure HYD-1, the proposed TMP would not have any greater impacts than those identified in the *General Plan EIR* and impacts associated with the proposed TMP would be less than significant.

HYD-1 **Where drainage courses are crossed, temporarily altering their capacity or flow characteristics, appropriate precautions, as recommended by a qualified biologist, shall be incorporated into the project design to minimize the time period in which drainages are disturbed while maintaining the natural flow or provide additional capacity within the drainages during the construction period to handle designed flows.**

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of

surface runoff in a manner, which would result in flooding on or off-site? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
Refer to Response IX(c), above. Impacts would be less than significant impacts with implementation of Mitigation Measure HYD-1.

e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff? ***Determination: Less Than Significant Impact.***

Discussion
Future transportation infrastructure would potentially increase the amount of impervious surface within the Tracy Planning Area and create additional sources of storm water runoff. However, as previously mentioned, the majority of improvements would be constructed within existing rights-of-way and, as such, would not contribute a significant amount of runoff water to the storm water drainage system. Therefore, implementation of the proposed TMP would not have any greater impacts than those identified in the *General Plan EIR* and would not exceed the capacity of the City's storm water drainage system and impacts would be less than significant.

f) Otherwise substantially degrade water quality? ***Determination: Less Than Significant Impact.***

Discussion
Refer to Responses IX(a) through (e), above.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map? ***Determination: No Impact.***

Discussion
Implementation of the proposed TMP would not include the construction of housing. Therefore, no impacts would result.

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows? ***Determination: Less Than Significant Impact.***

Discussion
The majority of the Tracy Planning Area is located outside of a 100-year flood zone. However, portions of the northern planning area are located within a 100-year flood zone. Construction of transportation infrastructure projects would not impede or redirect flood flows and impacts would be less than significant.

i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam? ***Determination: Less Than Significant Impact.***

Discussion
Some areas in the northern portion of the Tracy Planning Area have the potential to be affected by dam failure inundation. Potential dam failures could occur at the San Luis Reservoir, New

Melones and New Exchequer dams. The majority of proposed improvements would not be located within the vicinity of a dam or a dam inundation area. In addition, while portions of San Joaquin County could be subject to flooding due to seiches resulting in levee failure, the City is not in close proximity to the areas most likely to be affected. For these reasons, impacts would not be any greater than those identified in the *General Plan EIR* and implementation of the proposed TMP would not expose people or structures to risks associated with flooding caused by the failure of a dam or levee; therefore, impacts would be less than significant.

j) Inundation by seiche, tsunami, or mudflow? ***Determination: Less Than Significant Impact***

Discussion
Refer to Response IX(i), above. Impacts would be less than significant.

X. LAND USE AND RELEVANT PLANNING

LAND USE AND PLANNING - Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Physically divide an established community?	☐	☐	☑	☑
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☑	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☑	☐

Would the Project:

a) Physically divide an established community? ***Determination: No Impact.***

Discussion
An example of a project that has the potential to divide an established community includes the construction of a new freeway or highway through an established neighborhood. The proposed TMP includes future improvements to railroad crossings, intersections, bicycle and pedestrian facilities, bridges, and park and ride facilities. The majority of these improvements would be constructed within existing rights-of-way. As proposed, the TMP would not physically divide an established community and no impacts would result.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect? ***Determination: Less Than Significant Impact.***

Discussion
As part of the *General Plan Update*, the City analyzed future infrastructure demand and capacity to ensure that City facilities could accommodate anticipated regional growth. Typically, the buildout horizon for a *General Plan* is approximately 20 years, while an infrastructure master plan typically has a life-span of approximately 5 to 10 years. With this in mind, the proposed TMP is based on the most current information available for the Tracy Planning Area, and the analysis conducted provides adequate resources to accommodate this growth through anticipated buildout.

Based on this, impacts associated with potential conflict with any land use policy, plan, or regulation is considered less than significant.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan? ***Determination: Less Than Significant Impact.***

Discussion
Refer to Response IV(f), above. Impacts would be less than significant.

XI. MINERAL RESOURCES

MINERAL RESOURCES -- Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
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?	☐	☐	☐	☑

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? ***Determination: No Impact.***

Discussion
Proposed improvements identified in the TMP would not be located in areas designated as Aggregate in the *General Plan.* Therefore, no impacts would result.

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? ***Determination: No Impact.***

Discussion
Refer to Response XI(a), above. No impacts would result.

XII. NOISE

NOISE – Would the project result in:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☑	☐	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☑	☐	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☑	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☑	☐	☐
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 expose people residing or working in the project area to excessive noise levels?	☐	☐	☑	☐
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☑

Would the Project result in:

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Determination: Less Than Significant Impact with Mitigation Incorporated.

Discussion

Construction of proposed improvements identified in the TMP would result in noise impacts. Construction activities are generally short-term and temporary in duration, lasting from a few days to a period of several months. Construction-related noise impacts typically occur during initial site preparation, which can create the highest levels of noise but is also generally the shortest of all construction phases. High noise levels can be created by the operation of heavy-duty trucks, backhoes, bulldozers, excavators, front-end loaders, compactors, scrapers, and other heavy-duty construction equipment. Table 4*, Maximum Noise Levels Generated By Construction Equipment*, indicates the anticipated equipment noise levels during the construction period. Operating cycles for these types of construction equipment may involve one or two minutes of full power operation followed by three to four minutes at lower power settings. Other sources of acoustical disturbance include random incidents lasting less than one minute (such as dropping large pieces of equipment or the hydraulic movement of machinery lifts).

Table 4
Maximum Noise Levels Generated By Typical Construction Equipment

Type of Equipment	Sound Levels at Maximum Engine Power with Mufflers at Indicated Distance (dBA)			
	25 Feet	50 Feet	100 Feet	200 Feet
Air Compressor	87	81	75	69
Backhoe	91	85	79	73
Concrete Mixer	91	85	79	73
Crane, Mobile	89	83	77	71
Dozer	86	80	74	68
Grader	91	85	79	73
Jack Hammer	94	88	82	76
Loader	85	79	73	67
Pneumatic Tool	91	85	79	73
Pump	82	76	70	64
Roller	80	74	68	62
Saw	84	78	72	66
Scraper	94	88	82	76
Truck	97	91	85	79
Impact Pile Driver (peak)	107	101	95	89
Note: Assumes a drop-off rate of 6-dB per doubling of distance, which is appropriate for use in characterizing point-source (such as construction equipment) sound attenuation over a hard surface propagation path.				
Source: EPA, Bolt, Beranek, and Newman, *Noise Control for Buildings and Manufacturing Plants*, 1987.				

A reasonable worst-case assumption is that the three loudest pieces of equipment would operate simultaneously and continuously over at least one hour within a focused area of 15 yards of each other. The combined sound level of three of the loudest pieces of equipment (scraper, backhoe, and heavy truck) would be 93 dBA measured at 50 feet from the noise source. Table 5, *Estimated Construction Noise in the Project Area*, which assumes this combined source level, summarizes predicted noise levels at various distances from an active construction site. These estimations of noise levels take into account distance to receptor attenuation, attenuation from molecular absorption, and anomalous excess attenuation. Construction noise would be most noticeable during the initial months of site-intensive grading.

Table 5
Estimated Construction Noise in the Project Area

Distance Attenuation	
Distance to Receptor (Feet)	**Sound Level at Receptor (dBA)**
50	93
100	87
200	81
400	74
600	70
800	68
1,000	65
1,500	61

The following assumptions were utilized:
Basic sound level drop-off rate: 6.0 dB per doubling distance
Molecular absorption coefficient: 0.7 dB per 1,000 feet
Analogous excess attenuation: 1.0 dB per 1,000 feet
Reference sound level: 93 dBA
Distance for reference sound level: 50 feet
Simultaneous operation of 1 scraper, 1 heavy truck, and 1 backhoe

Future transportation infrastructure improvements would be located adjacent to urbanized areas where there are sensitive receptors, including schools, hospitals, and residential areas. Speech interference is an indicator of impact on typical daytime and evening activities. A speech interference criterion, in the context of impact duration and time of day, is used to identify substantial increases in noise from temporary construction activities. Noise peaks generated by construction equipment could result in speech interference in adjacent buildings if the noise level in the interior of the building exceeds 45 to 60 dBA. A typical building can reduce noise levels by 20 dBA with the windows closed. This noise reduction could be maintained only on a temporary basis in some cases, since it assumes windows must remain closed at all times. Assuming a 20-dBA reduction with the windows closed, an exterior noise level of 70 dBA (Leq) at receptors would maintain an acceptable interior noise environment of 50 dBA. Mitigation Measure NOI-1 requiring implementation of noise control measures would reduce short-term construction impacts to less than significant.

As discussed in the *General Plan EIR,* the City's Noise Ordinance and policies in the *General Plan* serve to control excessive sources of noise in the City and ensure that noise impacts from new projects are evaluated when they are reviewed. Despite these policies and regulations, the *General Plan EIR* found that significant noise levels increases (3 dBA Ldn or greater) associated with increased traffic would occur adjacent to existing noise sensitive uses along portions of I-205, Grant Line Road, Schulte Road, Linne Road, Lammers Road, Corral Hollow Road, Tracy Boulevard, and MacArthur Drive. New roadways facilitated by the *General Plan* would also increase existing noise levels at receivers in Tracy. This impact was identified as significant and unavoidable in the *General Plan EIR*. Noise levels associated with the proposed TMP would not exceed those studied in the *General Plan EIR* and, thus, no greater impacts would result.

NOI-1: **Prior to the issuance of grading permits and to the satisfaction of the City of Tracy, project proponents shall be required to implement feasible noise control measures to reduce daytime construction noise levels to meet the daytime speech interference criterion of 70-dBA for projects located within 500 feet of any noise-sensitive receptors (e.g., residences, schools, childcare canters, churches, hospitals, and nursing homes). Such control**

measures could include any of the following, as appropriate:

- **To the extent possible, all mechanical equipment shall be oriented away from the nearest noise sensitive receptors; and**
- **All mechanical equipment shall be screened and enclosed to minimize noise.**
- **Construction contracts shall specify that all construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers and other state required noise attenuation devices.**
- **All residential units located within 1,000 feet of the construction site shall be sent a notice regarding the construction schedule of the proposed project. A sign, legible at a distance of 50 feet shall also be posted at the construction site. All notices and signs shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.**
- **A "noise disturbance coordinator" shall be established. The disturbance coordinator shall be responsible for responding to any local complaints about construction noise. The disturbance coordinator would determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and would be required to implement reasonable measures such that the complaint is resolved. All notices that are sent to residential units within one-quarter mile of the construction site and all signs posted at the construction site shall list the telephone number for the disturbance coordinator.**
- **Construction noise reduction methods such as shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible.**
- **During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers.**
- **Operation of equipment requiring use of back-up beepers shall be avoided near sensitive receptors to the extent feasible during nighttime hours (10:00 PM to 7:00 AM).**
- **If impact equipment (e.g., jack hammers, pavement breakers, and rock drills) is used during construction, hydraulically or electric-powered equipment shall be used wherever feasible to avoid the noise associated with compressed-air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed-air exhaust shall be used (a muffler can lower noise levels from the exhaust by up to about 10 dBA).**

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
Refer to Response XII(a), above. Similar to short-term noise impacts, groundborne vibration would occur during grading and construction, and would expose adjacent uses to increased noise/vibration levels. Implementation of Mitigation Measure NOI-1 would reduce potential impacts to less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project? ***Determination: Less Than Significant Impact.***

Discussion
Refer to response XII(a), above. Impacts would be less than significant.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
Refer to Response XII(a), above. Impacts would be less than significant with implementation of Mitigation Measure NOI-1.

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 expose people residing or working in the project area to excessive noise levels? ***Determination: Less Than Significant Impact.***

Discussion
The Tracy Municipal Airport (TMA) is a general aviation airport owned by the City and managed by the Parks and Community Services Department. It is located in the southern portion of the City. Future transportation infrastructure would be constructed within two miles of the TMA. However, these improvements would be constructed within existing rights-of-way and would not expose people to excessive noise levels. Impacts would be less than significant.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels? ***Determination: No Impact.***

Discussion
There are no private airstrips located within the Tracy Planning Area. For this reason, impacts would not be any greater than those identified in the *General Plan EIR* and no impacts would result.

XIII. POPULATION AND HOUSING

POPULATION AND HOUSING -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Induce substantial 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 housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☑

Would the Project:

a) Induce substantial 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)? ***Determination: Less Than Significant Impact.***

Discussion
Proposed improvements identified in the TMP would serve existing and planned development consistent with the *General Plan*. Therefore, the proposed project would not induce population growth, either directly or indirectly, not already anticipated in the *General Plan EIR* and impacts would not be any greater than those identified in the *General Plan EIR*. Impacts associated with the proposed TMP would be less than significant.

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere? ***Determination: No Impact.***

Discussion
Proposed transportation improvements would be located within existing rights-of-way or on undeveloped land and, therefore, would not displace existing housing. No impacts would result.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere? ***Determination: No Impact.***

Discussion
Refer to Response XIII(b), above. No impacts would result.

XIV. PUBLIC SERVICES

PUBLIC SERVICES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☑	☑

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:*

1) *Fire protection?* ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion

Proposed improvements identified in the TMP could delay Fire Department response times during roadway construction due to lane closures, construction delays, and detours. Implementation of Mitigation Measure HAZ-1 requiring a Traffic Management Plan and PS-1 requiring coordination with the Tracy Fire Department prior to construction would reduce impacts to fire services to less than significant.

No long-term operational impacts to fire protection services are anticipated. For these reasons, impacts would not be any greater than those identified in the *General Plan EIR*.

PS-1 **Prior to construction of roadway improvements, the City shall coordinate with the Fire Department and other affected fire protection agencies in surrounding jurisdictions to review the Traffic Management Plan for the proposed project. Specifically, the following shall occur:**

- **Emergency vehicle access to structures and fire hydrants in the project area shall be maintained**
- **A prior notice of at least 24 hours in advance of an impact event such as a road closure shall be given to the appropriate agencies**
- **Traffic control measures, such as the use of flagmen, shall be implemented, if deemed necessary, in order to regulate traffic to ensure that access is maintained for emergency response**

2) Police protection? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
Proposed improvements identified in the TMP could delay Police Department response times during roadway construction due to lane closures, construction delays, and detours. Implementation of Mitigation Measure HAZ-1 requiring a TMP and PS-1 requiring coordination with the Tracy Police Department prior to construction would reduce impacts to fire services to less than significant.

No long-term operational impacts to police protection services are anticipated. For these reasons, impacts would not be any greater than those identified in the *General Plan EIR*.

PS-2 **Prior to construction of roadway improvements, the City shall coordinate with the Tracy Police Department to review the Traffic Management Plan (TMP) for the proposed project. Specifically, the following shall occur:**

- **A prior notice of at least 24 hours in advance of an impact event such as a road closure shall be given to the appropriate agencies**
- **Prior to construction, the Tracy Police Department and California Highway Patrol shall be notified of all roadway areas that will be obstructed to allow them to efficiently respond to any emergencies**
- **Traffic control measures, such as the use of flagmen, shall be implemented, if necessary, in order to regulate traffic to ensure that access is maintained for emergency response**

3) Schools? ***Determination: No Impact.***

Discussion
The proposed TMP would not generate students and, therefore, would not result in impacts to school services.

4) Parks? ***Determination: No Impact.***

Discussion
The proposed TMP would not generate residents and, therefore, would not result in impacts to parks.

5) Other public facilities? ***Determination: No Impact.***

Discussion
The proposed TMP would not generate residents and, therefore, would not result in impacts to other public facilities.

XV. RECREATION

RECREATION --	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☑

a) Would the proposed 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? ***Determination: No Impact.***

Discussion
Refer to Response XIV(a)4, above. No impacts would result.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse effect on the environment? ***Determination: No Impact.***

Discussion
The proposed TMP would not include recreational facilities or require the construction or expansion of recreational facilities. Therefore, no impacts would result.

XVI. TRANSPORTATION/TRAFFIC

TRANSPORTATION/TRAFFIC -- Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the	☐	☐	☑	☐

performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				
b) Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads and highways?	☐	☐	☑	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☑
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☑
e) Result in inadequate emergency access?	☐	☑	☐	☐
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☑

Would the Project:

a) *Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?* ***Determination: Less Than Significant Impact.***

Discussion

The proposed TMP builds on the goals and objectives of the *General Plan* and identifies transportation improvements needed to accommodate future development. These improvements include the following:

- **Railroad Facilities** – Maintain and improve five existing at-grade railroad crossings, provide five new grade-separated crossings, and close or relocate three crossings.

- **Intersections** – Improve traffic operations at 65 intersections. Future improvements would include signal control, lane reconfiguration, roundabouts, and widening of intersection approaches.
- **Bicycle and Pedestrian Facilities** – Provide bike lanes and pedestrian facilities in future development areas that complement the existing bike and pedestrian system.
- **Over/Underpass Facilities, Bridges and Culverts** – Maintain and improve 13 existing over/underpass facilities, ten existing bridges, and five existing culverts. Provide two new over/underpass facilities, one new bridge and three new culverts. Improvements to existing facilities include widening or replacement.
- **Roadway Classification** – Establish roadway hierarchy, functionality, operations and typical cross sections.
- **Park and Ride Facilities** – Provide new park and ride facilities.

Traffic analysis prepared for the *General Plan* was based on a future horizon year of 2030. This was because at the time the General Plan was initiated, the San Joaquin Council of Governments (SJCOG) updated the regional travel demand model to year 2030. As noted in the Project Description, the TMP looks out another five years to future horizon year 2035 to establish consistency with the most recent SJCOG land use development, employment forecasts and the subsequent update to their travel demand model for the 2035 horizon year. The City of Tracy geographic location emphasizes its regional significance; various modes of transport travel to, from and through the City on a daily basis. Utilizing the most recent SJCOG model for analysis, results in consistency in identifying improvements that are consistent between the regional agencies, who are responsible for the freeways, CMA roads, local roads, and transit services.

The 2030 traffic impacts for the *General Plan* were assessed through the use of the travel demand model, which provides directional roadway segment traffic forecasts and several level of service analysis techniques. The thresholds of significance used to determine at what level of service the freeways, roadways, and intersections would operate under the *General Plan* included the following:

- Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system.
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency or the city for designated roads or highways.
- Substantially increase hazards due to a design feature or incompatible uses.
- Result in inadequate emergency access.
- Result in inadequate parking capacity.
- Conflict with adopted policies, plans or programs supporting alternative transportation.
- Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

The *General Plan* includes a significantly expanded local roadway network designed to support the ultimate buildout of the land use plan. However, due to the City's Growth Management Ordinance (GMO) and market conditions, not all of the Tracy Planning Area would fully develop by 2030. As a result, the entire roadway network would not be required to be constructed in the next 20 years. As part of the analysis for the *General Plan* and *General Plan EIR*, the

improvements that would be needed by 2030 were identified. These improvements include the reclassification of portions of several streets from minor arterial to major arterial status, road widening to serve development in 2030, and Caltrans' planned widening of I-205 to eight lanes. A substantial number of new roads would be required to serve traffic generated by the *General Plan.* Other improvements, such as signalization of approximately 30 intersections, would also be required to support the *General Plan*. In addition, the upgrading of Eleventh Street/Lammers Road to an urban interchange would be needed.

It is important to maintain circulation continuity throughout the network of the City and County. Thus, it is imperative for the City to coordinate with San Joaquin County to incorporate the following upgrades and/or widenings into the circulation plan, including sections that are outside the City's SOI.

The *General Plan EIR* acknowledged that the existing TMP would require updating to ensure that the improvements identified in the *General Plan* are included in the TMP. Thus, the proposed TMP would further the goals and objectives of the *General Plan* and would be consistent with it.

The *General Plan EIR* evaluated the potential impacts that growth associated with the *General Plan* would have on the City's circulation system. With development resulting from the *General Plan*, traffic volumes would grow throughout the City and the levels of congestion would increase as well. In existing urbanized areas of the City, this congestion would be moderated by selected improvements, such as the construction of Schulte Road as a parallel route to Eleventh Street and a proposed urban interchange at Eleventh Street and Lammers Boulevard.

Roadways in other areas of the City are projected to operate at acceptable levels, with the roadway improvements identified in the *General Plan*. For instance, Lammers Road would be widened from two lanes to four and six lanes in sections to accommodate growth from developments such as Tracy Hills, Tracy Gateway, and other projects. Linne Road, Valpico Road, and MacArthur Drive are a few of the roadways that would be widened to provide an acceptable level of service with the development in the City under the *General Plan*. As a result, there would be a less than significant impact on local roadways. Thus, the *General Plan EIR* found that impacts to local roadways would be less than significant.

At intersections, the *General Plan EIR* found that the City's level of service standards would be maintained except at the intersections of Eleventh Street/Corral Hollow Road and Eleventh Street/Lammers Road, assuming that planned improvements identified in the *General Plan* would be implemented. *General Plan* Policy 2 under Objective CIR-1.3 allows individual locations to fall below the City's level of service standards in instances where the construction of physical improvements would be infeasible or would conflict with the character of the community. Since the intersection of Eleventh Street/Corral Hollow Road is constrained to the point of not allowing for adequate at-grade improvements, the *General Plan EIR* concluded that the resulting level of service would not result in a significant impact. Further improvements at the Eleventh Street/Lammers Road intersection have been discussed. The City has several options, including a grade separated interchange at this location that would be subject to further study pending approval of the final design to be selected for the I-205/Lammers Road interchange.

Additional traffic analysis was conducted for the TMP to determine the level of service at the study intersections for future horizon year 2035. As documented in the proposed TMP, all the

study intersections would operate at level of service D or better during the AM and PM peak hours, except the following five intersections:

- Corral Hollow Road/Eleventh Street
- Tracy Boulevard/Eleventh Street
- Corral Hollow Road/Schulte Road
- Tracy Boulevard/Schulte Road
- Lammers Road/Commerce Way

The proposed TMP includes recommended actions to implement goals and objectives identified in the *General Plan.* Included is the following action for Objective CIR-1.3:

> *Objective CIR-1.3*: Adopt and enforce LOS standards that provide a high level of mobility and accessibility, for all modes, for residents and workers.
>
> Actions: Identify locations or areas where the LOS can fall below the standard due to infeasible mitigation measures or where improvements would have an adverse impact to pedestrians or bicycles or other users. The following locations are exempt from the City's LOS D standard:

- Any intersections or roadways within ¼ mile of any freeway where LOS E is allowed to discourage inter-regional traffic from using City streets.
- Any intersections or roadways located in the Downtown and Bowtie area where LOS E shall be allowed.
- At intersections where construction of improvements is not feasible, the LOS may fall below the City's LOS C standard.
- During construction of intersection improvements, the LOS may temporarily fall below the City's LOS C standard.
- The following five intersections that are projected to operate at LOS E or F under Horizon Year Conditions (for these locations, the deficient LOS ratings is the LOS standard):
  - Corral Hollow Road/Eleventh Street (LOS E – AM Peak Hour, LOS F - PM Peak Hour)
  - Tracy Boulevard/Eleventh Street (LOS F - PM Peak Hour)
  - Corral Hollow Road/Schulte Road (LOS F - PM Peak Hour)
  - Tracy Boulevard/Schulte Road (LOS E - PM Peak Hour)
  - Lammers Road/Commerce Way (LOS E - PM Peak Hour)
- Caltrans facilities where Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on all State Highway facilities (i.e., freeway segments, signalized intersections, on- or off-ramps, etc.), however, Caltrans recognizes that it may not always be feasible. For Caltrans intersections, City of Tracy impact criteria applies. For freeway segments, LOS D or better is considered acceptable.
- County of San Joaquin facilities where LOS D is the minimum acceptable LOS for roadway and intersection operations.
- Develop multi-modal LOS analysis procedures and standards to evaluate other facilities (bicycle, pedestrian, and transit) in addition to roads.

As proposed, the TMP would establish policies that would allow the City's level of service standard to be exceeded under certain circumstances. Thus, the resulting level of service under future horizon year 2035 at the five intersections noted above would not result in a significant impact.

b) Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? ***Determination: Less Than Significant Impact.***

Discussion

As identified in the *General Plan* EIR, many of the regional roadway segments near Tracy would operate at a deficient level of service. While the *General Plan* incorporates a range of features that would work to help reduce the potential impact of future growth in Tracy to regional roadways, none of these approaches would reduce the potential impact to less than significant level. Thus, the *General Plan EIR* concluded that a significant and unavoidable impact to the following regional roadways would result: I-205, I-580, I-5, Patterson Pass Road and Tesla Road. The proposed TMP would not result in any greater impacts to regional roadway segments than previously identified in the *General Plan EIR* and, therefore, the full extent of impacts has been analyzed and the resulting impact due to the proposed TMP would be less than significant.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? ***Determination: No Impact.***

Discussion

The Tracy Municipal Airport (TMA) is a general aviation airport owned by the City and managed by the Parks and Community Services Department. It is located in the southern portion of the City. Proposed improvements identified in the TMP would not result in a change in air traffic patterns. No impact would result.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? ***Determination: No Impact.***

Discussion

Improvements identified in the proposed TMP would be designed to ensure that they would not increase hazards. No impact would result.

e) Result in inadequate emergency access? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion

Construction of improvements identified in the proposed TMP could delay emergency response times due to roadblocks, construction delays, and detours of the various facilities. However, with implementation Mitigation Measures HAZ-1, PS-1 and PS-2, impacts associated with inadequate emergency access would be less than significant.

f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)? ***Determination: No Impact.***

Discussion

The proposed TMP includes policies that encourage alternative transportation. The City's Bicycle and Pedestrian Plan has been integrated into the TMP to ensure a comprehensive bicycle and pedestrian system. The TMP includes discussion relative to current innovations for bicycle facilities such as bicycle detection, colored bicycle lanes, bicycle racks and lockers, and other design elements to enhance the bicycle environment. In addition, the proposed TMP identifies the construction of new Park and Ride facilities and discusses policies regarding planning and design of Park and Ride facilites.Therefore, the proposed TMP would not conflict with adopted policies, plans, or programs, supporting alternative transportation and no impacts would result.

XVII. UTILITIES AND SERVICE SYSTEMS

UTILITIES AND SERVICE SYSTEMS B Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☑	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☑
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☑	☐	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☑
e) 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?	☐	☐	☐	☑
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☑	☐

g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☑	☐

Would the Project:

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? ***Determination: Less Than Significant Impact.***

Discussion
Refer to Response IX(a), above. Impacts would be less than significant.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? ***Determination: No Impact.***

Discussion
The TMP does not propose the construction of new water or wastewater facilities nor would it require such facilities. Thus, no impact would result.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
Construction of improvements identified in the proposed TMP would include new facilities to convey storm water runoff from roadways, bridges and other impervious surfaces to the City's storm drainage system. These facilities would be included in the infrastructure design and constructed as part of the improvement. Storm drainage capacity would be verified during design as applicable. Construction of new storm water conveyance facilities associated with improvements identified in the proposed TMP would occur concurrently and, thus, would have no greater impact than those identified elsewhere in this Initial Study. Mitigation measures are identified throughout this document to reduce impacts associated with implementation of the proposed TMP to less than significant.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? ***Determination: No Impact.***

Discussion
The proposed TMP would not require water supplies. No impacts would result.

e) 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? ***Determination: No Impact.***

Discussion
The proposed TMP would not require wastewater treatment. No impacts would result.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? ***Determination: Less Than Significant Impact.***

Discussion
Construction debris and other solid waste would be generated during the construction of improvements identified in the proposed TMP and would require disposal in an appropriate landfill. Solid waste disposal needs would be temporary and would cease upon completion of the proposed improvements. Therefore, impacts would be less than significant.

g) Comply with federal, state, and local statutes and regulations related to solid waste? ***Determination: Less Than Significant Impact.***

Discussion
Refer to Response XVII(g), above. Impacts would be less than significant.

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

MANDATORY FINDINGS OF SIGNIFICANCE --	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☑	☐	☐
b) 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?	☐	☑	☐	☐

The following findings have been made, regarding the mandatory findings of significance set forth in Section 15065 of the CEQA Guidelines, based on the results of this environmental assessment:

a) *Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?* ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
As discussed in Section IV (Biological Resources) and Section V (Cultural Resources) of this Initial Study, the proposed TMP has the potential to result in potentially significant impacts on the environment. However, impacts would not be any greater than those identified in the *General Plan EIR* with implementation of Mitigation Measures BIO-1 through BIO-9 and CULT-1 though CULT-3, which would reduce impacts to less than significant.

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)?* ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
Construction of improvements identified in the proposed TMP would occur over time and would be dependent on future development. Therefore, it is not anticipated that cumulative impacts would result from implementation of improvements. Adherence to the mitigation measures identified throughout this document would reduce potential short-term and long-term impacts to less than significant.

c) *Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?* ***Determination: Less Than Significant Impact with Mitigation Incorporated.***

Discussion
As stated in various sections of this Initial Study, the proposed TMP has the potential to result in significant impacts on the environment. However, with implementation of mitigation measures identified throughout this document, impacts would be reduced less than significant.

H. REFERENCES

The following references were utilized during preparation of this Initial Study.

California Department of Conservation, California Geological Survey website, www.consrv.ca.gov.

California Environmental Quality Act (CEQA) Guidelines, 2008.

City of Tracy, *General Plan*, February 2011.

City of Tracy, *General Plan Final Supplemental EIR*, February 2011.

City of Tracy, *Draft Citywide Transportation Master Plan,* August 2011

H.T. Harvey and Associates, *Biotic Resources Study,* December 2010.

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STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

February 21, 2012

RECEIVED

FEB 2 2 2012

CITY OF TRACY

William Dean
City of Tracy
333 Civic Center Drive
Tracy, CA 95376

Subject: Citywide Transportation Master Plan
SCH#: 2012012032

Dear William Dean:

The enclosed comment (s) on your Notice of Preparation was (were) received by the State Clearinghouse after the end of the state review period, which closed on February 13, 2012. We are forwarding these comments to you because they provide information or raise issues that should be addressed in your final environmental document.

The California Environmental Quality Act does not require Lead Agencies to respond to late comments. However, we encourage you to incorporate these additional comments into your final environmental document and to consider them prior to taking final action on the proposed project.

Please contact the State Clearinghouse at (916) 445-0613 if you have any questions concerning the environmental review process. If you have a question regarding the above-named project, please refer to the ten-digit State Clearinghouse number (2012012032) when contacting this office.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures
cc: Resources Agency

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Rm. 151
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
PERMITS: (916) 574-2380 FAX: (916) 574-0682

2/15/12 Lake

RECEIVED
FEB 17 2012
STATE CLEARING HOUSE

February 16, 2012

Mr. William Dean
City of Tracy
333 Civic Center Drive
Tracy, California 95376

Subject: Citywide Transportation Master Plan SCH Number: 2012012032 Notice of Preparation of a Draft Environmental Impact Report

Dear Mr. Dean:

Staff for the Central Valley Flood Protection Board has reviewed the subject document and provides the following comments:

The proposed project is located within the jurisdiction of the Central Valley Flood Protection Board. The Board is required to enforce standards for the construction, maintenance, and protection of adopted flood control plans that will protect public lands from floods. The jurisdiction of the Board includes the Central Valley, including all tributaries and distributaries of the Sacramento River and the San Joaquin River, and designated floodways (Title 23 California Code of Regulations (CCR), Section 2).

A Board permit is required prior to starting the work within the Board's jurisdiction for the following:

- The placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment, excavation, the planting, or removal of vegetation, and any repair or maintenance that involves cutting into the levee (CCR Section 6);

- Existing structures that predate permitting or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the encroachment has not been clearly established or ownership and use have been revised (CCR Section 6);

- Vegetation plantings that will require the submission of detailed design drawings; identification of vegetation type; plant and tree names (i.e. common name and scientific name); total number of each type of plant and tree; planting spacing and irrigation method that will be utilized within the project area; a complete vegetative management plan for maintenance to prevent the interference with flood control, levee maintenance, inspection and flood fight procedures (Title 23, California Code of Regulations CCR Section 131).

In accordance with CEQA Guidelines Section 15130 "Discussion of Cumulative Impacts. (a) An EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in section 15065(a)(3). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," the lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable."

Vegetation requirements in accordance with Title 23, Section 131(c) states, "Vegetation must not interfere with the integrity of the adopted plan of flood control, or interfere with maintenance, inspection, and flood fight procedures."

The accumulation and establishment of woody vegetation that is not managed has a negative impact on channel capacity and increases the potential for levee over-topping and flooding. When a channel develops vegetation that then becomes habitat for wildlife, maintenance to initial baseline conditions becomes more difficult as the removal of vegetative growth is subject to federal and state agency requirements for on-site mitigation within the floodway.

Hydraulic impacts – Hydraulic impacts due to encroachments could impede flows, reroute flood flows, and/or increase sediment accumulation. The Draft EIR should include mitigation measures for channel and levee improvements and maintenance to prevent and/or reduce hydraulic impacts. Off-site mitigation outside of the State Plan of Flood Control should be used when mitigating for vegetation removed within the project location.

The permit application and Title 23 CCR can be found on the Central Valley Flood Protection Board's website at http://www.cvfpb.ca.gov/. Contact your local, federal and state agencies, as other permits may apply.

Should you have any further questions, please contact me by phone at (916) 574-0651, or via email at jherota@water.ca.gov .

Sincerely,

James Herota
Staff Environmental Scientist
Floodway Projects Improvement Branch

cc: Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814

STATE OF CALIFORNIA
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

RECEIVED
JAN 18 2012
CITY OF TRACY

Notice of Preparation

January 13, 2012

To: Reviewing Agencies

Re: Citywide Transportation Master Plan
SCH# 2012012032

Attached for your review and comment is the Notice of Preparation (NOP) for the Citywide Transportation Master Plan draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

William Dean
City of Tracy
333 Civic Center Drive
Tracy, CA 95376

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

Document Details Report
State Clearinghouse Data Base

SCH# 2012012032
Project Title Citywide Transportation Master Plan
Lead Agency Tracy, City of

Type NOP Notice of Preparation

Description The proposed TMP provides a comprehensive review of the City's transportation system and identifies improvements and expansions to the existing system required to accommodate future growth anticipated by the General Plan. The TMP builds upon the goals and objectives contained in the Circulation Element of the General Plan and the City's Sustainability Action Plan (February 2011). The traffic analysis contained in the General Plan EIR is based on a future horizon year of 2030. The TMP looks out another five years to 2035 to provide the maximum possible infrastructure planning and to be consistent with the most recent SJCOG travel demand model.

Lead Agency Contact

Name William Dean
Agency City of Tracy
Phone 209 831 6000 **Fax**
email
Address 333 Civic Center Drive
City Tracy **State** CA **Zip** 95376

Project Location

County San Joaquin
City Tracy
Region
Cross Streets Various, Citywide
Lat / Long
Parcel No. Various
Township **Range** **Section** **Base**

Proximity to:

Highways Various
Airports Various
Railways Various
Waterways Various
Schools Various
Land Use Multiple land uses/zoning throughout City

Project Issues Air Quality; Cumulative Effects; Other Issues

Reviewing Agencies Resources Agency; Department of Parks and Recreation; Department of Water Resources; Department of Fish and Game, Region 3; Native American Heritage Commission; Public Utilities Commission; Caltrans, Division of Transportation Planning; California Highway Patrol; Caltrans, District 10; Air Resources Board, Transportation Projects; Regional Water Quality Control Bd., Region 5 (Redding)

Date Received 01/13/2012 **Start of Review** 01/13/2012 **End of Review** 02/13/2012

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

County: San Joaquin SCH# 2012071032

Resources Agency

- [■] Resources Agency
  Nadell Gayou
- [ ] Dept. of Boating & Waterways
  Nicole Wong
- [ ] California Coastal Commission
  Elizabeth A. Fuchs
- [ ] Colorado River Board
  Gerald R. Zimmerman
- [ ] Dept. of Conservation
  Elizabeth Carpenter
- [ ] California Energy Commission
  Eric Knight
- [ ] Cal Fire
  Allen Robertson
- [ ] Central Valley Flood Protection Board
  James Herota
- [ ] Office of Historic Preservation
  Ron Parsons
- [■] Dept of Parks & Recreation
  Environmental Stewardship Section
- [ ] California Department of Resources, Recycling & Recovery
  Sue O'Leary
- [ ] S.F. Bay Conservation & Dev't. Comm.
  Steve McAdam
- [X] Dept. of Water Resources Resources Agency
  Nadell Gayou

Fish and Game

- [ ] Depart. of Fish & Game
  Scott Flint
  Environmental Services Division
- [ ] Fish & Game Region 1
  Donald Koch
- [ ] Fish & Game Region 1E
  Laurie Harnsberger
- [ ] Fish & Game Region 2
  Jeff Drongesen
- [ ] Fish & Game Region 3
  Charles Armor
- [ ] Fish & Game Region 4
  Julie Vance
- [ ] Fish & Game Region 5
  Leslie Newton-Reed
  Habitat Conservation Program
- [ ] Fish & Game Region 6
  Gabrina Gatchel
  Habitat Conservation Program
- [ ] Fish & Game Region 6 I/M
  Brad Henderson
  Inyo/Mono, Habitat Conservation Program
- [ ] Dept. of Fish & Game M
  George Isaac
  Marine Region

Other Departments

- [ ] Food & Agriculture
  Sandra Schubert
  Dept. of Food and Agriculture
- [ ] Depart. of General Services
  Public School Construction
- [ ] Dept. of General Services
  Anna Garbeff
  Environmental Services Section
- [ ] Dept. of Public Health
  Bridgette Binning
  Dept. of Health/Drinking Water
- [ ] Delta Stewardship Council
  Kevan Samsam

Independent Commissions,Boards

- [ ] Delta Protection Commission
  Linda Flack
- [ ] Cal EMA (Emergency Management Agency)
  Dennis Castrillo
- [■] Native American Heritage Comm.
  Debbie Treadway
- [X] Public Utilities Commission
  Leo Wong
- [ ] Santa Monica Bay Restoration
  Guangyu Wang
- [ ] State Lands Commission
  Jennifer Deleong
- [ ] Tahoe Regional Planning Agency (TRPA)
  Cherry Jacques

Business, Trans & Housing

- [ ] Caltrans - Division of Aeronautics
  Philip Crimmins
- [X] Caltrans - Planning
  Terri Pencovic
- [X] California Highway Patrol
  Suzann Ikeuchi
  Office of Special Projects
- [ ] Housing & Community Development
  CEQA Coordinator
  Housing Policy Division

Dept. of Transportation

- [ ] Caltrans, District 1
  Rex Jackman
- [ ] Caltrans, District 2
  Marcelino Gonzalez
- [ ] Caltrans, District 3
  Bruce de Terra
- [ ] Caltrans, District 4
  Lisa Carboni
- [ ] Caltrans, District 5
  David Murray
- [ ] Caltrans, District 6
  Michael Navarro
- [ ] Caltrans, District 7
  Elmer Alvarez
- [ ] Caltrans, District 8
  Dan Kopulsky
- [ ] Caltrans, District 9
  Gayle Rosander
- [■] Caltrans, District 10
  Tom Dumas
- [ ] Caltrans, District 11
  Jacob Armstrong
- [ ] Caltrans, District 12
  Marlon Regisford

Cal EPA

Air Resources Board

- [ ] Airport/Energy Projects
  Jim Lerner
- [X] Transportation Projects
  Douglas Ito
- [ ] Industrial Projects
  Mike Tollstrup
- [ ] State Water Resources Control Board
  Regional Programs Unit
  Division of Financial Assistance
- [ ] State Water Resources Control Board
  Student Intern, 401 Water Quality Certification Unit
  Division of Water Quality
- [ ] State Water Resouces Control Board
  Phil Crader
  Division of Water Rights
- [ ] Dept. of Toxic Substances Control
  CEQA Tracking Center
- [ ] Department of Pesticide Regulation
  CEQA Coordinator

Regional Water Quality Control Board (RWQCB)

- [ ] RWQCB 1
  Cathleen Hudson
  North Coast Region (1)
- [ ] RWQCB 2
  Environmental Document Coordinator
  San Francisco Bay Region (2)
- [ ] RWQCB 3
  Central Coast Region (3)
- [ ] RWQCB 4
  Teresa Rodgers
  Los Angeles Region (4)
- [ ] RWQCB 5S
  Central Valley Region (5)
- [ ] RWQCB 5F
  Central Valley Region (5)
  Fresno Branch Office
- [X] RWQCB 5R
  Central Valley Region (5)
  Redding Branch Office
- [ ] RWQCB 6
  Lahontan Region (6)
- [ ] RWQCB 6V
  Lahontan Region (6)
  Victorville Branch Office
- [ ] RWQCB 7
  Colorado River Basin Region (7)
- [ ] RWQCB 8
  Santa Ana Region (8)
- [ ] RWQCB 9
  San Diego Region (9)

- [ ] Other _____
- [ ] _____ Conservancy

Last Updated 12/23/11

SAN JOAQUIN COUNCIL OF GOVERNMENTS

555 E. Weber Avenue • Stockton, California 95202

209.235.0600 • 209.235.0438 (fax)

www.sjcog.org

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CITY OF TRACY

February 15, 2012

Chuck Winn
CHAIR

Ken Vogel
VICE CHAIR

Andrew T. Chesley
EXECUTIVE DIRECTOR

Member Agencies
CITIES OF
ESCALON,
LATHROP,
LODI,
MANTECA,
RIPON,
STOCKTON,
TRACY,
AND
THE COUNTY OF
SAN JOAQUIN

Mr. Bill Dean
Development and Engineering Services Dept.
City of Tracy
333 Civic Center Plaza, Tracy CA 95376

Re: SJCOG/CMA REVIEW - City of Tracy Notice of Preparation (NOP) CITYWIDE TRANSPORTATION MASTER PLAN

Dear Mr. Dean:

Thank you for the opportunity to comment on the NOP for the City's Transportation Master Plan. As the County's designated Regional Transportation Planning Agency (RTPA), the Congestion Management Agency (CMA), and the Metropolitan Planning Organization (MPO), the San Joaquin Council of Governments (SJCOG) has reviewed the above-referenced document with respect to consistency with the Regional Congestion Management Program (RCMP).

Background Information:

The Regional Congestion Management Program/Process is required by State Govt. Code, Section 65088 – 65089.10, the County's Measure K Renewal Ordinance, and federal congestion management process planning requirements. Implementation of the State CMP requirements also implements the federal Congestion Management Process planning requirements. The primary objective of the CMP is to ensure that new land uses are developed in tandem with the necessary transportation improvements by coordinating the land use, air quality, and transportation planning processes.

The federal Congestion Management Process stipulates that, in non-attainment areas, for any project that results in a significant increase in the carrying capacity of single occupancy vehicles (SOVs) and is also proposed to be advanced with federal funds, an analysis is required to demonstrate that travel demand reduction and operational management strategies have been implemented to the full extent possible on the subject roadway. If the analysis demonstrates that despite these strategies additional SOV capacity is still required, the identification of all reasonable strategies to manage the SOV facility effectively will be in place. San Joaquin County is designated as a "non-attainment area" of federal air quality standards, and, therefore must conform to these

standards by focusing efforts that emphasis travel demand reduction and system management at both the local and regional level.

Comment on the Initial Study:

Section XV1 TRANSPORTATION/TRAFFIC

1. Page 57, Section b) gives the significance criteria for project impacts to the Congestion Management Program and makes the finding that the full extent of significant impacts were identified and analyzed in the 2010 General Plan EIR and, therefore, the resulting impact from this project would be less than significant and will not be analyzed within the TMP's DEIR. Although the General Plan EIR concluded that a significant and unavoidable impact to the Level of Service would occur and adopted Overriding Considerations, it does not exempt the City of Tracy in complying with local, state, and federal CMP mandates. The LOS standards are only one component of the Regional Congestion Management Program (RCMP). SJCOG staff requests the DEIR analyze impacts to all components of the RCMP and that the Citywide Transportation Master Plan incorporate appropriate objectives and policies to support the EIR's analysis and findings. For example, as stated on Page 1, federal funds will not be advanced for any capacity increasing project without first demonstrating that travel demand reduction and operational management strategies have been implemented to the full extent possible. Another example would be how the TMP will show consistency with the Regional Travel Demand Management Action Plan was adopted in August 2010.

   Additionally, The RCMP is currently going through a comprehensive update and is expected to be completed by June 2012 (draft will be available by April). As part of the Program Update we will be working with all partner agencies to establish and identify "strategic corridors". These corridors will be considered for Complete Street concepts and subject to multi-modal LOS standards versus roadway LOS, thus allowing the roadway to become deficient and also maintain consistency with the RCMP. SJCOG staff encourages the City to incorporate the "strategic corridors" (tbd) and the associated performance measures and multi-modal LOS standard into the TMP.

2. Page 57, Section f) gives the significance criteria for project impacts to conflicts with adopted policies, plans, or programs supporting alternative transportation. SJCOG staff requests that the "Action Items" within Regional Travel Demand Management Plan be integrated into the TMP and that a full discussion also be included within the DEIR. This Plan was adopted by the SJCOG Board in August 2010 and is an important implementing component of the RCMP.

3. Page 56 of the Initial Study gives locations that are exempt from the City's LOS D standard, as identified in the General Plan, Object CIR-1.3. It should be noted that these exemptions are not applicable to roadways that are subject to State and regional agency oversight and/or are candidates for State-funded or federally-funded improvements, per CIR-1.3, P4 of the General Plan. SJCOG requests Policy P4 also be discussed within the

DEIR as it relates to the RCMP and incorporated as part of the implementing goals of the TMP.

4. Lastly, if any roadways will be built, expanded, or reclassified as a principal arterial to serve this planning area, Govt. Code 65089.1, requires that they are designated as part of the state CMP system.

Implementing planning priorities that show consistency with the RCMP will assist SJCOG staff in securing federal, state, and local monies. These funding sources include the following:

Federal Surface Transportation Program (STP) Funds - Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU)

Regional STP funds shall not be programmed for a project within a nonconforming jurisdiction unless the regional agency (SJCOG) finds that the project is of regional significance or included in a CMP deficiency plan (Section 65089.2 (C)(1) California Government Code).

Federal Congestion Mitigation and Air Quality (CMAQ) Funds
Federal SAFETEA-LU CMAQ funds shall not be programmed for a project within a nonconforming jurisdiction unless the regional agency (SJCOG) finds that the project is of regional significance or included in a CMP deficiency plan (Section 65089.2 (C)(1) California Government Code).

State Regional Improvement Program Funds
These funds are programmed through the regional transportation improvement program (RTIP). In developing the regional transportation improvement program, the regional transportation planning agency must be consistent with projects from the CMP capital improvement program.

Local Section 2105 Funds
If local jurisdictions are not in conformance, the new increment of local subvention funds (Proposition 111 – Section 2105) made available through the increased gas tax may be withheld (Section 65089.4).

Thank you for the opportunity to review and comment on this project. If you have any questions please call the RCMP's lead planner, Laura Brunn, at (209) 235-0579. We would be pleased to meet with the city and provide any necessary information, support and guidance relative to these comments and the Regional Congestion Management Program.

Sincerely,

Laura Brunn

LAURA BRUNN
SJCOG Associate Regional Planner

M:\Project Review\RCMP_RTPA Project Reviews\Projects_local jurisdictions\Tracy\CItywide Transportation Master Plan 2012\SJCOG_City Tracy Transportation Master Plan_NOP.docx

STATE OF CALIFORNIA – CALIFORNIA NATURAL RESOURCES AGENCY EDMUND G. BROWN JR., GOVERNOR

CENTRAL VALLEY FLOOD PROTECTION BOARD
3310 El Camino Ave., Rm. 151
SACRAMENTO, CA 95821
(916) 574-0609 FAX: (916) 574-0682
PERMITS: (916) 574-2380 FAX: (916) 574-0682

RECEIVED
FEB 17 2012
CITY OF TRACY

February 16, 2012

Mr. William Dean
City of Tracy
333 Civic Center Drive
Tracy, California 95376

Subject: Citywide Transportation Master Plan SCH Number: 2012012032 Notice of Preparation of a Draft Environmental Impact Report

Dear Mr. Dean:

Staff for the Central Valley Flood Protection Board has reviewed the subject document and provides the following comments:

The proposed project is located within the jurisdiction of the Central Valley Flood Protection Board. The Board is required to enforce standards for the construction, maintenance, and protection of adopted flood control plans that will protect public lands from floods. The jurisdiction of the Board includes the Central Valley, including all tributaries and distributaries of the Sacramento River and the San Joaquin River, and designated floodways (Title 23 California Code of Regulations (CCR), Section 2).

A Board permit is required prior to starting the work within the Board's jurisdiction for the following:

- The placement, construction, reconstruction, removal, or abandonment of any landscaping, culvert, bridge, conduit, fence, projection, fill, embankment, building, structure, obstruction, encroachment, excavation, the planting, or removal of vegetation, and any repair or maintenance that involves cutting into the levee (CCR Section 6);

- Existing structures that predate permitting or where it is necessary to establish the conditions normally imposed by permitting. The circumstances include those where responsibility for the encroachment has not been clearly established or ownership and use have been revised (CCR Section 6);

- Vegetation plantings that will require the submission of detailed design drawings; identification of vegetation type; plant and tree names (i.e. common name and scientific name); total number of each type of plant and tree; planting spacing and irrigation method that will be utilized within the project area; a complete vegetative management plan for maintenance to prevent the interference with flood control, levee maintenance, inspection and flood fight procedures (Title 23, California Code of Regulations CCR Section 131).

In accordance with CEQA Guidelines Section 15130 "Discussion of Cumulative Impacts. (a) An EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in section 15065(a)(3). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," the lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable."

Vegetation requirements in accordance with Title 23, Section 131(c) states, "Vegetation must not interfere with the integrity of the adopted plan of flood control, or interfere with maintenance, inspection, and flood fight procedures."

The accumulation and establishment of woody vegetation that is not managed has a negative impact on channel capacity and increases the potential for levee over-topping and flooding. When a channel develops vegetation that then becomes habitat for wildlife, maintenance to initial baseline conditions becomes more difficult as the removal of vegetative growth is subject to federal and state agency requirements for on-site mitigation within the floodway.

Hydraulic impacts – Hydraulic impacts due to encroachments could impede flows, reroute flood flows, and/or increase sediment accumulation. The Draft EIR should include mitigation measures for channel and levee improvements and maintenance to prevent and/or reduce hydraulic impacts. Off-site mitigation outside of the State Plan of Flood Control should be used when mitigating for vegetation removed within the project location.

The permit application and Title 23 CCR can be found on the Central Valley Flood Protection Board's website at http://www.cvfpb.ca.gov/. Contact your local, federal and state agencies, as other permits may apply.

Should you have any further questions, please contact me by phone at (916) 574-0651, or via email at jherota@water.ca.gov .

Sincerely,

James Herota
Staff Environmental Scientist
Floodway Projects Improvement Branch

cc: Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street, Room 121
Sacramento, California 95814

THOMAS M. GAU
DIRECTOR

FRITZ BUCHMAN
DEPUTY DIRECTOR

MICHAEL SELLING
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ROGER JANES
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February 10, 2012

William Dean, Assistant Director
Development and Engineering Services Department
City of Tracy
333 Civic Center Plaza
Tracy, California 95376

SUBJECT: NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE CITYWIDE TRANSPORTATION MASTER PLAN

Dear Mr. Dean:

The San Joaquin County Department of Public Works has reviewed the Notice of Preparation for the above referenced project and our comments are as follows:

From Flood Management:

1. Depending upon the location of the crossing, a San Joaquin County Watercourse Encroachment Permit or a Central Valley Flood Protection Board Encroachment Permit may be required.

From Transportation Engineering:

2. Truck Routes should focus on establishing STAA routes along the Linne Road area where a concentration of industrial terminals are predominant.

Thank you for the opportunity to review and comment. Should you have questions or need additional information regarding the above comments, please contact me at (209) 468-8494.

Sincerely,

Megan Aguirre

MEGAN AGUIRRE
Associate Planner

MA:to
TE-12B012-T1

c: Alex Chetley, Senior Civil Engineer
John I. Maguire, Engineering Services Manager
Firoz Vohra, Senior Engineer

DEPARTMENT OF TRANSPORTATION
P.O. BOX 2048 STOCKTON, CA 95201
(1976 E. CHARTER WAY/1976 E. DR. MARTIN
LUTHER KING JR. BLVD. 95205)
TTY: California Relay Service (800) 735-2929
PHONE (209) 941-1921
FAX (209) 948-7194

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City of Tracy Citywide
Transportation Master Plan
SCH #2012012032

William Dean
City of Tracy
333 Civic Center Dr.
Tracy, CA 95376

Dear Mr. Dean,

The California Department of Transportation (Department) appreciates the opportunity to comment on the Notice of Preparation for the **City of Tracy Citywide Transportation Master Plan (TMP)** draft Environmental Impact Report (DEIR). The proposed TMP provides a comprehensive review of the City of Tracy's transportation system and identifies improvements and expansions to the existing system required to accommodate future growth anticipated by the General Plan. The TMP builds upon the goals and objectives contained in the Circulation Element of the General Plan and looks out another 5 years to 2035 to provide the maximum possible infrastructure planning.

Upon review of the project, the Department has the following comments:

1. Any proposed roadway improvements must be compatible with the proposed future improvements to I-5, I-205, and I-580. Future improvements to the State Highway System (SHS) include new interchanges and a 6 to 8-lane widening on I-205, with lane 7 and 8 being potential HOV lanes. HOV lanes require additional right-of-way (ROW) clearance. There is also a 6 to 8-lane widening planned in the I-580 Transportation Concept Report for both the Concept Facility and Ultimate Transportation Concept. Please ensure that adequate ROW is reserved for these highway facility improvements by acquiring an Irrevocable Offers of Dedication of ROW along the State Highway for the eventual widening of I-205 and I-580.

2. When developing the TMP, goods movement issues must be of utmost priority and incorporated into the plan. Issues that should be addressed include:

    a. Encourage planning for establishing rail line connectors at all new industrial park developments or other developments with significant goods movement activity.

    b. Provision for truck parking facilities (truck stops) that include adequate overnight parking, food, showers/restrooms, fueling and truck wash and maintenance/repair services.
        - Encourage truck stops to include truck parking electrification options at truck parking facilities to reduce truck emissions and green house gases.

If you have any questions, please contact Sinarath Pheng at (209) 942-6092 (e-mail: Sinarath_Pheng@dot.ca.gov) or myself at (209) 941-1921.

Sincerely,

for TOM DUMAS, CHIEF
OFFICE OF METROPOLITAN PLANNING

c Scott Morgan, State Clearinghouse

California Regional Water Quality Control Board
Central Valley Region
Katherine Hart, Chair

11020 Sun Center Drive, #200, Rancho Cordova, California 95670-6114
(916) 464-3291 • FAX (916) 464-4645
http://www.waterboards.ca.gov/centralvalley

Matthew Rodriquez
Secretary for
Environmental Protection

Edmund G. Brown Jr.
Governor

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CITY OF TRACY

3 February 2012

Bill Dean, Assistant Director
Development and Engineering
Services Department
333 Civic Center Plaza
Tracy, CA 95376

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7011 2970 0003 8939 7868

COMMENTS TO NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT, CITYWIDE TRANSPORTATION MASTER PLAN PROJECT, SAN JOAQUIN COUNTY

Pursuant to the City of Tracy's 12 January 2012 request, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) has reviewed the *Notice of Preparation of an Environmental Impact Report* for the Citywide Transportation Master Plan Project, located in San Joaquin County.

Our agency is delegated with the responsibility of protecting the quality of surface and groundwaters of the state; therefore our comments will address concerns surrounding those issues.

Construction Storm Water General Permit

Dischargers whose project disturb one or more acres of soil or where projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the General Permit for Storm Water Discharges Associated with Construction Activities (Construction General Permit), Construction General Permit Order No. 2009-009-DWQ. Construction activity subject to this permit includes clearing, grading, grubbing, disturbances to the ground, such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

For more information on the Construction General Permit, visit the State Water Resources Control Board website at:
http://www.waterboards.ca.gov/water_issues/programs/stormwater/constpermits.shtml

Phase I and II Municipal Separate Storm Sewer System (MS4) Permits[1]

The Phase I and II MS4 permits require the Permittees reduce pollutants and runoff flows from new development and redevelopment using Best Management Practices (BMPs) to the maximum extent practicable (MEP). MS4 Permittees have their own development standards, also known as Low Impact Development (LID)/post-construction standards that include a hydromodification component. The MS4 permits also require specific design concepts for LID/post-construction BMPs in the early stages of a project during the entitlement and CEQA process and the development plan review process.

For more information on which Phase I MS4 Permit this project applies to, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/municipal_permits/

Industrial Storm Water General Permit

Storm water discharges associated with industrial sites must comply with the regulations contained in the Industrial Storm Water General Permit Order No. 97-03-DWQ.

For more information on the Industrial Storm Water General Permit, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/storm_water/industrial_general_permits/index.shtml.

Clean Water Act Section 404 Permit

If the project will involve the discharge of dredged or fill material in navigable waters or wetlands, a permit pursuant to Section 404 of the Clean Water Act may be needed for the United States Army Corps of Engineers (USACOE). If a Section 404 permit is required by the USACOE, the Central Valley Water Board will review the permit application to ensure that discharge will not violate water quality standards. If the project requires surface water drainage realignment, the applicant is advised to contact the Department of Fish and Game for information on Streambed Alteration Permit requirements.

If you have any questions regarding the Clean Water Act Section 404 permits, please contact the Regulatory Division of the Sacramento District of USACOE at (916) 557-5250.

Clean Water Act Section 401 Permit – Water Quality Certification

If an USACOE permit, or any other federal permit, is required for this project due to the disturbance of waters of the United States (such as streams and wetlands), then a Water Quality Certification must be obtained from the Central Valley Water Board prior to initiation of project activities. There are no waivers for 401 Water Quality Certifications.

---

[1] Municipal Permits = The Phase I Municipal Separate Storm Water System (MS4) Permit covers medium sized Municipalities (serving between 100,000 and 250,000 people) and large sized municipalities (serving over 250,000 people). The Phase II MS4 provides coverage for small municipalities, including non-traditional Small MS4s, which include military bases, public campuses, prisons and hospitals.

Waste Discharge Requirements

If USACOE determines that only non-jurisdictional waters of the State (i.e., "non-federal" waters of the State) are present in the proposed project area, the proposed project will require a Waste Discharge Requirement (WDR) permit to be issued by Central Valley Water Board. Under the California Porter-Cologne Water Quality Control Act, discharges to all waters of the State, including all wetlands and other waters of the State including, but not limited to, isolated wetlands, are subject to State regulation.

For more information on the Water Quality Certification and WDR processes, visit the Central Valley Water Board website at:
http://www.waterboards.ca.gov/centralvalley/water_issues/water_quality_certification/

If you have questions regarding these comments, please contact me at (916) 464-4745 or gsparks@waterboards.ca.gov.

Genevieve Sparks

Genevieve (Gen) Sparks
Environmental Scientist
401 Water Quality Certification Program

San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT

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CITY OF TRACY

February 7, 2012

William Dean
City of Tracy
Development and Engineering
333 Civic Center Plaza
Tracy, CA 95376

Project: Citywide Transportation Master Plan

District CEQA Reference No: 20120059

Dear Mr. Dean:

The San Joaquin Valley Unified Air Pollution Control District (District) has reviewed the Notice of Preparation for the project referenced above. The District offers the following comments and recommendations:

Emissions Analysis

1) The District is currently designated as extreme nonattainment for the 8-hour ozone standard, attainment for PM10 and CO, and nonattainment for PM2.5 for the federal air quality standards. At the state level, the District is designated as nonattainment for the 8-hour ozone, PM10, and PM2.5 air quality standards. The District recommends that the Air Quality section of the Environmental Impact Report (EIR) include a discussion of the following impacts:

   a) **Criteria Pollutants:** Project related criteria pollutant emissions should be identified and quantified. The discussion should include existing and post-project emissions.

      i) Construction Emissions: Construction emissions are short-term emissions and should be evaluated separate from operational emissions. The District recommends preparation of an Environmental Impact Report (EIR) if annual construction emissions cannot be reduced or mitigated to below the following levels of significance: 10 tons per year of oxides of nitrogen (NOx), 10 tons

Seyed Sadredin
Executive Director/Air Pollution Control Officer

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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

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per year of reactive organic gases (ROG), or 15 tons per year particulate matter of 10 microns or less in size (PM10).

ii) Operational Emissions: Permitted (stationary sources) and non-permitted (mobile sources) sources should be analyzed separately. The District recommends preparation of an Environmental Impact Report (EIR) if the sum of annual permitted and non-permitted emissions cannot be reduced or mitigated to below the following levels of significance: 10 tons per year of oxides of nitrogen (NOx), 10 tons per year of reactive organic gases (ROG), or 15 tons per year particulate matter of 10 microns or less in size (PM10).

b) **Health Impacts:** Project related health impacts should be evaluated to determine if emissions of toxic air contaminants (TAC) will pose a significant health risk to nearby sensitive receptors. TACs are defined as air pollutants that which may cause or contribute to an increase in mortality or serious illness, or which may pose a hazard to human health. The most common source of TACs can be attributed to diesel exhaust fumes that are emitted from both stationary and mobile sources. Health impacts may require a detailed health risk assessment (HRA).

Prior to conducting an HRA, an applicant may perform a prioritization on all sources of emissions to determine if it is necessary to conduct an HRA. A prioritization is a screening tool used to identify projects that may have significant health impacts. If the project has a prioritization score of 1.0 or more, the project has the potential to exceed the District's significance threshold for health impacts of 10 in a million and an HRA should be performed.

If an HRA is to be performed, it is recommended that the project proponent contact the District to review the proposed modeling approach. The project would be considered to have a significant health risk if the HRA demonstrates that project related health impacts would exceed the District's significance threshold of 10 in a million.

More information on TACs, prioritizations and HRAs can be obtained by:

- E-mailing inquiries to: hramodeler@valleyair.org; or
- Visiting the District's website at:

  http://www.valleyair.org/busind/pto/Tox_Resources/AirQualityMonitoring.htm.

2) In addition to the discussions on potential impacts identified above, the District recommends the EIR also include the following discussions:

a) A discussion of the methodology, model assumptions, inputs and results used in characterizing the project's impact on air quality. To comply with CEQA requirements for full disclosure, the District recommends that the modeling

outputs be provided as appendices to the EIR. The District further recommends that the District be provided with an electronic copy of all input and output files for all modeling.

b) A discussion of the components and phases of the project and the associated emission projections, including ongoing emissions from each previous phase.

c) A discussion of project design elements and mitigation measures, including characterization of the effectiveness of each mitigation measure incorporated into the project.

d) A discussion of whether the project would result in a cumulatively considerable net increase of any criteria pollutant or precursor for which the San Joaquin Valley Air Basin is in non-attainment. More information on the District's attainment status can be found online by visiting the District's website at:

http://valleyair.org/aqinfo/attainment.htm.

District Rules and Regulations

3) The proposed project may be subject to District rules and regulations, including: Regulation VIII (Fugitive PM10 Prohibitions), Rule 4102 (Nuisance), and Rule 4641 (Cutback, Slow Cure, and Emulsified Asphalt, Paving and Maintenance Operations). In the event an existing building will be renovated, partially demolished or removed, the project may be subject to District Rule 4002 (National Emission Standards for Hazardous Air Pollutants).

The District recommends that a copy of the District's comments be provided to the project proponent. If you have any questions or require further information, please call Debbie Johnson at (559) 230-5817.

Sincerely,

David Warner
Director of Permit Services

for Arnaud Marjollet
Permit Services Manager

DW:dj

January 11, 2012

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JAN 17 2012
CITY OF TRACY

Mr. Bill Dean
City of Tracy
Development and Engineering Services
333 Civic Center Plaza
Tracy, CA 95376

Re: Request for Notices of CEQA Actions and Public Hearings

Dear Mr. Dean:

This letter serves as the annual renewal of our request for mailed notices of CEQA actions and public hearings. We have worked out arrangements with a number of jurisdictions to meet this request in a way that works effectively with their current information and notification systems and nothing in this request should supersede those agreements.

On behalf of Carpenters Local Union 152-East, I request that the City of Tracy send us notice of any and all actions or hearings related to:

1. residential development projects of 30 units or greater,
2. commercial projects of 20,000 sq. ft. or greater, or
3. activities authorized, approved, permitted, licensed, undertaken, or certified by the City of Tracy, and/or supported, in whole or in part, through contracts, grants, subsidies, loans or other forms of assistance from the City of Tracy, including, but not limited to the following:
   - Notice of any public hearing in connection with projects as required by California Planning and Zoning Law pursuant to Government Code Section 65091.
   - Any and all notices prepared pursuant to the California Environmental Quality Act ("CEQA"), including:
     - Notices of any public hearing held pursuant to CEQA.
     - Notices of determination that an Environmental Impact Report ("EIR") is required for a project, prepared pursuant to Public Resources Code Section 21080.4.
     - Notices of any scoping meeting held pursuant to Public Resources Code Section 21083.9.
     - Notices of preparation of an EIR or a negative declaration for a project prepared pursuant to Public Resources Code Section 21092.
     - Notices of availability of an EIR or a negative declaration for a project prepared pursuant to Public Resources Code Section 21152 and Section 15087 of Title 14 of the California Code of Regulations.
     - Notices of approval and/or determination to carry out a project, prepared pursuant to Public Resources Code Section 21152(a).

- Notices of determination that a project is exempt from CEQA, prepared pursuant to Public Resources Code Section 21152(b).

Please note that we are requesting notices of CEQA actions and notices of any public hearings to be held under any provision of Title 7 of the California Government Code governing California Planning and Zoning Law.

This request is filed pursuant to Public Resources Code Section 21092.2 and Government Code Section 65092, which require local agencies to mail such notices to any person who has filed a written request for them with the clerk of the agency's governing body.

In addition, we request that we receive a copy of all City of Tracy Planning Commission and City Council meeting and/or hearing agendas.

We are of course willing to pay any fees reasonably related to the costs of providing these services, and will renew this general request on an annual basis at the City of Tracy's request.

Electronic notices are preferred and can be sent to project.tracking@nccrc.org. Please mail paper notices and documents to:

Northern California Carpenters Regional Council
Katie Boyd
Research Department
265 Hegenberger Rd., Suite 220
Oakland, CA 94621

Please contact me should you have any questions. I may be reached at (510) 430-9706 x115 or via email at kboyd@nccrc.org. Thank you for your attention to this matter.

Sincerely,



Katie Boyd

THOMAS M. GAU
DIRECTOR

FRITZ BUCHMAN
DEPUTY DIRECTOR

MICHAEL SELLING
DEPUTY DIRECTOR

STEVEN WINKLER
DEPUTY DIRECTOR

ROGER JANES
BUSINESS ADMINISTRATOR

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February 10, 2012

William Dean, Assistant Director
Development and Engineering Services Department
City of Tracy
333 Civic Center Plaza
Tracy, California 95376

SUBJECT: NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE CITYWIDE TRANSPORTATION MASTER PLAN

Dear Mr. Dean:

The San Joaquin County Department of Public Works has reviewed the Notice of Preparation for the above referenced project and our comments are as follows:

From Flood Management:

1. Depending upon the location of the crossing, a San Joaquin County Watercourse Encroachment Permit or a Central Valley Flood Protection Board Encroachment Permit may be required.

From Transportation Engineering:

2. Truck Routes should focus on establishing STAA routes along the Linne Road area where a concentration of industrial terminals are predominant.

Thank you for the opportunity to review and comment. Should you have questions or need additional information regarding the above comments, please contact me at (209) 468-8494.

Sincerely,

Megan Aguirre

MEGAN AGUIRRE
Associate Planner

MA:to
TE-12B012-T1

c: Alex Chetley, Senior Civil Engineer
John I. Maguire, Engineering Services Manager
Firoz Vohra, Senior Engineer

William Dean

From: Nathaniel Atherstone <natherstone@sanjoaquinrtd.com>
Sent: Friday, January 20, 2012 2:16 PM
To: William Dean
Cc: Gloria Salazar; Ed Lovell
Subject: Citywide Transportation Master Plan (Tracy)

Mr. Dean:

I received your notice of Preparation of an Environmental Impact Report (EIR) for the Transportation Master Plan for the City of Tracy (TMP), and formally request to be included on the mailing list for the distribution of information and draft review of the TMP and EIR as you progress.

I am disappointed to see that Public Transportation (Transit) or Transit Facilities are not identified as a TMP component.

The San Joaquin Regional Transit District (RTD) would appreciate the City of Tracy to further expand upon the scope of the Environmental Impact Report to include mass transportation alternatives and associated facility improvements for services that are currently operating within the City, and for potential services that may be warranted as the City grows in population. This includes public transportation services provided by RTD, the Altamont Commuter Express, and the Tracy Tracer. We also encourage expanding the review to include private transportation services, including Greyhound and Amtrak, as well.

Thank you for your consideration.

Regards,

Nathaniel Atherstone, Planning Manager
San Joaquin Regional Transit District (RTD)
PO Box 201010
Stockton, CA 95201
(209) 948-5566 x604
(209) 948-8516 Fax
natherstone@sanjoaquinRTD.com

APPENDIX B:

CITY OF TRACY CITYWIDE TRANSPORTATION MASTER PLAN

Citywide Roadway & Transportation Master Plan







Prepared for:
City of Tracy

February 2012

RBF CONSULTING

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1. INTRODUCTION

1.1 INTRODUCTION

In 2008, the City of Tracy began an update of the Transportation Master Plan (TMP). The TMP was last updated in 1994. According to the City's 2006 General Plan, the city's population has more than doubled to approximately 74,000 residents between 1990 and 2004. During a similar time period, the number of jobs has almost tripled to 29,000.

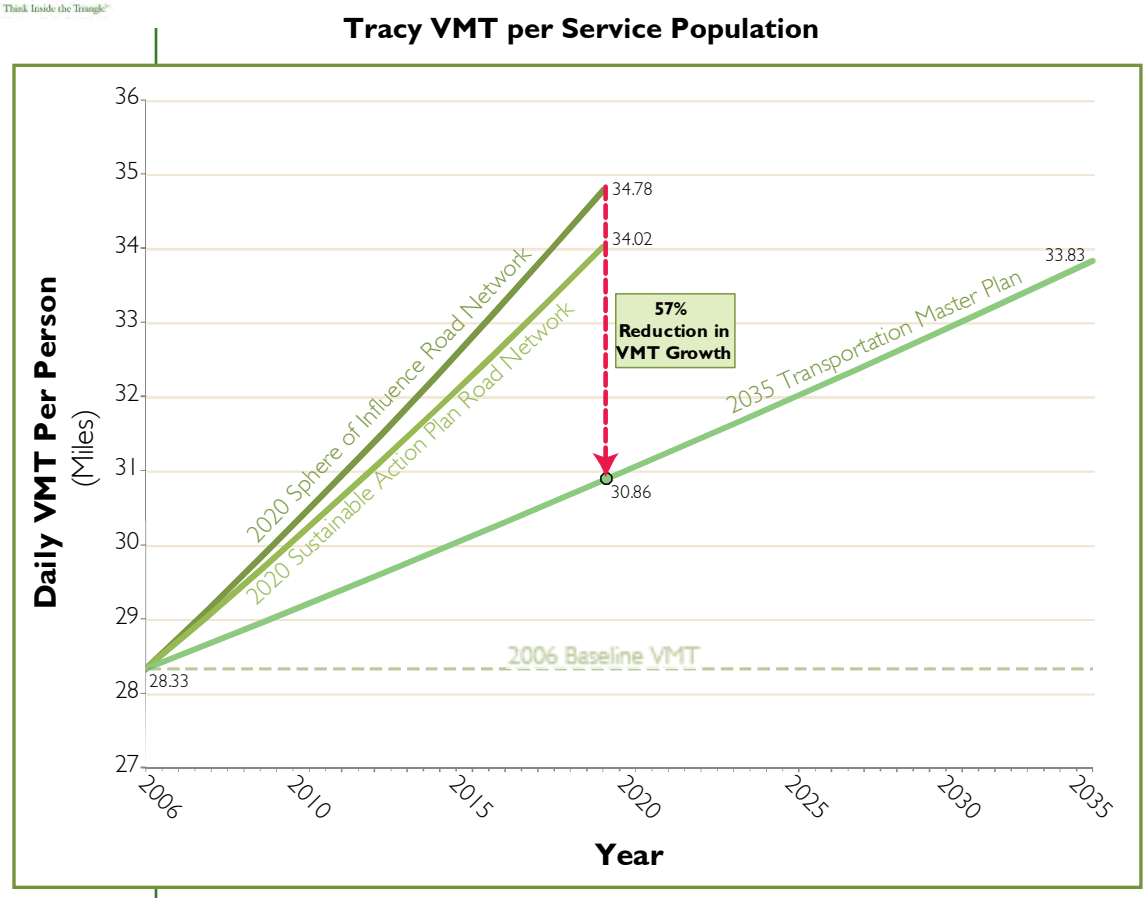
The transportation system is a key element in maintaining historical growth and accommodating future development. The transportation system includes three major freeways; several active rail lines; local and regional truck routes; arterial, collector, and residential streets; and bicycle, pedestrian, and transit facilities. The City is responsible for ensuring that the transportation system is providing adequate and efficient access for all modes.

The TMP reflects a decrease in the daily vehicle miles traveled per person for the City of Tracy service population when compared to the 2020 Sphere of Influence and Sustainable Action Plan land use and roadway network development scenarios:

Tracy Vehicle Miles Traveled (VMT) per Service Population Calculations

Scenario	Total Daily VMT	Population + Employment	Daily VMT per Service Population
Existing (2006)	3,301,364	116,526	28.33
2020 Sphere of Influence	5,291,997	152,140	34.78
2020 Sustainable Action Plan	5,175,759	152,140	34.02
2030 General Plan	4,778,000	N/A	N/A
2035 TMP	6,901,062	203,997	33.83

The road network within the 2020 Sphere of Influence and 2020 Sustainable Action Plan scenarios is represented in the City's General Plan. The 2035 road network includes a grid road network which connects future and existing land uses more efficiently. This results in a reduced VMT as indicated as follows. A reduction in VMT decreases Green House Gas emissions.



1.2 PURPOSE OF TMP

The TMP builds upon the goals and objectives as defined in the Circulation Element of the City's General Plan (July 2010) and the Sustainable Action Plan (SAP) (February 1, 2011). The SAP included feasible measures to achieve sustainability in multiple sectors and to reduce greenhouse gas (GHG) emissions. These measures include policies and measures to increase transit usage and opportunities, to improving traffic flow in the city, to support development of new bicycle and pedestrian facilities, and other land use policies.

The General Plan is based upon a future horizon year of 2030 conditions. The TMP looks out another five years, to Horizon Year (2035), to provide the maximum possible infrastructure planning and to be consistent with the planned San Joaquin Council of Governments travel demand model update to Year 2035.

The TMP provides a comprehensive review of the City's transportation system and serves as a comprehensive planning document, or blueprint, that can be utilized to identify and implement required improvements to the existing roadway system as well as expand upon the system to accommodate future development consistent with the recent General Plan update.

The TMP also balances the existing and future transportation infrastructure needs with safe access for all user groups (motorists, pedestrians, bicyclists, and transit users) by incorporating strategies, principles, and design elements such as Smart Growth design elements, Context-Sensitive Design, and Complete Streets guidelines.

The Tracy TMP includes extensive use of principles of Complete Streets and Smart Growth principles through the development of a transportation system that will address all future transportation needs:

- Transit (bus, and rail)
- Cycling
- Walking
- Private vehicle movement
- Good vehicle movement

The road network system is designed to provide a comprehensive grid system of hierarchal streets that provides for a well-connected City, reduces trip lengths, promotes non-motorized travel and reduces the per capita emission of greenhouse gasses.

Every transportation element of the TMP includes implementation of Smart Growth and Complete Streets principles. Additional, comprehensive information is included in the TMP that further identifies guidelines for use in the detail design and implementation of the TMP.

This TMP shall be updated every five years for consideration of required improvements and related costs.

1.3 DEVELOPMENT OF TMP

The development of the TMP was conducted with the following steps:

Step 1: Forecast Horizon Year Conditions: The City of Tracy Travel Demand model was updated to project Horizon Year conditions. Sustainable land use and transportation strategies were incorporated; Horizon Year and build-out land uses for each future service in the General Plan Update from the City were obtained; Horizon Year and build-out plan-line roadway networks (classification and number of lanes), based on the model link volume forecasts, incorporating the effects of the sustainability strategies were developed; and future intersection volumes were forecasted.

Step 2: Assess Horizon Year Roadway Network Conditions: The results from Step 1 was used to evaluate each aspect of the transportation system (roadway and intersection capacity, bridges/canals/culverts, bicycle and pedestrian

facilities, train crossings, truck facilities, park and ride facilities, and ITS system).

Step 3: Identify Horizon Year Roadway Improvements: The results from Step 2 were used to identify whether roadways and intersections needed to be widened, whether adequate bicycle and pedestrian facilities were provided and what gaps were missing in the system. Railroad and bridges/canal/culvert crossings were examined to determine whether sufficient capacity was provided. Updated roadway cross sections for various types of roadways were prepared to provide adequate access for all modes of travel. Improvements were identified to address projected deficiencies in other areas (e.g. park and ride facilities, ITS equipment, truck routing system).

Step 4: Finalize the Plan and Identify Capital Costs: Input on the proposed list of improvements was obtained from City staff and various stakeholders and preliminary cost estimates for implementation were developed.

1.4 OBJECTIVES OF THE TMP

The following are objectives of the TMP:

- Provide an Implementation Plan for the Circulation Element of the City of Tracy General Plan (2011).
- Serve as a comprehensive planning document or blueprint that identifies and requires improvements to the existing transportation system and expands upon the system to accommodate future development consistent with the General Plan. The system includes transit passenger movement, goods movement, pedestrian movement, bicycle movement and private vehicular movement.
- Establish a framework of goals, policies, and implementation methodology that outlines improvement projects and programs, identifies financial resources and allocates funding, and sets project priorities to provide a safe and efficient transportation system that meets the community's needs.
- Guide the development of transportation infrastructure and services as growth occurs under the General Plan.
- Facilitate a transportation system that is a multi-modal network of roads, bicycle lanes and paths, transit services, and pedestrian facilities that will support the planned land uses in the City by providing mobility to residents and visitors alike.
- Balance existing and future transportation infrastructure needs with safe access for all user groups (motorists, pedestrians, bicyclists, and transit users) by incorporating strategies, principles, and design elements such as Smart Growth design elements, Context-Sensitive Design, and Complete

Street guidelines.

- Facilitate the provision of an improved transportation system that enhances mobility, accommodates future growth, and maintains the quality of life in Tracy.
- Establish policies and priorities to maintain and improve the transportation system.
- Maintain consistency with the San Joaquin County Expressways Study,
- Preserve four-lane maximum arterial widths where possible to promote a more walkable, bikeable environment, particularly in new areas of future development where sustainable practices can be applied in an equitable manner.
- Decrease right-of-way and vehicular lane widths which implement Complete Street principles.
- Maintain consistency with the roadway plans in entitled project areas (Ellis Specific Plan and Gateway).
- Provide maximum roadway v/c ratios of 0.8 – 0.9 (roughly corresponding to a LOS D - E operation on a link-volume basis) to the greatest extent possible.
- Ensure the provision of bicycle and pedestrian facilities that connect people and places.
- Develop a comprehensive bicycle and pedestrian system that ensures a multi-modal infrastructure network.
- Develop a comprehensive circulation system that identifies bridge and culvert crossings to minimize traffic conflicts and preserve open space and preservation areas.
- Develop a comprehensive Park and Ride system that supports resident transit usage or carpooling to commute from the City.
- Provides a nexus for a Traffic Impact Fee Program that will fund the development of the planned transportation system through payment of impact fees by all future development.
- Develop Travel Demand Management (TDM) principles that reduces private vehicle trips and build on the regional TDM programs developed by the SJCOG
- Provide for a comprehensive transit system on all new collector, arterial and expressway roadways and providing opportunity for expanding transit services on the existing roadways.

1.5 REPORT ORGANIZATION

The TMP is organized into the following chapters:

Chapter 1: Introduction – Description and purpose of a transportation master plan

Chapter 2: Existing Transportation System – Description of the existing transportation roadway system (roadway functional classification, intersection operations, pedestrian and bicycle facilities, park and ride facilities, truck facilities, bridges/canals/culverts, railroad facilities, and intelligent transportation system).

Chapter 3: Overview of TMP Development Process – Description of Horizon Year and Buildout planning horizons including land use, roadway network, mode split, trip generation and distribution, and future roadway plan lines.

Chapter 4: Horizon Year TMP – Recommended improvements to support Horizon Year growth for the various transportation elements as indicated in Chapter 2.

Chapter 5: Horizon Year TMP Cost Estimates – Discussion of the cost estimates to provide the Horizon Year infrastructure recommendations.

2. EXISTING TRANSPORTATION SYSTEM

2.1 INTRODUCTION

The purpose of this chapter is to provide perceptive as to the scale of the existing transportation systems in the City of Tracy and to identify any existing operating deficiencies. The findings from this chapter will be incorporated into the Horizon Year Transportation Master Plan (TMP) to help determine the needs of the City for short and long-term future conditions.

The existing conditions determine the baseline conditions from which the Horizon Year transportation system is developed. The following elements of the transportation system in Tracy are evaluated in this chapter:

- Automobile Mobility
    - Street Segments
    - Intersections
    - Canal and Creek Crossings
    - Roadway Bridges
    - Railroad Crossings
    - Park and Ride
    - Parking
- Pedestrian Mobility
- Bicycle Mobility
- Heavy Vehicle Mobility
- Transit
- Intelligent Transportation System

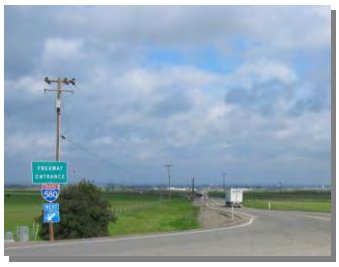
The ultimate goal of the TMP is to develop a framework of goals, policies and implementation methodology that outlines improvement projects and programs, identifies financial resources and allocates funding, and sets project priorities to provide a safe and efficient transportation system that meets the community's needs.

Tracy residents are served by an extensive, multi-modal transportation system that includes walking and cycling facilities (on-road cycling facilities, sidewalks and multi-use pathways), transit services (on-road bus services and Park & Ride lots), roads (freeways, arterials, collector and local roads) and parking facilities (on-street and off-street).

The City of Tracy's transit service will be updated as part of tier 2.

2.2 STUDY AREA

2.2.1 REGIONAL CONTEXT



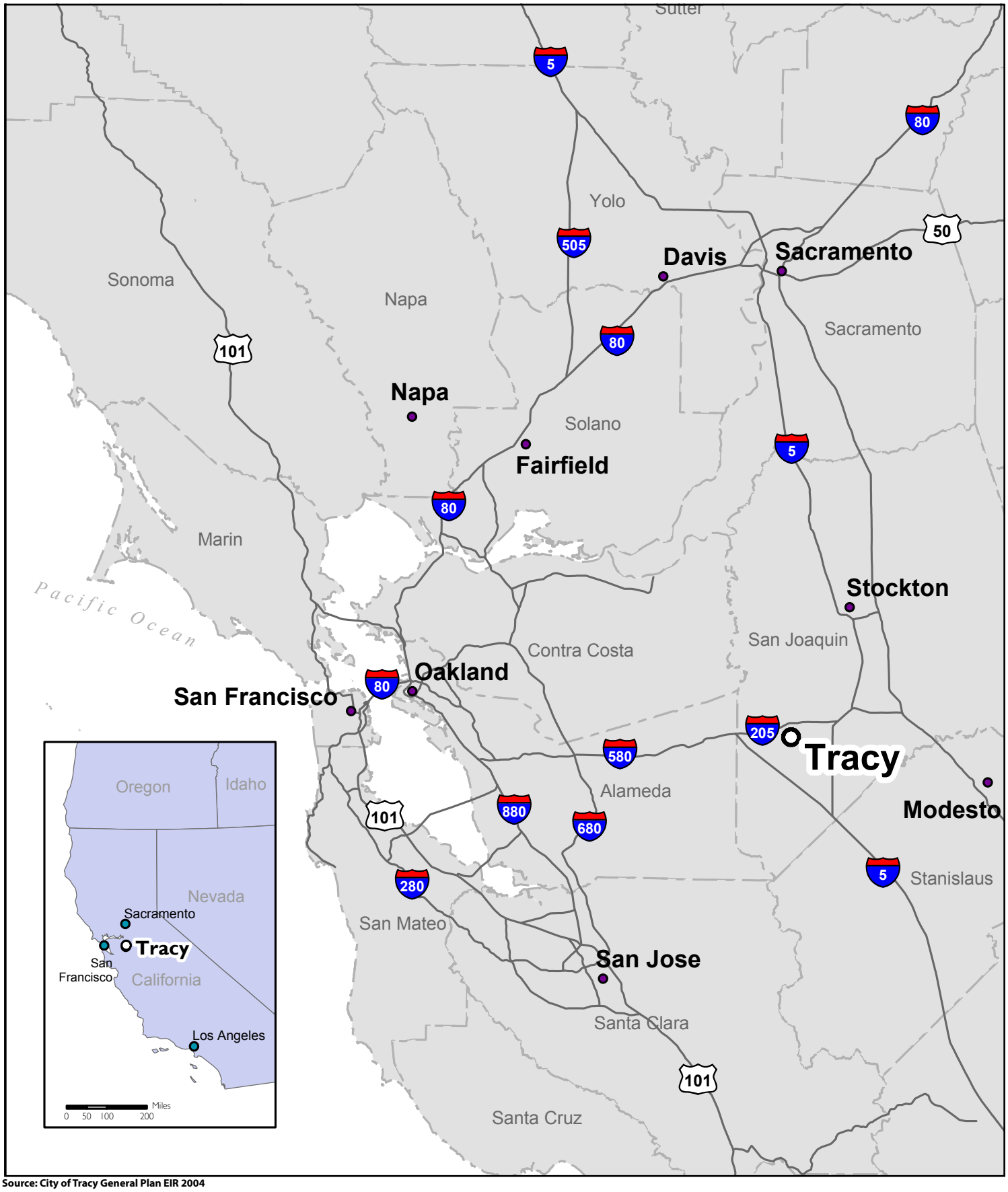
The City of Tracy is home to roughly 82,000 people based on the 2006-2008 American Community Survey 3-Year Estimates as identified by the US Census. Although the current city boundary covers an area of some 22 square miles, approximately 70% is built out.

The City of Tracy is located approximately fifty miles east of San Francisco in the southwest portion of San Joaquin County (**Figure 2.1**). The City is situated in the center of a triangle that is formed by Interstate 5 (I-5), Interstate 205 (I-205), and Interstate 580 (I-580). This orientation provides multiple access points for regional travel and goods distribution to the west towards San Francisco Bay Area along I-580, to the north along the I-5, and to southern California along I-5. Multiple agencies govern the transportation infrastructure management in and around Tracy:

- Interstate Freeways – Caltrans
- Regional Transportation Planning – San Joaquin County, San Joaquin Council of Governments, and City of Tracy
- Transit – San Joaquin Regional Rail Commission, San Joaquin Regional Transit District, and City of Tracy
- Local Streets – City of Tracy

Figure 2.2 presents the existing City limit and a parcel map of the City.

Tracy residents use automobiles more than any other mode of travel. The US Census estimated that in 2008 approximately 94% of commuters traveled by automobiles (78% drove alone, 16% carpooled), 3% traveled by transit, almost 2% traveled by walking and just over 1% traveled by other modes of transportation. Approximately 97% of households own at least one motor vehicle, with households owning an average of 1.2 each.



Source: City of Tracy General Plan EIR 2004

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Figure 2.1: Regional Location

City of Tracy Transportation Master Plan

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Mountain House Pkwy
Hansen Rd
Byron Rd
Reeve Rd
Bethany Rd
Lammers Rd
Corral Hollow Rd
Tracy Blvd
Arbor Ave
MacArthur Dr
Grant Line Rd
11th St
Central Ave
Schulte Rd
Sycamore Pkwy
Chrisman Rd
Valpico Rd
Banta Rd
Bird Rd
Linne Rd
Ahern Rd
Durham Ferry Rd
Patterson Pass Rd
205
580
5

Legend

City Limits

Sphere of Influence

Source: City of Tracy General Plan EIR 2004, RBF Consulting 2010

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North

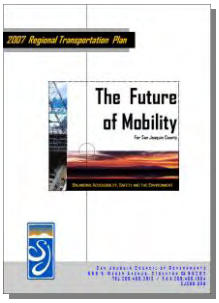
0 0.5 1 2 Miles (Approximate)

Figure 2.2: Tracy City Limits and Sphere of Influence Map

Goods movement is also a significant element of total travel demand in Tracy. The I-205 freeway carries heavy truck volumes over its entire length. Total truck traffic in 2008 east of Tracy Boulevard was over 11,200 truck trips per day, or approximately 11 percent of all traffic. I-580 freeway also carries heavy truck volumes over its entire length. Total truck traffic in 2008 on I-580, east of Highway 132 /Chrisman Avenue, was approximately 6,000 truck trips per day, or 18 percent of all traffic.

Figure 2.3 shows the existing land uses in the City overlaid on the existing base map.

San Joaquin County has numerous regional transportation improvements planned which have been outlined in the *2007 Regional Transportation Plan* (RTP) (San Joaquin Council of Governments, May 2007). These include but are not limited to:



- Highway mainline and interchange safety and operational improvements
- Roadway and intersection improvements
- Signal control upgrades and coordination improvements
- Transit facility improvements
- Bicycle facility improvements

A complete listing of the planned improvements identified in the RTP has been included in Appendix A.

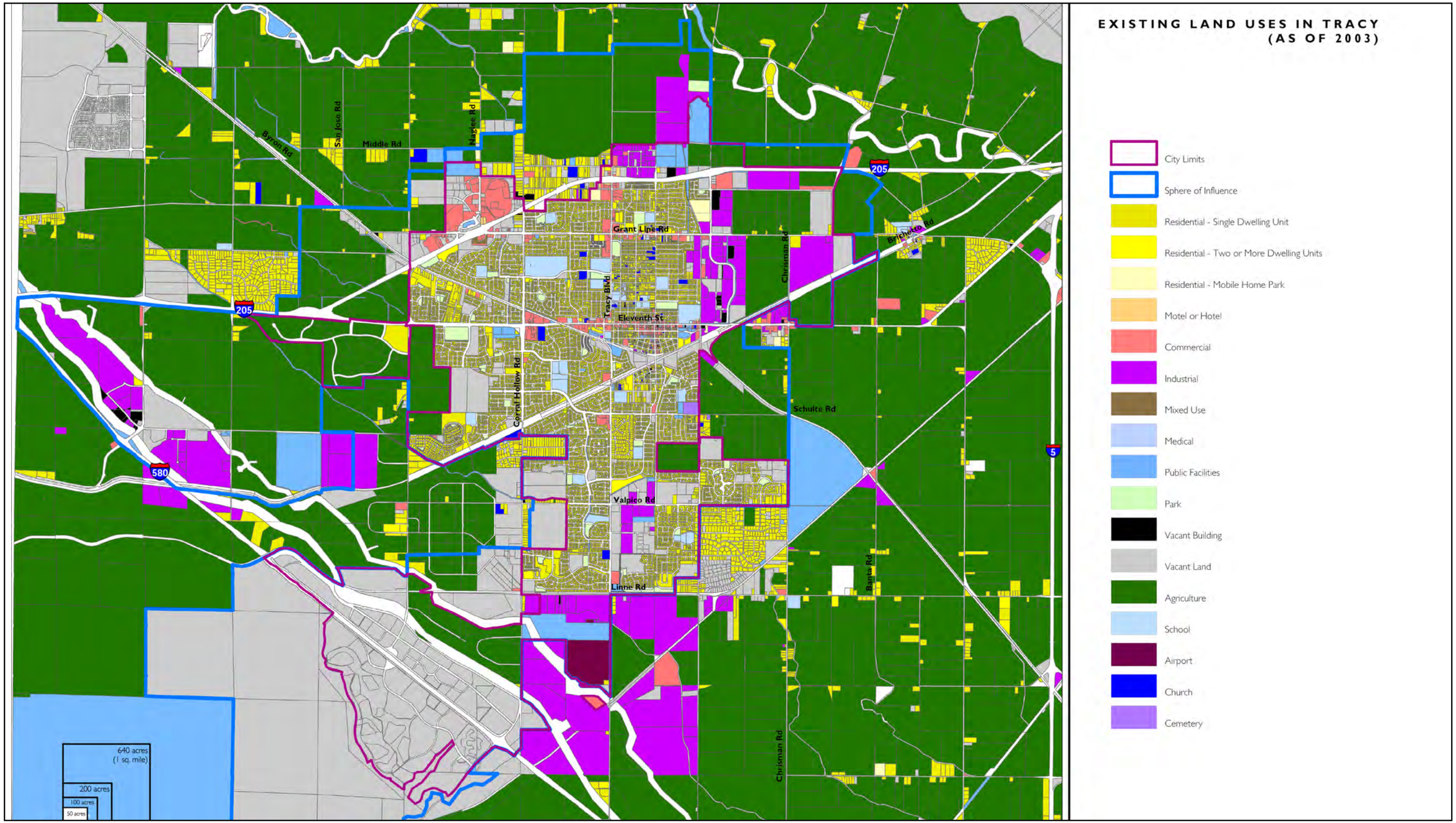
The *2007 Regional Congestion Management Plan* (San Joaquin Council of Governments, December 6, 2007) identifies the strategic plan for reducing congestion and its economic impacts. The strategies include:

- Developing new land use monitoring and information program
- Developing new multi-modal performance measures
- Limiting Vehicle Miles Traveled (VMT) growth
- Coordinating between private and public agencies

2.2.2 EMERALD TRACY

The City of Tracy has started the Emerald Tracy pilot program which is part of the Emerald Cities Collaborative (ECC). The goal of the program is to improve cities and surrounding metropolitan areas by making them more environmentally friendly. Several transportation sustainability objectives have been established by the Emerald Tracy program. These objectives include a:

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Source: City of Tracy General Plan EIR 2004

North

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Figure 2.3: Existing Land Use Map

- 20% increase in the percentage of City employees who participate in travel demand management programs from current (2006) levels.
- 20% increase in the percentage of non-City employees who participate in travel demand management programs from current (2006) levels.
- 20% reduction in the municipal VMT from current (2006) levels.
- 20% reduction in the community VMT per capita from current (2006) levels.

To make sure objectives are reached, action plan measures are currently being established from ideas that were developed during community workshops. Some of the ideas that are applicable to transportation planning are:



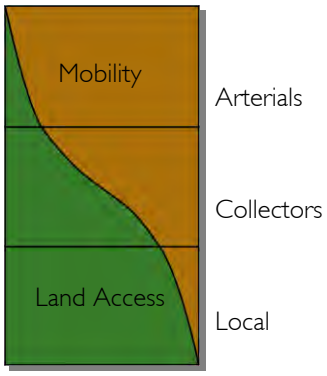
- Installing parking, shower and dressing facilities, and creating a bicycle sharing program to promote bicycle usage,
- Increasing transit route coverage to be within ½ mile of all residents and ¼ mile of 75 percent of residents in new developments,
- Filling the gaps in sidewalks along key pedestrian routes, and
- Develop a bottleneck improvement program to execute improvements along the City's key corridors.

2.3 INFRASTRUCTURE AND MODES OF TRANSPORTATION

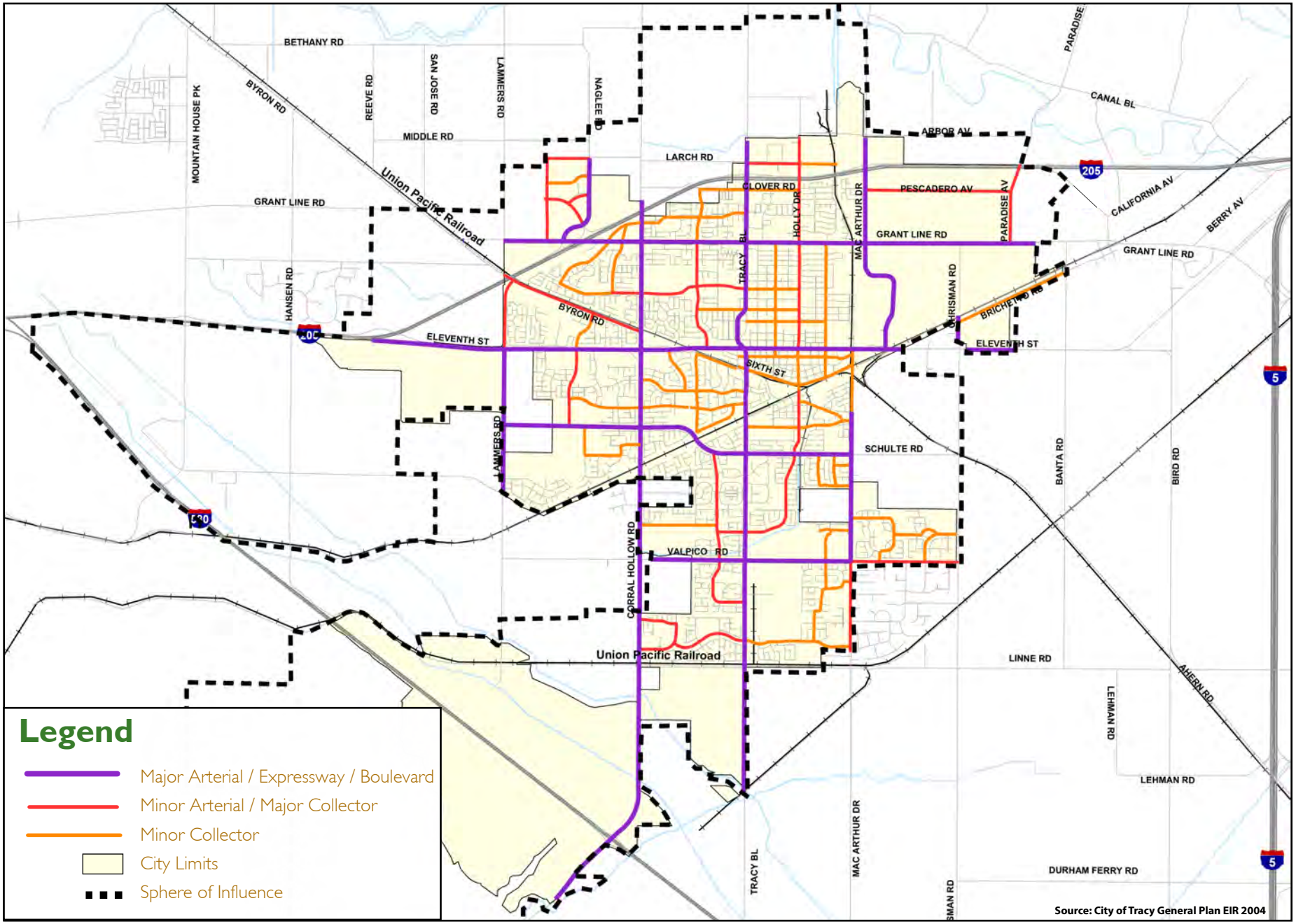
The City of Tracy roadway network supports multiple modes of travel including vehicles, transit, biking, and walking. The following sections provide a description of the elements that form the roadway network.

2.3.1 FUNCTIONAL CLASSIFICATION

Roadways that comprise the Tracy transportation network are part of a hierarchal classification system. The system classifies roadway types based on the function they serve and the jurisdiction that they fall under. The function of roadways range from regional facilities serving the mobility of high volumes of vehicles to local roadways providing access to land parcels for low volumes of vehicles.



Descriptions of the existing roadway classification system that serves the City of Tracy are provided in the following paragraphs. **Figure 2.4** presents existing roadway functional classification in the City of Tracy. **Table 2.1** summarizes the key characteristics (vehicular design capacity, typical curb-to-curb width, and number of lanes) for these various types of roadways.



North

Figure 2.4: Existing Roadway Funcitonal Classification

Table 2.1: Existing Functional Classification Design Criteria

	Design Capacity (vehicles/day)	Typical Curb to Curb Width (ft)	Typical Number of Lanes
Expressway	> 10,000	86 – 110	4 - 6
Major Arterial	> 10,000	80 – 104	4 - 6
Minor Arterial	5,000 – 12,000	64	4
Collector	2,000 – 5,000	44 – 56	2
Residential	500 – 2,000	36 - 40	2
Industrial	Not Provided	44	2

2.3.1.1 FREEWAYS

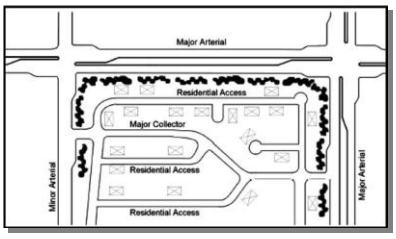
Freeways are designed to carry very high volumes of traffic at very high travel speeds. Travel along freeways is generally unimpeded and provides inter-regional and inter-state travel for passenger cars and commercial vehicles. Access is provided by grade separated interchanges that are generally spaced at a minimum of one mile.

2.3.1.2 EXPRESSWAYS

Expressways provide connections to regional roadways such as freeways and are usually designed to accommodate through traffic with limited access to adjacent land uses. These facilities typically have multiple lanes (four, six, or eight) and carry higher speeds and volumes. Access points are typically spaced further apart, usually a minimum of one third mile spacing between major intersections. Closer spacing of signalized intersections lowers the progression speeds of vehicles, yet improves distribution to more road segments on the system, ultimately providing for a denser road network with well established connections between origins and destinations. Right-in-right-out access point may be provided in-between the major intersections. Expressways generally serve higher traffic volumes (up to 75,000 average daily trips for a 8-lane facility).

2.3.1.3 ARTERIALS

Arterials provide regional connectivity and relatively unimpeded traffic flow for both passenger cars and commercial vehicles. These facilities have high vehicles capacities and support high travel speeds. Access to arterials is limited by intersection spacing and driveway locations. Arterials can be classified as either major or minor arterials.



Major arterials are designed to provide major routes within the City and to regional facilities. Major arterials have access points that are spread out approximately every mile. Traffic volumes along major arterials can be as high as 50,000 vehicles per day.

Minor arterials provide some direct access to shopping centers and large residential communities. Access to minor arterials is more frequent than major arterials (approximately every half mile). Traffic volumes along minor arterials range from 10,000 to 30,000 vehicles per day.

2.3.1.4 COLLECTORS

Collectors are designed to provide connectivity between local roadways and the higher capacity arterial facilities. Collectors also provide direct access to business and residential properties (approximately every quarter mile). High vehicle capacities and moderate travel speeds are supported by collectors. Collectors can be classified as either major or minor. Major collectors support higher volumes and higher speeds than minor collectors but have more limited access. Collectors have traffic volumes that range from 2,000 to 10,000 vehicles per day.

2.3.1.5 RESIDENTIAL

Residential streets support low traffic volumes and slow travel speeds. They provide direct access to properties and connect to the roadway network. Design guidelines of these roadways are implemented to minimize travel speed, promote pedestrian safety, and prohibit cut through traffic. Access locations are generally very close together on residential streets (approximately 500 foot spacing).

2.3.1.6 INDUSTRIAL

Industrial streets are designed to provide access to industrial and commercial land uses such as shopping centers, office parks, and industrial parks. These roadways are designed to allow access for truck traffic.

2.3.2 TRAFFIC CONTROL

Traffic control systems are used to direct drivers, pedestrians, and bicyclists while providing a safe and efficient operating environment. Traffic control systems are comprised of but not limited to roundabouts, signal controls, stop signs, pavement markings, and roadway signs. The implementation, design, and placement of these devices are governed by the California *Manual of Uniform Traffic Control Devices* (MUTCD) and the City of Tracy Standard Plans.

2.3.3 EXISTING BICYCLE CIRCULATION

The City of Tracy updated its *Bikeways Master Plan* in April 2005. The purpose of the update was to revise the *1992 Bikeways Master Plan* and to identify fund raising opportunities and provide a long range planning tool. The City is currently in the process of developing an addendum to the *2005 Tracy Bikeways Master Plan*. The addendum, *Tracy Master Plan Design Supplement*, will identify design strategies for improving the existing bicycle circulation.

2.3.3.1 BICYCLE FACILITIES AND PARKING

The City of Tracy uses the Caltrans *Highway Design Manual* (6th Edition, California Department of Transportation, 2006) for its bicycle facility design standards. The standards are outlined in Chapter 1000: Bikeway Planning and Design. These design standards classify bikeway facilities into three categories; Class I, Class II, and Class III. The categories are described below.

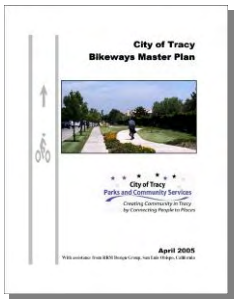
Class I Bikeway (Bike Path) – A Class I Bikeway is a physically separated bike path that does not share the roadway with motorized vehicles. They can be separated by either open space or a physical barrier and are generally two-way facilities for bicyclists and pedestrians.

Class II Bikeway (Bike Lane) – A Class II Bikeway is a bike lane that shares a portion of the roadway with motorized vehicles. They are separated by striping and are signed and marked for exclusive use by bicycle traffic. Class II Bikeways provide service for one-way bicycle traffic and are located outside of the through lanes for motorized vehicles.

Class III Bikeway (Bike Route) – A Class III Bikeway is a bike route that shares the roadway with motorized vehicles. They are identified by signs and not separated by striping. Class III Bikeways are utilized in locations that do not have Class I or Class II facilities or to connect Class II Bikeways to provide a continuous bikeway system.

The City of Tracy has an extensive bicycle network that includes all three bikeway categories (**Figure 2.5**). Although the bikeway system is broad, there are critical gaps that limit its effectiveness to serve cyclists through connecting origins and destinations. The gaps include:

- Three segments along Grant Line Road
  - Between MacArthur Drive and Tracy Boulevard
  - Between Tracy Blvd and Lincoln Boulevard
  - Under the I-205 overpass
- Tracy Boulevard between West 11th Street and I-205,
- Two segments on MacArthur Drive between Valpico Road and just north of Schulte Road,





Class I: Bike Path



Class II: Bike Lane



Class III: Bike Route

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Mountain House Pkwy
Hansen Rd
Byron Rd
Reeve Rd
Bethany Rd
Lammers Rd
Corral Hollow Rd
Tracy Blvd
Arbor Ave
Grant Line Rd
MacArthur Dr
11th St
Central Ave
Schulte Rd
Chrisman Rd
Sycamore Pkwy
Valpico Rd
Banta Rd
Bird Rd
Linne Rd
Ahern Rd
Durham Ferry Rd
Patterson Pass Rd
I-205
I-580
I-5

Legend

- Class I (Bike Path)
- Class II (Bike Lane)
- Class III (Bike Route)
- City Limits
- Sphere of Influence

North

0 0.5 1 2 Miles (Approximate)

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Figure 2.5: Existing Bikeway Map

City of Tracy Transportation Master Plan

- One segment south of Valpico Road, and
- One segment along Valpico Road between MacArthur Drive and Tracy Boulevard.

As identified in the City of Tracy's *Bicycle Master Plan* (BMP), bicycle parking facilities are categorized as follows:

- Class I bicycle parking facilities consist of bicycle lockers, or a secure area that may be accessed only by bicyclists.
- Class II bicycle parking facilities are bicycle racks that provide support for the bicycle but do not have locking mechanisms.

The City requires that bicycle parking be provided at parking lots with 20 or more vehicle parking stalls (*City of Tracy Municipal Code*, September 2009). Ordinance 10.08.3510, Bicycle Parking, states that 2 bicycle permanent bicycle stalls shall be provided in parking lots with 20 to 40 vehicle stalls and 5% of the total vehicle stalls for parking lots with more than 40 vehicle stalls.

Each bicycle parking stall shall be 5 ½ feet long by 2 ½ feet wide and include a permanent fixture for locking or securing the bicycle frame and wheels in an upright position. The parking stalls are required to be within 100 feet of the public entrance for each building or land use type.

2.3.4 EXISTING PEDESTRIAN CIRCULATION

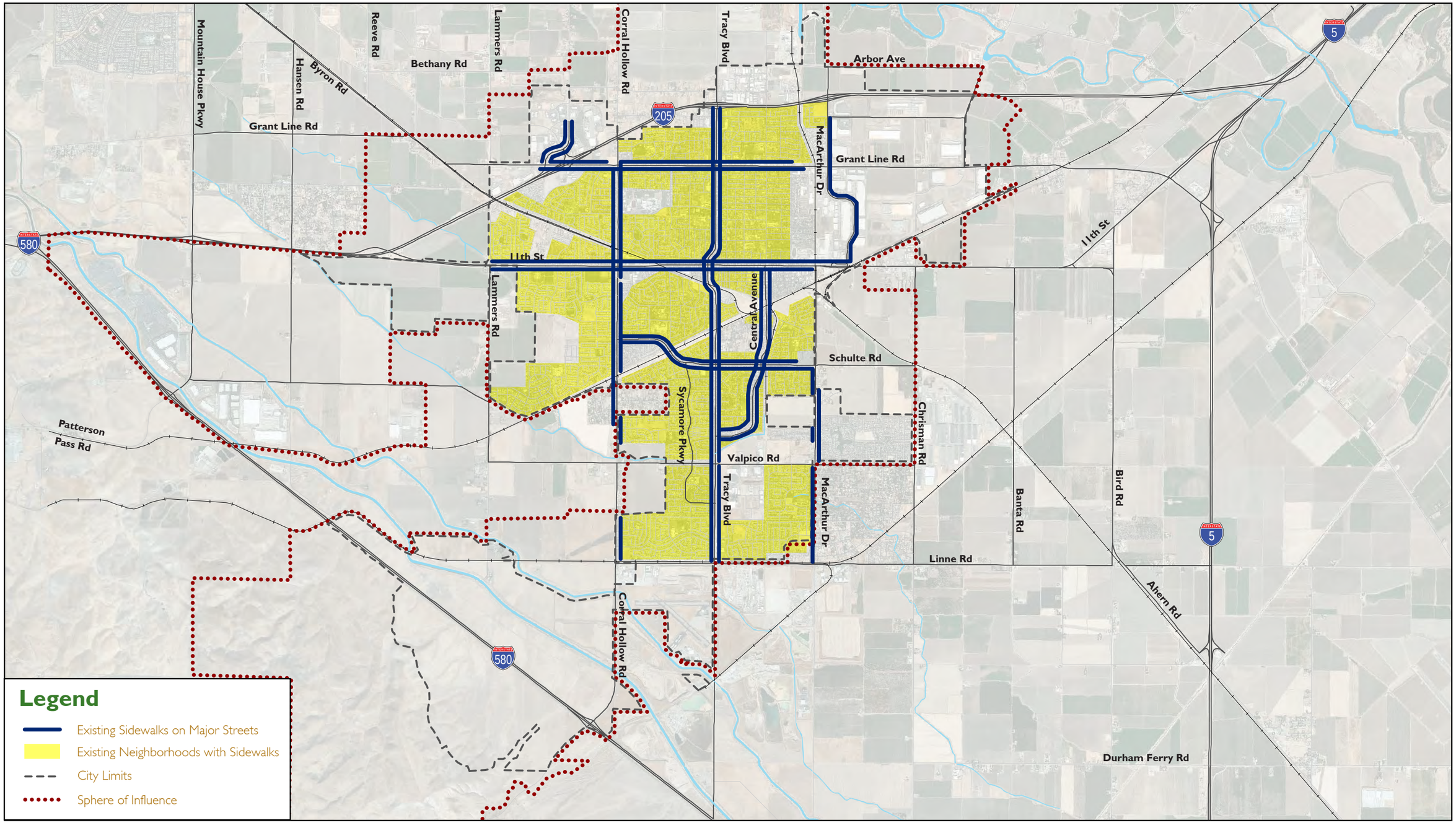


The City of Tracy is pedestrian friendly with widespread sidewalk coverage and pedestrian crossing with Americans with Disabilities Act (ADA) ramps along major roadways and in residential neighborhoods. The sidewalk coverage helps to promote walking and provides pedestrians access to destinations throughout the City.

Figure 2.6 provides a map of the existing sidewalk locations and highlights them in red. Although a detail inventory of each residential neighborhood was not performed, a preliminary inventory was completed. The map highlights in yellow, neighborhoods that have approximately 90% or greater sidewalk coverage.

Similar to bikeway facilities, the City has critical gaps in sidewalk coverage. These gaps include multiple segments along Corral Hollow Road south of Schulte Road, along Byron west of Corral Hollow, along Tracy Boulevard south of Valpico Road, and along Grant Line Road west of Corral Hollow and east of East Street. In addition to the critical gaps, ADA routes have not been established along the existing sidewalks to specific destinations in the City.

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Figure 2.6: Existing Sidewalk Map

City of Tracy Transportation Master Plan

2.3.5 EXISTING PARKING



The City's goals and actions it takes, will acknowledge the ability of parking supply and parking pricing to influence how people choose to travel. Parking areas are also a major consumer of land, and the treatment of parking within developments can either help or hinder the achievement of compact communities. Notwithstanding these concerns, adequate parking is an issue of vital importance to Tracy's businesses and institutions. Parking enables them to remain accessible to employees, customers and visitors who travel by automobile, whether by need or choice. The interests of employers, stores, service providers must be considered in the development of a balanced parking system.

Parking services provided directly by the City include on-street parking, several off-street parking lots, and enforcement of parking by-laws. These services have significant costs, but also generate significant revenues. As well, through its land use planning functions, the City also influences the supply of parking in new developments, and has some regulatory control over privately run off-street public parking lots.

2.3.6 PARK AND RIDE FACILITIES



A Park-and-Ride facility is generally an area used to park vehicles, while the vehicle owner uses a public transport or carpooling to commute. Vehicles are parked in the facility during the day and retrieved when the commuter returns. Currently, there are five Park and Ride facilities within the City of Tracy as illustrated in **Figure 2.7**.

1. Naglee Road (Naglee Road /Pavillion Parkway intersection)
2. Prime Outlets (MacArthur Drive /E. Pescadero Avenue)
3. Tracy Transit Station (southeast corner 6th Street /Central Avenue intersection)
4. 6th Street and Central Avenue (northwest corner of the intersection)
5. Altamont Commuter Express (ACE) Train Station (Tracy Boulevard /Linne Road intersection)

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Mountain House Pkwy
Hansen Rd
Byron Rd
Reeve Rd
Bethany Rd
Lammers Rd
Corral Hollow Rd
Tracy Blvd
Arbor Ave
Grant Line Rd
MacArthur Dr
11th St
Schulte Rd
Central Ave
Sycamore Pkwy
Valpico Rd
Chrisman Rd
Banta Rd
Bird Rd
Linne Rd
Ahern Rd
Durham Ferry Rd
Patterson Pass Rd
580
205
5

Naglee Road Park and Ride



Vehicular Parking Spaces: 180
Transit: Tracer and SJRTD Service
Bike Storage: 4 Lockers & 1 Bike Rack

Prime Outlet Park and Ride



Vehicular Parking Spaces: 40
Transit: No Service
Bike Storage: No Lockers & Bike Racks

Tracy Transit Center Park and Ride



Vehicular Parking Spaces: 222
Transit: Tracer and SJRTD Service
Bike Storage: 12 Lockers & Bike Racks

Sixth Street and Central Avenue Park and Ride



Vehicular Parking Spaces: 71
Transit: Tracer and No Service
Bike Storage: No Lockers & 1 Bike Rack

Altamont Communiter Express (ACE) Park and Ride



Vehicular Parking Spaces: 505
Transit: ACE Service
Bike Storage: 6 Lockers & 1 Bike Rack

Legend

- City Limits
- Shpere of Influence
- Approximate Location of Park and Ride Facility

North

0 0.5 1 2 Miles (Approximate)

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Figure 2.7: Existing Park and Ride Facilities Map

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2.3.6.1 NAGLEE ROAD PARK AND RIDE

This parking lot is located between Grant Line Road & Pavilion Parkway along the southside of Naglee Road and west of I-205 /Naglee Road interchange. This lot has a parking capacity for 170 regular vehicles and 10 ADA vehicles. It also has one bike rack and 4 bike lockers. Access to the parking lot is provided via Naglee Road /Park and Ride signalized intersection. Currently, Tracer fixed route and paratransit service operates one local bus service and San Joaquin Regional Transit District (SJRTD) operates several inter-regional bus services to and from this parking lot. The following bus routes provide services to the Naglee Road Park and Ride facility.



- # Route B - West Valley Mall /Tracy Transit Station - TRACER
- #153-Livermore 1 - Livermore/Sandia Labs – SJRTD
- #160-Bart 1 - Pleasanton/Dublin – SJRTD
- #166-Lockheed 3 Sunnyvale- SJRTD
- #170-San Jose/Metro Dr-Light Rail
- #171-Bart 2 - Pleasanton/Dublin – SJRTD
- #172-Lockheed 4 Sunnyvale- SJRTD
- #173-Sunnyvale – SJRTD
- #174-Mtn.View/Palo Alto – SJRTD
- #175 - Santa Clara – SJRTD

2.3.6.2 PRIME OUTLET PARK AND RIDE

This parking lot is located on the north side of E. Pescadero Avenue and in the back of Prime Outlet shopping center, and is in close proximity to the interchange of I-205 and MacArthur Drive. This lot has a parking capacity for 45 regular vehicles with no bicycle facilities provided. Access to the parking lot is shared with access for the shopping center. Currently, Tracer operates Route A bus service to and from the shopping center to Tracy Transit Station.

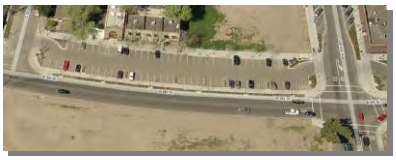


2.3.6.3 TRACY TRANSIT STATION PARK AND RIDE

The Tracy Transit Station opened on February 1, 2010 and serves as a transit hub for the City of Tracy. It is located on the southeast corner of Central Avenue and 6th Street. The Transit Station contains approximately 6,000 square feet and includes an indoor passenger waiting area, a ticket sales and information office, public restrooms, three community meeting rooms, 222 parking spaces (including infrastructure for up to three recharging spaces for electric vehicles), an outdoor plaza, designated bus, taxi and vanpool pickup and drop-off zones, and 12 bike lockers and bike racks. Access to the parking lot is provided along N. Central Avenue. Currently, Tracer operates five local bus services, Routes A thru E, and SJRTD operates two regional bus services to and from Stockton, Routes 26 and



90.



2.3.6.4 6TH STREET AND CENTRAL AVENUE PARK AND RIDE

This parking lot is located diagonally across from the Tracy Transit Station along the north side of 6th Street, between Central Avenue and C Street. This lot has a parking capacity for 67 regular vehicles and 4 ADA vehicles and has no bicycle facilities. Access to this parking lot is provided via a driveway along both Central Avenue and C Street.



2.3.6.5 ALTAMONT COMMUTER EXPRESS (ACE) PARK AND RIDE

The Tracy ACE station is located at Tracy Boulevard and Linne Road. This park and ride lot has a parking capacity for 493 regular vehicles and 12 ADA vehicles. The lot also contains one bike rack and 6 bike lockers. Access to the parking lot is provided via a driveway along Tracy Boulevard. Currently, ACE provides daily services between Stockton and San Jose. Two trains depart from Stockton in the morning and two from San Jose return in the evening.

2.3.7 FREIGHT – TRUCK SERVICE

The following section describes the existing trucks routes in the City of Tracy as obtained from the existing City of Tracy Truck Route Map (per City ordinance 1068 adopted 11-16-04) and survey of field data.

2.3.7.1 EXISTING TRUCK ROUTES



The existing truck routes in the City of Tracy run primarily in a north-south and east-west direction. Access to truck routes originate from Interstate 205 and disperse to the City via the interchanges at I-205 / Eleventh Street, I-205 / Grant Line Road, and I-205 / MacArthur Drive. The existing truck route network connects truck traffic on I-205 to the industrial areas in the south and northeast via MacArthur Drive, and also the commercial areas in the north and central via Larch Road, Eleventh Street, and Grant Line Roads. Truck access to I-580 is provided via a through truck route on Corral Hollow Road via the I-580 interchange to the south.

Section 3.08.290 of the City's Municipal Code establishes truck routes throughout the City restricting vehicles routes within the City with a gross vehicle weight of five tons or more, licensed commercially as a truck in the state of origin, and used for carrying goods for pickup and delivery. Vehicles meeting this requirement shall drive only on truck route designated streets except when necessary for egress and ingress by direct route to and from restricted street for the purposed of loading or unloading.

Currently there are three types of truck routes within the City of Tracy: "Through Truck Routes" and "Local Truck Routes" and STAA truck routes. These routes are indicated throughout the City with the appropriate signage specific to each

route type per MUTCD requirements.

2.3.7.2 THROUGH TRUCK ROUTES

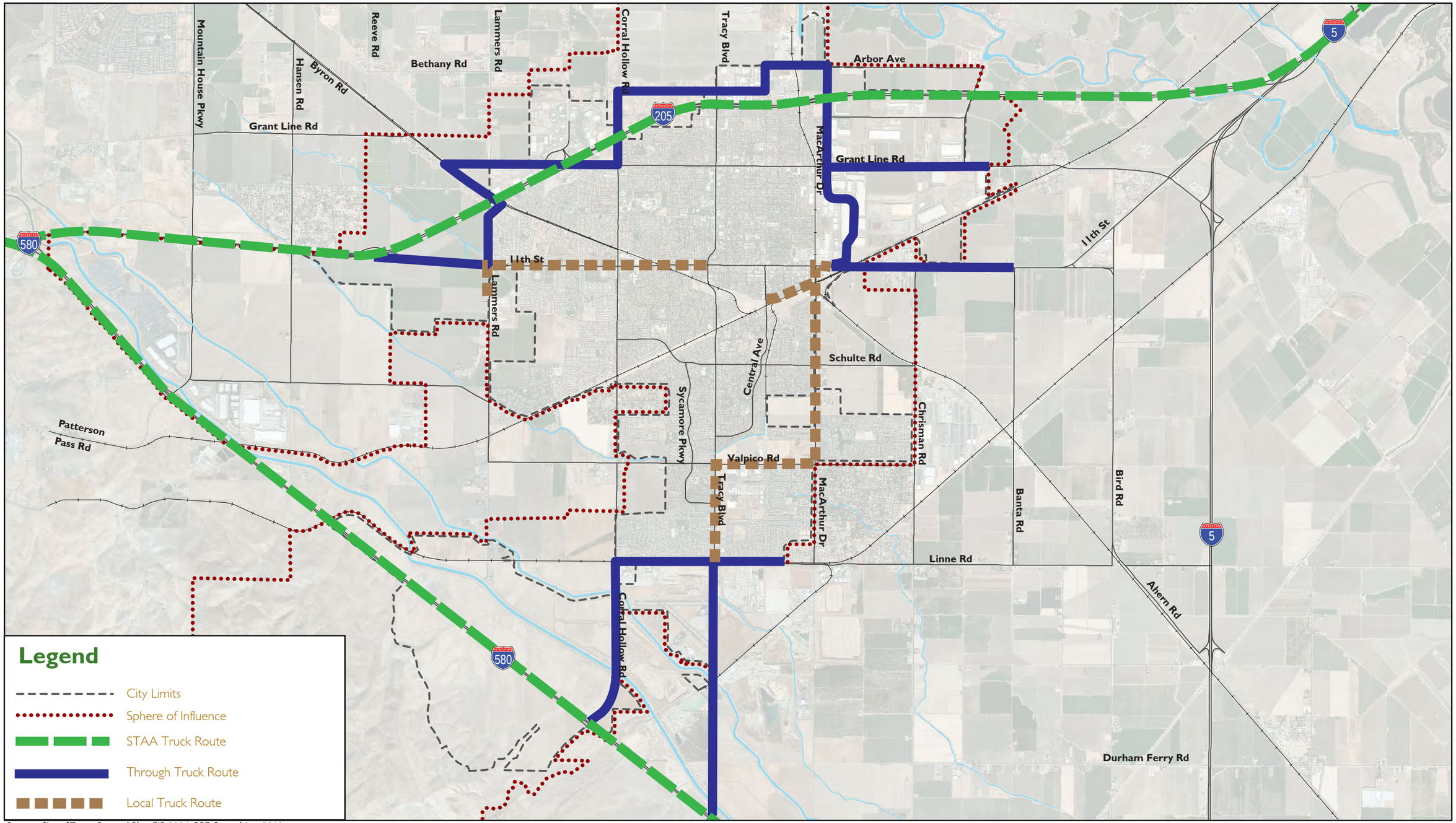
Through truck routes are defined as a route that allows any vehicle entering the City of Tracy from any point outside the City and destined for any other point located outside the City to proceed entirely through without unloading or loading freight within the City of Tracy. A map showing the location of truck routes throughout the City can be found in **Figure 2.8**.



Existing through truck routes within the City of Tracy include:

- Arbor Road (MacArthur Drive to Holly Drive)
- Byron Road (west City limits to Lammers Road)
- Corral Hollow Road (Larch Road to Grant Line Road)
- Corral Hollow Road (Linne Road to I-580)
- Chrisman Road (North of Valpico Road portion of Chrisman Road within City limits)
- Eleventh Street (Lammers Road to the west City limits)
- Eleventh Street (MacArthur Drive to east City limits)
- Grant Line Road (West City limits to Corral Hollow Road)
- Grant Line Road (MacArthur Drive to East City limits)
- Holly Drive (Arbor Road to Larch Road)

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Source: City of Tracy General Plan EIR 2004, RBF Consulting 2010

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North

0 0.5 1 2 Miles (Approximate)

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Figure 2.8: Existing Truck Routes

City of Tracy Transportation Master Plan

- Lammers Road (Byron Road to Eleventh Street)
- Larch Road (Holly Drive to Corral Hollow Road)
- Linne Road (East City limits to West City limits)
- MacArthur Drive (Arbor Road to Eleventh Street)
- Tracy Boulevard (Larch Road to I-205)
- Tracy Boulevard (Linne Road to South City limits).

2.3.7.3 LOCAL TRUCK ROUTES

Local truck routes are defined as a route that may not be used by any truck to move from any point outside of the City of Tracy continuously to any other point located outside the City of Tracy without unloading or loading within the City of Tracy. All local truck traffic trips must use the shortest local truck traffic route between connecting or through truck traffic routes and the origin and destination within the City.

Existing local truck routes within the City of Tracy include:

- Eleventh Street (Lammers Road to Tracy Boulevard)
- Eleventh Street (north leg MacArthur Drive to south leg MacArthur Drive)
- Lammers Road (Eleventh Street to 0.5 miles south of Eleventh Street) City portion
- MacArthur Drive (Eleventh Street to Sixth Street)
- MacArthur Drive (Valpico Road to Mount Diablo Avenue)
- Sixth Street (MacArthur Drive to Central Avenue)
- Tracy Boulevard (Linne Road to Valpico Road)
- Valpico Road (Tracy Boulevard to MacArthur Drive).
- MacArthur Drive (Mount Diablo Avenue to Sixth Street.

2.3.7.4 SURFACE TRANSPORTATION ASSISTANCE ACT (STAA) TRUCK ROUTES

The Surface Transportation Assistance Act (STAA) of 1982 authorized the establishment of a national network of highways designated for use by large trucks. On these highways, Federal width and length limits apply. The STAA allows large trucks to operate on the Interstate and certain primary routes called collectively the National Network (NN). These trucks, referred to as STAA trucks, are longer than California legal trucks. As a result, STAA trucks have a larger turning radius than most local roads can accommodate. The law allows for "reasonable access" to and from the NN for terminals, deliveries, trucks stops, repairs, and other reasons. The NN is recommended for through truck traffic (e.g. traffic that is passing through the area), and trucks are allowed to operate on truck-restricted

roads if they have no other means of access to their destination.



Through the City of Tracy, I-205 is a STAA route. I-580 to the south of the city limits is also a designated STAA route. Both routes are designated as National Network STAA routes.

2.3.7.5 EXISTING TRUCK STOP FACILITY

There is one designated truck stop within the City of Tracy located on North Tracy Boulevard ¼ mile to the north of the I-205 / Tracy Boulevard interchange. Services offered at this truck stop include refueling, truck parking, truck permit services, load monitors, driver lounges, showers, and laundry.

2.3.8 TRACY RAILROADS



The City of Tracy has three major rail lines that run east to west through the City. Each of these lines consists of several spurs that are used to access the industrial areas throughout the City. These lines are currently owned and operated by the Union Pacific Railroad Corporation, which also operates freight rail service through the region.

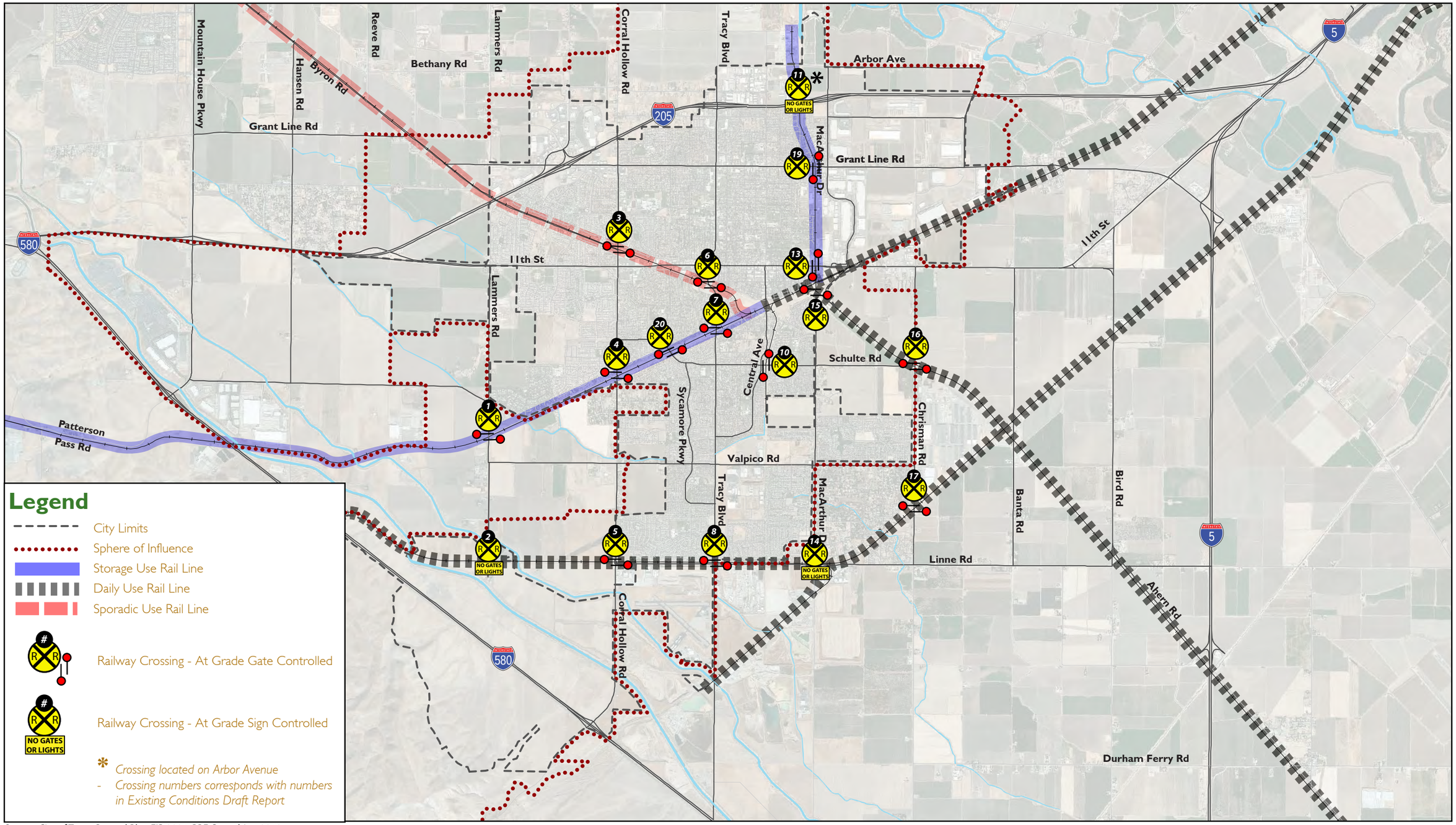
The main line runs along the southern border of Tracy along Linne Road. This line is used for both freight and commuter rail service operated by Altamont Commuter Express (ACE). Approximately ten freight trains and six commuter rail trains operate daily on this track. The remaining lines run through the center of Tracy. The line along Byron Road is used minimally and does not have regularly scheduled service which connects the City to the industrial centers of the North San Francisco Bay Area. The line to the northeast is used for local freight bound for Stockton. The rail line at the southwest of the City has tracks that stop at the County line is no longer in service and is used for storage of train cars only.

2.3.8.1 RAILROAD CROSSINGS

Due to the prevalence of railroad lines, there are 19 at-grade railroad crossings and 1 grade separated railroad crossing within the City of Tracy. These crossing are distributed throughout the City with two crossings each on Corral Hollow Road, Tracy Boulevard, and MacArthur Drive. Each of the railroad crossings locations are shown in **Figure 2.9** and are described in detail below:



1. Lammers Road between Schulte and Valpico Roads: This at-grade crossing consists of two travel lanes with control gates and flashing warning signals.
2. Lammers Road south of Valpico Roads: This at-grade crossing consists of two travel lanes with gravel roads and stop sign only control.
3. Corral Hollow Road, north of the Coral Hollow Road / Eleventh Street Intersection: This at-grade crossing consists of four travel lanes located approximately 40 feet to the north of the intersection. This crossing is gate controlled with flashing warning signals and is coordinated with the



Source: City of Tracy General Plan EIR 2004, RBF Consulting 2010

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Figure 2.9: Railroad Crossings

City of Tracy Transportation Master Plan

signals at the adjacent intersection.

4. Corral Hollow Road south of Schulte Road: This crossing consists of a single track with 4 vehicle travel lanes. Vehicle crossing is controlled by control gates and flashing warning lights.

5. Corral Hollow Road north of Linne Road: This crossing is located approximately 100 feet to the north of the Corral Hollow Road / Linne Road intersection. The crossing consists of a single track with two vehicle travel lanes. Vehicle crossing is controlled by gate controls and flashing warning lights. This nearby intersection is stop sign controlled and thus does not require coordinated signals.



6. Tracy Boulevard, south of Sixth Street: This crossing is located between the intersections of Tracy Boulevard / Sixth Street and Tracy Boulevard / Beechnut Avenue. The tracks are positioned midway between the two intersections approximately 20 feet from both intersections. Both intersections are signalized and are coordinated with the crossing gates. This at-grade crossing consists of a single track and 4 vehicle travel lanes. Vehicle crossing control is restricted with gate controls and flashing warning lights.

7. Tracy Boulevard, north of Fourth Street: This crossing is located approximately 20 feet to the north of the Tracy Boulevard / Fourth Street intersection. The crossing consists of a single track, with 5 vehicle lanes. Vehicle crossing control is restricted by gate controls and flashing warning lights.



8. Tracy Boulevard, north of Linne Road: This crossing is located approximately 70 feet to the north of the Tracy Boulevard / Linne Road intersection. The at-grade crossing consists of a single track, with two vehicle travel lanes. Vehicle crossing control is restricted by gate controls and flashing warning lights. This crossing is located adjacent to the Tracy ACE station and parking lot.

9. MacArthur Drive, grade separated crossing: This grade separated crossing is located east of the MacArthur Drive / Eleventh Street intersection. The crossing consists of two tracks with a four lane bridge overpass above.



10. Schutle Road, east of Central Avenue: This crossing is located approximately 250 feet from the intersection of Schulte Road / Central Avenue. The at-grade crossing consists of a single track with 4 vehicle travel lanes. Vehicle crossing control is restricted by gate controls and flashing warning lights.

11. Arbor Avenue, between South Holly Drive and MacArthur Drive: This at-grade crossing provides freight rail access to the Holly Sugar Corporation to the north. This single track is currently used for storage only as the

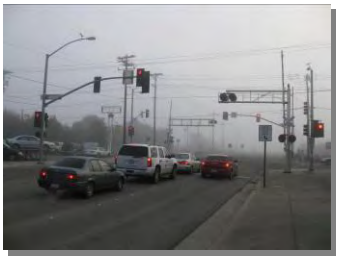
track is obstructed by a fence at the Holly Sugar Corporation property line. This crossing does not have stop sign or gate crossing controls.



12. East Grant Line Road, west of MacArthur Drive: This crossing is located approximately 500 feet from the East Grant Line Road / MacArthur Drive intersection. The at-grade crossing consists of a single track with 4 vehicle travel lanes. Vehicle crossing is controlled by gate controls and flashing warning lights.
13. MacArthur Drive / Eleventh Street Intersection: This crossing is located at the east leg of the MacArthur Drive / Eleventh Street intersection. The at-grade crossing consists of a single track with 4 vehicle travel lanes. The crossing coordinated with the MacArthur Drive / Eleventh Street traffic signal. Vehicle crossing is controlled by gate controls and flashing warning lights.
14. West Lenne Road, east of MacArthur Drive: This crossing is located approximately 700 feet from the West Lenne Road / MacArthur Drive intersection. The at-grade crossing consists of a single track with two vehicle travel lanes. The track is currently being used for storage only as a fence obstructs the track at the industrial properties to the south. There is no crossing control and only a railroad crossing sign is provided.



15. MacArthur Drive, south of Eleventh Street: This at-grade crossing consists of a two tracks with two vehicle travel lanes. Vehicle crossing is controlled by gate controls and flashing warning lights.
16. Chrisman Road, north of Schulte Road: This crossing is located approximately 60 feet from the intersection of Chrisman Road and Schulte Road. This at-grade crossing consists of a single track with two vehicle travel lanes. Vehicle crossing is controlled by gate controls and flashing warning lights.



17. Chrisman Avenue, north of Linne Road: This at-grade crossing consists of two tracks with two vehicle travel lanes. Vehicle crossing is controlled by gate controls and flashing warning lights.
18. Banta Road, north of Linne Road: This at-grade crossing consists of a single track with two vehicle travel lanes. Vehicle crossing is controlled by gate controls and flashing warning lights.
19. Grant Line Road, east of Seventh Street: This crossing is located approximately 450 feet from the intersection of Grant Line Road and Seventh Street. This at-grade crossing consists of a single track with two vehicle travel lanes. Vehicle crossing is controlled by gate controls and flashing warning lights.
20. Schutle Road between Corral Hollow Road and Tracy Boulevard: This at-

grade crossing consists of a single track with four vehicle travel lanes. Vehicle crossing is controlled by gate controls and flashing warning lights.

2.3.9 BRIDGES AND CULVERT FACILITIES



The City of Tracy has several creeks, canals, and a system of aqueducts that run throughout the City. Major waterways include the Delta Mendota Canal and California Aqueduct running parallel to each other to the southwest of Tracy. Several smaller channels run throughout the City providing irrigation and collecting runoff that drains into the California Aqueduct system.

Interstate 205 has 10 over/under crossings along its stretch through the City of Tracy. These locations include;

- I-205 / Mountain Houseparkway
- 1-205 / Hansen Road
- I-205 / Eleventh Street
- I-205 / Byron Road
- I-205 / Grant Line Road
- I-205 / Corral Hollow Road
- I-205 / Tracy Boulevard
- I-205 / South Holly Drive
- I-205 / MacArthur Drive
- I-205 / Paradise Avenue



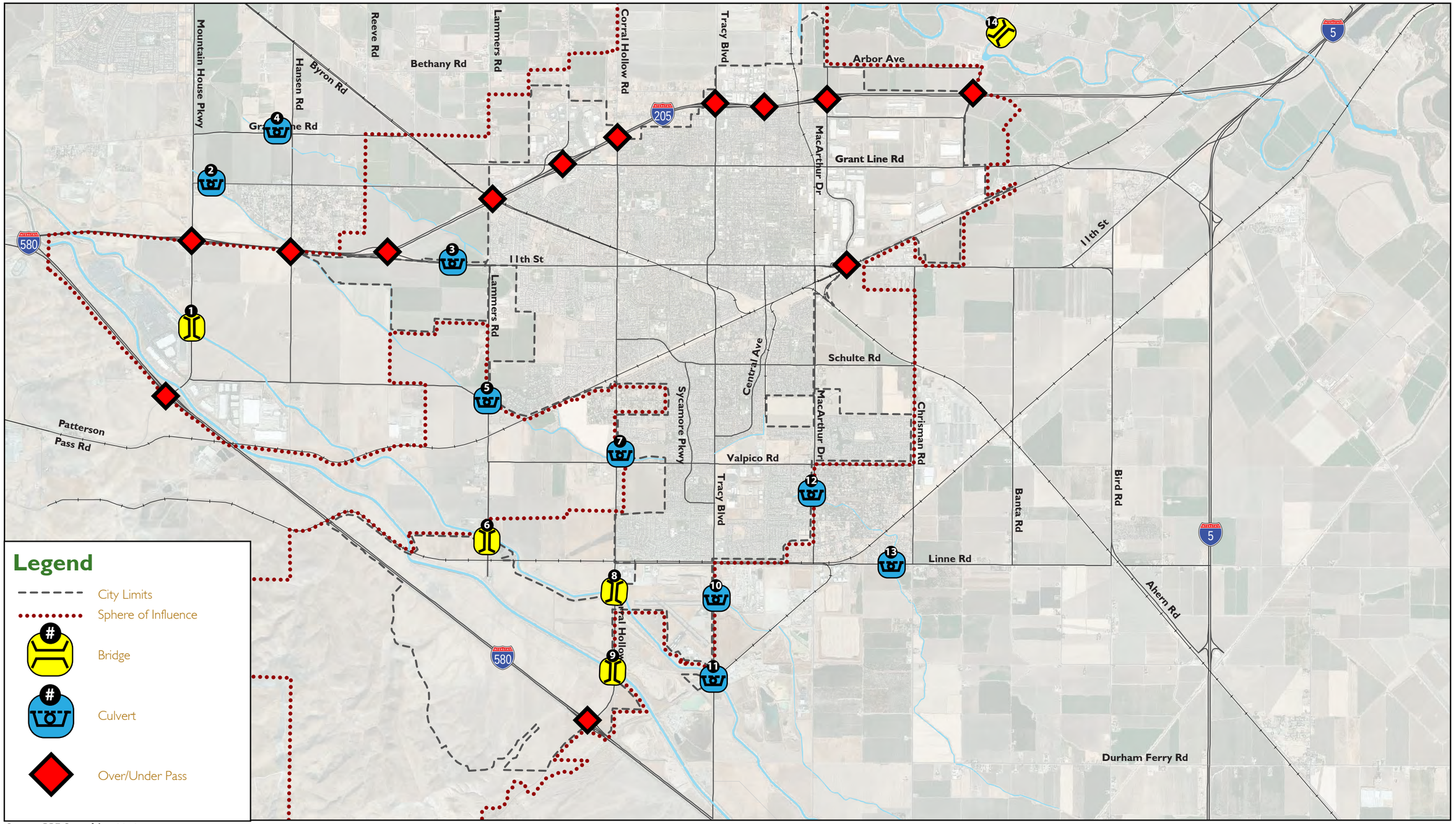
The City's bridge system consists of a network of 14 bridges and culverts that provide transportation access over these waterways. The City of Tracy bridge type and locations are shown in **Figure 2.10** and are described in detail below:

1. Mountain House Parkway, north of Schulte Road: This bridge provides access across the California Aqueduct and is approximately 200 feet long consisting of two travel lanes with concrete and steel barriers. The posted speed limit on this bridge is 45 MPH.



2. Von Sosten Road, east of Mountain House Parkway: This culvert provides access across a drainage canal and is approximately 80 feet long consisting of two travel lanes. The posted speed limit on this culvert is 35 MPH.
3. Von Sosten Road, east of Grunauer Road: This culvert provides access across a drainage canal and is approximately 60 feet long consisting of two travel lanes. The posted speed limit on this culvert is 35 MPH.
4. Grant Line Road, east of Mountain House Parkway: This culvert provides access across a drainage canal and is approximately 80 feet long consisting

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Source: RBF Consulting 2010

North

Miles (Approximate)

0 0.5 1 2

Figure 2.10: Existing Bridges and Culverts

City of Tracy Transportation Master Plan

of two travel lanes. The posted speed limit on this culvert is 35 MPH.

5. Lammers Road, south of West Schulte Road: This culvert provides access across a drainage canal and is approximately 50 feet long consisting of two travel lanes. The posted speed limit on this culvert is 35 MPH.
6. Lammers Road, south of Valpico Road: This bridge provides access across the Delta Mendota Canal and is approximately 110 feet long consisting of two travel lanes with steel barriers along each side. The posted speed limit on this bridge is 45 MPH.



7. Corral Hollow Road, north of Valpico Road: This culvert provides access across a drainage canal and is approximately 35 feet long consisting of two travel lanes. The posted speed limit on this culvert is 45 MPH.
8. Corral Hollow Road, south of Linne Road: This bridge provides access across the Delta Mendota Canal and is approximately 115 feet long consisting of two travel lanes with steel barriers along each side. The posted speed limit on this bridge is 45 MPH.
9. Corral Hollow Road, north of I-580: This bridge provides access across the California Aqueduct and is approximately 175 feet long consisting of two travel lanes with steel barriers along each side. The posted speed limit on this bridge is 45 MPH.
10. Tracy Boulevard, south of Linne Road: This small culvert provides access across a drainage ditch and is approximately 20 feet long consisting of two travel lanes. There is no posted speed limit across this culvert.



11. South Tracy Boulevard, south of the Tracy Municipal Airport Driveway: This culvert provides access across the Delta Mendota Canal and is approximately 200 feet long consisting of two travel lanes. There is no posted speed limit across this culvert. The culvert is approximately 200 feet wide across the aqueduct and does not have side barriers.
12. MacArthur Drive, south of Etcheverry Drive: This culvert provides access across a drainage ditch and is approximately 30 feet long consisting of two travel lanes. There is a small metal barrier on the east side and concrete barrier on the west side of the culvert crossing.
13. Linne Road, west of Chrisman Avenue: This culvert provides access across a drainage canal and is approximately 25 feet long consisting of two travel lanes. There is a low-lying concrete barrier on each side of the culvert crossing. The posted speed limit across the culvert is 45 MPH.
14. Paradise Avenue, north of Arbor Avenue: This bridge provides across the Tom Paine Slough to the north of the City and is approximately 150 feet long and consists of two travel ways with metal barriers on each side.

2.3.10 INTELLIGENT TRANPORTATION SYSTEMS (ITS)

Intelligent Transportation Systems (ITS) are transportation networks that include information and communication technologies that are designed to improve the safety and operation of the transportation infrastructure. There are numerous types of ITS systems that range from simple variable message signs to more advanced real time vehicle parking guidance systems.

2.3.10.1 EXISTING SYSTEM INVENTORY AND EVALUATION

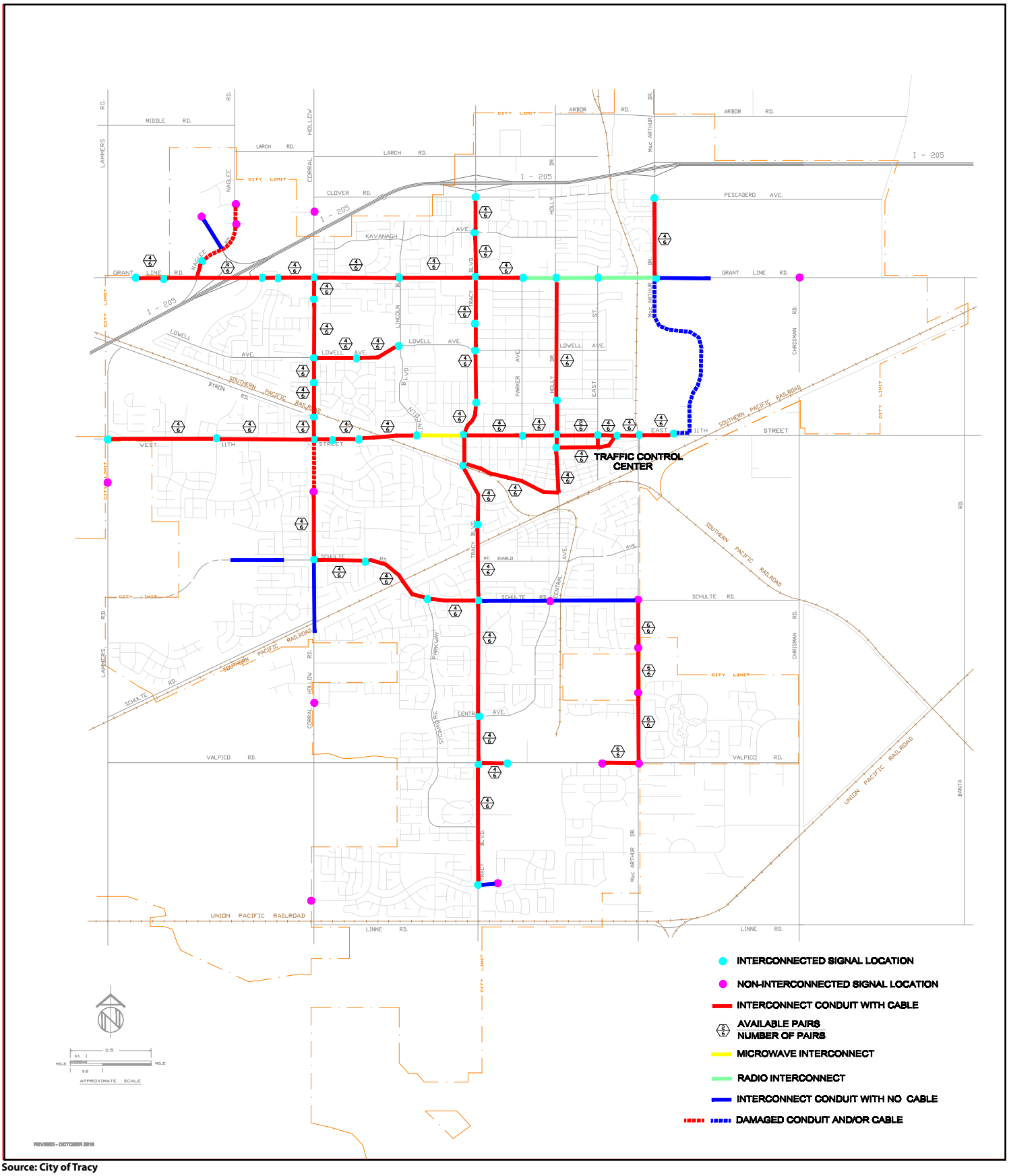
An inventory of the City of Tracy's existing traffic signal equipment, communications equipment, communications alignment was conducted.

There are sixty-five (65) signalized intersections within the City of Tracy that are operating via Model 170 traffic signal controllers located inside Type 332 cabinets at each local intersection. The traffic signal controllers are managed by Quicknet traffic management control and software system.

The City of Tracy's existing traffic signal communication infrastructure (citywide) primarily consists of twisted pair copper wire signal interconnect cable and conduit that interconnect the existing traffic signals. At designated roadway segments communications are provided over microwave and/or radio communications.

Figure 2.11 illustrates the City of Tracy's existing traffic signal locations and communication system infrastructure.

It should be noted that ITS systems have been discussed during community workshops for the Emerald Tracy program. The discussions included topics such as, continuing to implement a comprehensive signal coordination program, install adaptive traffic controls, synchronized signals, transit and emergency signal priority, and other traffic flow management techniques.



Source: City of Tracy

RBF CONSULTING

North

Figure 2.11: Existing Interconnect Master Plan

2.3.11 TRANSIT FACILITIES

Transit plays an important role for many commuters in Tracy. Tracy isalso a connection point for regional transit trips to and from the Bay area and connect transit services to the Central Valley. The public transit system includes both bus and rail components. The City is serviced by the following public transportation services:

- Local fixed-route and commuter bus services operated by the City (TRACER)
- Regional intercity fixed-route bus service operated by the San Joaquin Regional Transit District (RTD)
- County Hopper Service operated by RTD
- Commuter express bus service operated by RTD
- Altamont Commuter Express (ACE) rail service

Figure **Figure 2.12** displays existing bus transit system within the City of Tracy.

2.3.11.1 LOCAL FIXED-ROUTE BUS SERVICE (TRACER)

Fixed-route services run on a set route and time with fixed stops. TRACER offers five fixed bus routes, Routes A-E. Routes A, B and C run Monday through Friday from approximately 7:00 AM to 7:00 PM and Saturday from 9:00 AM to 5:00 PM. Routes D and E run only on weekdays when school is in session. TRACER does not operate on Sundays and holidays.

- Route A provides service to/from the Tracy Transit Station to West Valley Mall, and runs along East Street, MacArthur Drive, Grant Line Road, Tracy Boulevard and Corral Hollow Road. It also provides services to other major destinations within the City including Prime Outlets, Civic Center and West Valley Mall. It operates between 7:00 AM to 7:50 PM on weekdays and between 9:15 AM to 5:10 PM on Saturdays. Headways range between 30 to 90 minutes.
- Route B also provides service to/from the Tracy Transit Station to West Valley Mall, and runs along Holly Drive, Eaton Avenue, Tracy Boulevard, Lowell Avenue, Corral Hollow Road, Grant Line Road and Naglee Road. Major destinations served along this route include Sutter Tracy Community Hospital, Civic Center, Walmart and West Valley Mall. It operates between 7:00 AM to 6:55 PM on weekdays, and between 9:00 AM to 4:55 PM on Saturday. This service is provided with 60-minute headways during the weekdays and Saturdays.
- Route C provides service to/from the Tracy Transit Station to south Tracy residential area, along 10th Street, Eleventh Street, Corral Hollow Road, Schulte Road, Tracy Boulevard and Central Avenue. Major destinations served along this route include Civic Center, U.S. Post Office, Williams Middle School and SaveMart. It operates between 7:00 AM to 6:50 PM on weekdays, and between 9:00 AM to 4:50 PM on Saturday. This service is

provided with approximately 60-minute headways on both weekdays and Saturday.

- Route D and Route E are commuter routes and provide service only on weekdays. These routes provide a clockwise and counterclockwise loop around the City limits and run along East Street, Holly Drive, Kavanagh Avenue, Tracy Boulevard, Lowell Avenue, Corral Hollow Road, Schulte Road, Sycamore Parkway and Central Avenue. Major destinations served along these routes include Civic Center, library, elementary, middle and high schools in Tracy, and Tracy Sports Complex. Routes D/E makes two runs in the morning and two runs in the afternoon.

2.3.11.2 REGIONAL INTERCITY FIXED-ROUTE BUS SERVICE

The RTD operates one fixed-route bus line (Route 27) that connects the City to Stockton via Lathrop. Route 27 runs along Grant Line Road and East Street within Tracy. Major destinations served along this route include Civic Center and Tracy Transit Station. It operates between 5:30 AM to 7:37 PM on weekdays with six eastbound (Tracy to Manteca) runs and 4 westbound (Manteca to Tracy) runs.

2.3.11.3 COUNTY HOPPER SERVICE

The RTD County Hopper (Route 90) is a deviated fixed-route bus service connecting Stockton, Tracy, Lodi, Manteca, Ripon and Lathrop. The Hopper replaces RTD Countywide General Public Dial-A-Ride (DAR) services during Hopper service hours in the areas covered by the Hopper service. Within the City, this route runs along Grant Line Road with stops at major locations such as Wal-Mart. Route 90 operates Monday through Friday between 5:30 AM and 11:00 PM on weekdays with eight eastbound Tracy to Manteca) runs and nine westbound (Manteca to Tracy) runs.

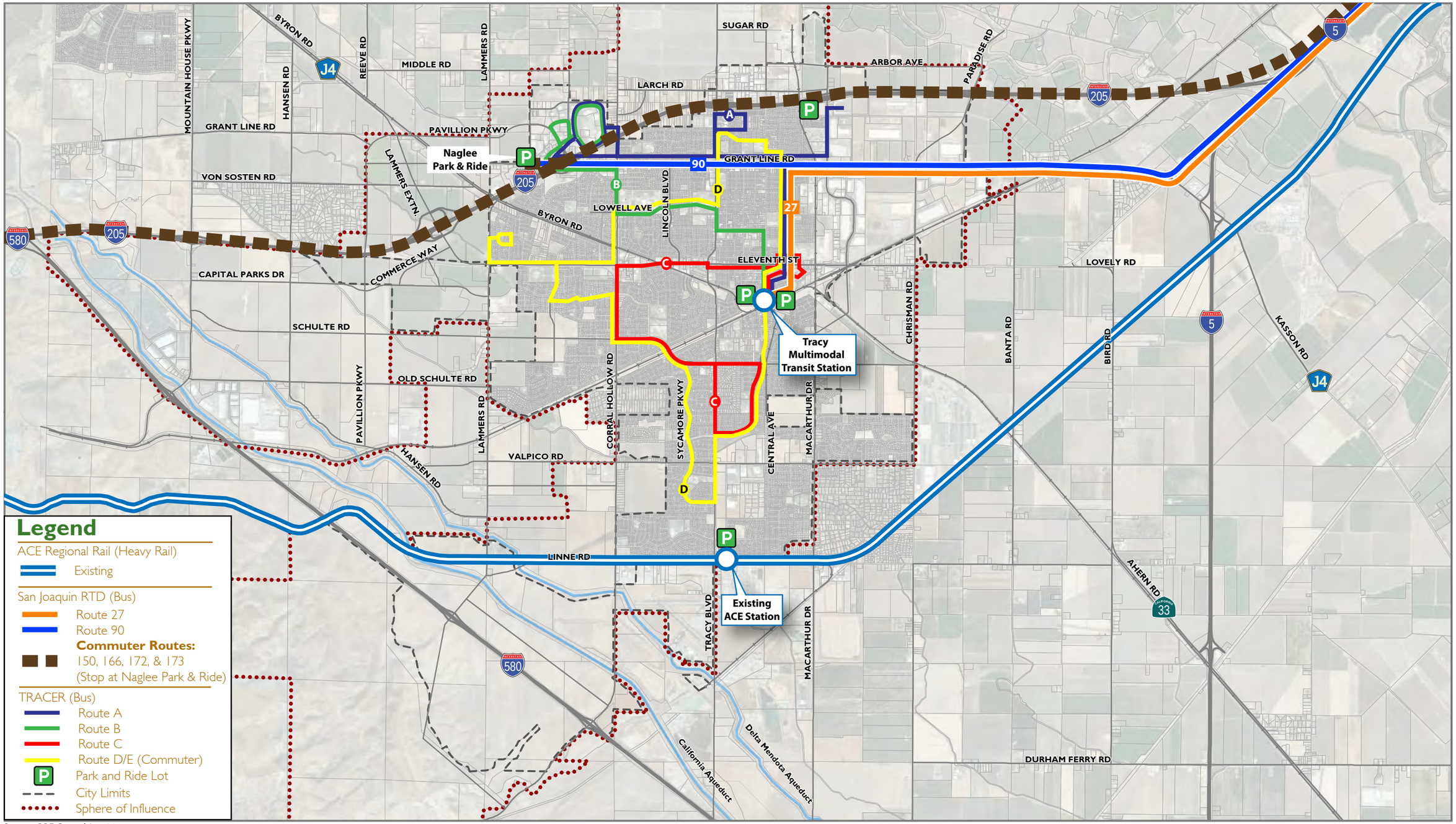
2.3.11.4 RTD COMMUTER BUS SERVICE

San Joaquin Commuter provides several inter-regional bus services from Naglee Road Park & Ride lot to the East Bay and South Bay, Monday through Friday, during commute hours. Route 150 consists of two feeder buses, one from Stockton and one from Manteca, that both meet at the Naglee Park and Ride Lot and then travels to the Dublin/Pleasanton BART station. Routes 166 and 172 provide service from Stockton, Lathrop, Manteca, and Tracy to Lockheed Martin in Sunnyvale. Route 173 provides service between Northrup Grumman in Sunnyvale to Stockton, Manteca, and Tracy. These commuter routes make a limited number of runs during the morning and evening periods.



2.3.11.5 ALTAMONT COMMUTER EXPRESS

ACE is a passenger rail service connecting Stockton to San Jose - http://www.acerail.com/mapsstations/tracystation.aspx. ACE operates on weekdays, excluding holidays. The ACE station in Tracy is located along Tracy Boulevard near Linne Road. ACE operates three westbound trains during the morning commute arriving in Tracy at 4:49 AM, 5:35 AM and 7:09 AM and three eastbound trains during the evening commute arriving in Tracy at 5:09 PM, 6:09 PM and 7:09 PM. ACE connects to the parallel feeder and distribution services, including RTD and TRACER in the City.



Legend

ACE Regional Rail (Heavy Rail)
- Existing

San Joaquin RTD (Bus)
- Route 27
- Route 90
- **Commuter Routes:**
  150, 166, 172, & 173
  (Stop at Naglee Park & Ride)

TRACER (Bus)
- Route A
- Route B
- Route C
- Route D/E (Commuter)
- Park and Ride Lot
- City Limits
- Sphere of Influence

Source: RBF Consulting 2011

RBF CONSULTING

North

0 0.5 1 2 Miles (Approximate)

Figure 2.12: Existing Transit Service

City of Tracy Transportation Master Plan

2.4 EXISTING INTERSECTION OPERATIONS

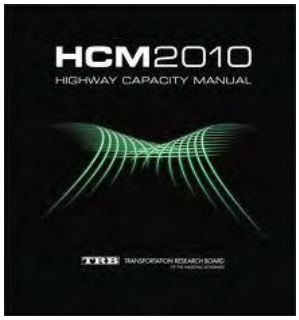
Weekday AM and PM commute peak-hour traffic operations at key intersections were analyzed to determine the existing conditions of the roadway network. The results of the analysis identify operating deficiencies in the transportation system and will be used to develop long-range planning strategies.

2.4.1 ANALYSIS METHODOGOLY

The methodologies used to perform the operational analyses and provide quantitative levels of service (LOS) were based on the *2000/2010 Highway Capacity Manual* (HCM) for unsignalized and signalized intersections. The evaluation of signalized and unsignalized intersection operations was performed using the Synchro 7.0 analysis software. These methodologies are consistent with City standards for traffic analysis.

2.4.2 HIGHWAY CAPACITY MANUAL

Traffic flow operations based on the HCM methodology at intersections were evaluated using a LOS concept. The LOS concept uses a grading scale of "LOS A" through "LOS F" with "LOS A" representing free flowing conditions and "LOS F" representing forced flow conditions.



Factors used in determining intersection LOS vary depending on the control device at the intersection. For all-way stop intersections, average delay per vehicle is used to define the LOS of the intersection operation. The average delay is determined based on the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand.

For side-street stop controlled intersections, the operating efficiency of vehicle movements is analyzed. Vehicles on minor street approaches must yield to the through movements of the major streets. The LOS for stopped/yielding vehicles is based on the distribution of gaps in the traffic stream along the major street and driver judgment on the minor street approach in selecting gaps. The LOS reported includes both the overall or average value at the intersection for all movements and also the worst approach of the minor street stopped vehicles.

The HCM calculates the LOS of the minor street approaches and the overall intersection LOS based on this data. It should be noted that both the overall intersection LOS and the minor approach LOS are provided in this EIR. This is because traffic on the minor street approaches has the lowest priority of right-of-way at the intersection and, therefore, is the most critical in terms of delay. The threshold for each LOS grade is provided in **Table 2.2** (HCM Level of Service Criteria for Unsignalized Intersections).

Table 2.2: HCM Level of Service Criteria for Unsignalized Intersections

Level of Service	Description	Control Delay (seconds/vehicle)
A	Intersections operating at LOS A contain no congestion. The intersection operates with very little delay, from 0 to 10 seconds per vehicle.	0 – 10
B	Intersections operating at LOS B contain very little congestion. The intersection operates with minimal delay, from 10 to 15 seconds per vehicle.	>10 – 15
C	Intersections operating at LOS C contain little congestion. The intersection operates with some delay, from 15 to 25 seconds per vehicle.	>15 – 25
D	Intersections operating at LOS D contain some congestion. The intersection operates with longer delays, from 25 to 35 seconds per vehicle.	>25 – 35
E	Intersections operating at LOS E border on being congested. The intersection operates with delays from 35 to 50 seconds per vehicle.	>35 – 50
F	Intersections operating at LOS F contain congestion. The intersection operates with delays over 50 seconds.	>50
Source: *Highway Capacity Manual*, (2000 /2010), Chapter 17, Unsignalized Intersections, p. 17-2 and p. 17-22.		

For signalized intersections, average control delay per vehicle is utilized to define intersection LOS. Delay is dependent on a number of factors including the signal cycle length, the roadway capacity (number of travel lanes) provided on each intersection approach and the traffic demand. The threshold for each LOS grade is provided in **Table 2.3** (HCM Level of Service Criteria for Signalized Intersections).

Table 2.3: HCM Level of Service Criteria for Signalized Intersections

Level of Service	Description	Control Delay (seconds/vehicle)
A	Intersections operating at LOS A contain no congestion. The intersection operates with very little delay, from 0 to 10 seconds per vehicle.	0 – 10
B	Intersections operating at LOS B contain very little congestion. The intersection operates with minimal delay, from 10 to 20 seconds per	>10 – 20
C	Intersections operating at LOS C contain little congestion. The intersection operates with some delay, from 20 to 35 seconds per vehicle.	>20 – 35
D	Intersections operating at LOS D contain some congestion. The intersection operates with longer delays, from 35 to 55 seconds per vehicle.	>35 – 55
E	Intersections operating at LOS E border on being congested. The intersection operates with delays from 55 to 80 seconds per vehicle.	>55 – 80
F	Intersections operating at LOS F contain congestion. The intersection operates with delays over 80 seconds.	>80
Source: *Highway Capacity Manual*, (2000/2010), Chapter 16, Signalized Intersections, p. 16-2.		

2.4.3 LEVEL OF SERVICE STANDARDS

The City of Tracy has established LOS D, where feasible, as the minimum acceptable LOS for roadway and overall intersection operations. However, there are certain locations where these standards do not apply. The following provides a list and description of exceptions to the LOS standard of LOS D.

- Within ¼ mile of any freeway, LOS E shall be allowed on roadways and at intersections to discourage inter-regional traffic from using City streets.
- In the Downtown and Bowtie area of Tracy LOS E, shall be allowed.
- At intersections where construction of improvements is not feasible, the LOS may fall below the City's LOS D standard.
- During construction of intersection improvements or funded but not yet constructed, the LOS may temporarily fall below the City's LOS D standard.

The Caltrans standard for level of service is the LOS C/D threshold in which LOS

C is acceptable in all cases and LOS D is acceptable on a case-by-case basis.

The county of San Joaquin has established LOS D as the minimum acceptable LOS for roadway and intersection operations.

2.4.4 EXISTING LEVELS OF SERVICE

Weekday AM and PM peak-hour traffic counts were conducted primarily in 2003 with a few locations counted in 2002. Intersections 12, 13, 16, 17, 18, 20, 21, 23, 28, and 46 were not included in the 2004 General Plan and subsequently were not counted in 2002 or 2003, but rather in 2009.

The Synchro software program was utilized to conduct weekday Existing AM and PM peak hour level of service calculations at each study intersection. The LOS results are listed in **Table 2.4** below and are shown graphically on **Figure 2.13**. All intersections operate at an acceptable LOS during the existing weekday AM and PM peak hours except for the following intersections.

- Corral Hollow Road/Eleventh Street
- MacArthur Drive/Shulte Road
- MacArthur Drive/Valpico Road
- Byron Road/Grant Line Road

The Synchro output calculations are provided in **Appendix B.**

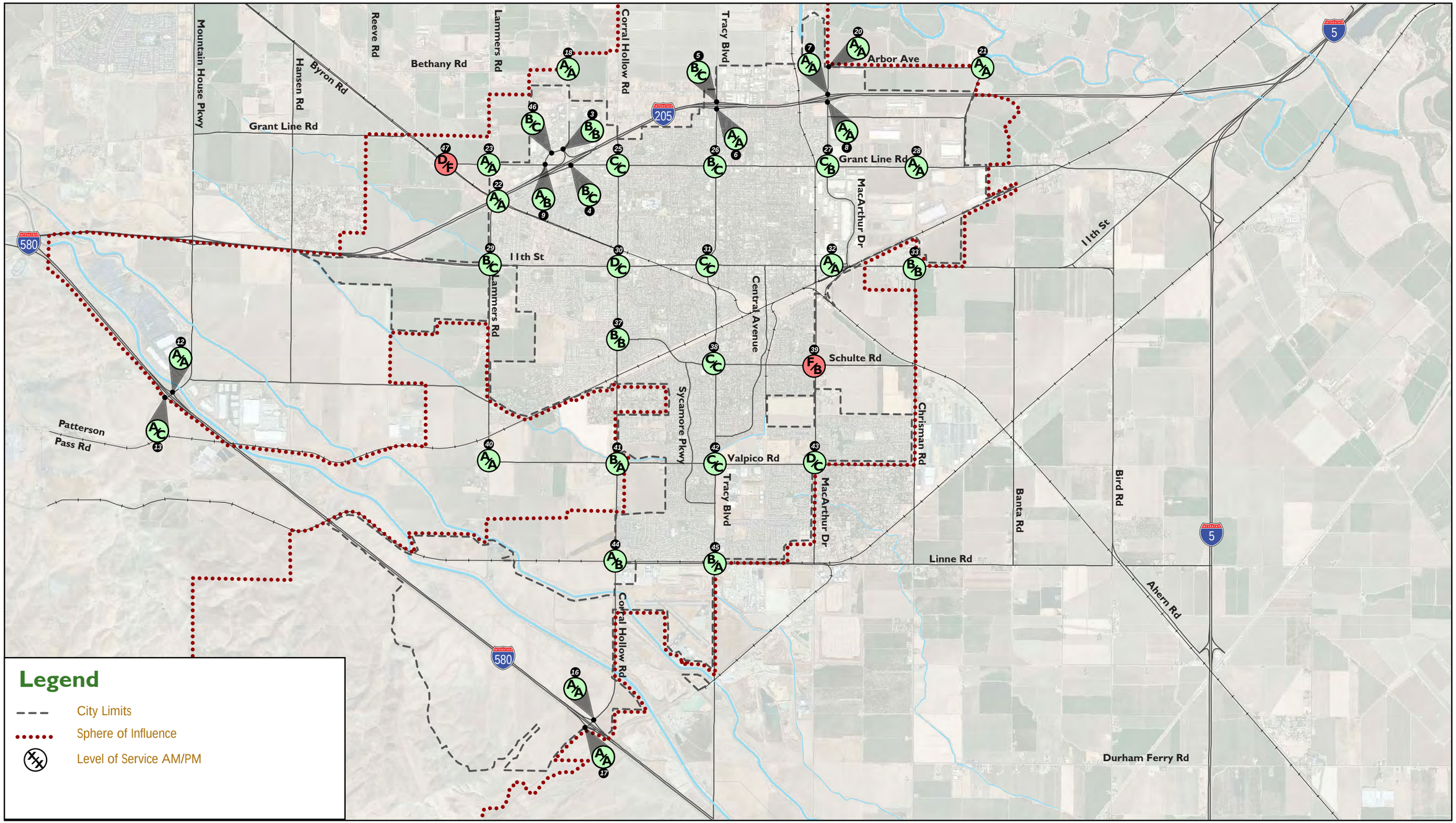
Table 2.4: Existing Intersection Level of Service

Number	Intersection	Control Type	Delay		LOS	
			AM	PM	AM	PM
3	I-205 WB Ramps/Naglee Road	Signal	13	14	B	B
4	I-205 EB Ramps/Grant Line Road	Signal	11	20	B	C
5	I-205 WB Ramps/Tracy Boulevard	Signal	14	23	B	C
6	I-205 EB Ramps/Tracy Boulevard	Signal	8	10	A	A
7	I-205 WB Ramps/MacArthur Drive	Signal	8	8	A	A
8	I-205 EB Ramps/MacArthur Drive	Signal	6	5	A	A
9	Naglee Road (I-205 WB Ramps) /Grant Line Road	Signal	8	12	A	B
12	I-580 WB Ramps/Mountain House Parkway	SSS	5	2	A	A
13	I-580 EB Ramps/Patterson Pass Road	SSS	3	30	A	C
16	I-580 WB Ramps/Corral Hollow Road	SSS	7	2	A	A

Number	Intersection	Control Type	Delay		LOS	
			AM	PM	AM	PM
17	I-580 EB Ramps/Corral Hollow Road	SSS	3	6	A	A
18	Naglee Road/Middle Road	SSS	5	5	A	A
20	MacArthur Drive/Arbor Avenue	AWS	8	8	A	A
21	Paradise Road / Arbor Avenue	SSS	3	3	A	A
22	Lammers Road/Byron Road	AWS	10	13	A	A
23	Lammers Road/Grant Line Road	SSS	1	6	A	A
25	Corral Hollow Road/Grant Line Road	Signal	22	34	C	C
26	Tracy Boulevard/Grant Line Road	Signal	19	35	B	C
27	MacArthur Drive/Grant Line Road	Signal	22	20	C	B
28	Chrisman Avenue/Grant Line Road	Signal	10	10	A	A
29	Lammers Road/Eleventh Street	Signal	17	21	B	C
30	Corral Hollow Road/Eleventh Street	Signal	40	33	D	C
31	Tracy Boulevard/Eleventh Street	Signal	23	29	C	C
32	MacArthur Drive/Eleventh Street (North)	Signal	6	6	A	A
33	Chrisman Avenue/Eleventh Street (South)	Signal	19	17	B	B
37	Corral Hollow Road/Shulte Road	Signal	20	20	B	B
38	Tracy Boulevard/Shulte Road	Signal	25	21	C	C
39	MacArthur Drive/Shulte Road	Signal	43	26	D	C
40	Lammers Road/Valpico Road	SSS	9	9	A	A
41	Corral Hollow Road//Valpico Road	AWS	14	12	B	A
42	Tracy Boulevard/Valpico Road	AWS	16	16	C	C
43	MacArthur Drive/Valpico Road	Signal	40	22	D	C
44	Corral Hollow Road/Linne Road	SSS	6	11	A	B
45	Tracy Boulevard/Linne Road	AWS	12	9	B	A
46	Naglee Road/Park and Ride	Signal	13	21	B	C
47	Byron Road/Grant Line Road	SSS	31	58	D	**F**

Note: Level of service ratings exceeding the LOS standard are highlighted in **bold** text.

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RBF CONSULTING

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Figure 2.13: Existing Level of Service

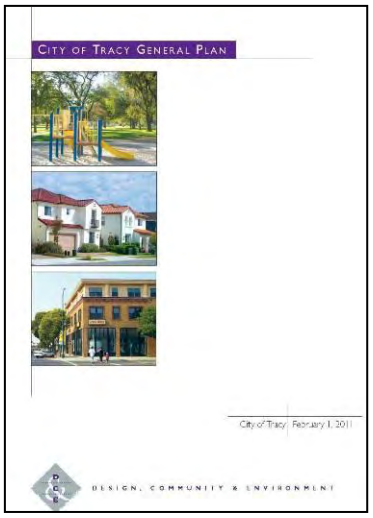
City of Tracy Transportation Master Plan

3. HORIZON YEAR FORECAST

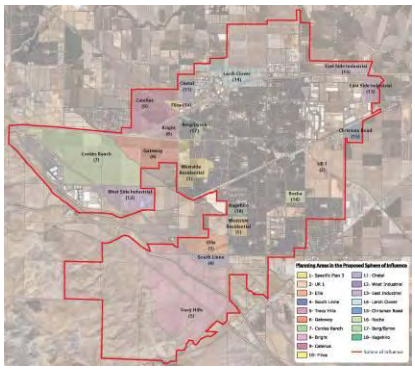
3.1 INTRODUCTION

This chapter presents the traffic forecasting methodology that was used to develop the roadway network requirements for the Tracy Transportation Master Plan (TMP). This is the first step in the process of defining the physical and operational improvements that will be needed to serve development under the Tracy *General Plan*. The resulting plan-line roadway network is based on roadway-level volume forecasts and a roadway volume-based assessment of the network's performance in Horizon Year in terms of volume-to-capacity ratios.

3.2 OVERVIEW OF TRANSPORTATION MASTER PLAN DEVELOPMENT PROCESS



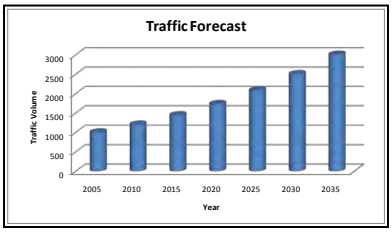
The TMP will guide the development of transportation infrastructure and services as growth occurs under the General Plan. While the General Plan Update and EIR forecasts traffic conditions to the year 2030, the TMP looks out another five years, to Horizon Year, in order to provide the maximum possible infrastructure planning. The Horizon Year was chosen because it is practically possible to estimate Tracy land use growth patterns to that year, and because the San Joaquin Council of Governments is planning to update its travel demand model to the year 2035. Note that neither the 2030 nor the Horizon Year forecasts represent full build-out of all the development capacity in the General Plan areas, but rather the residential and non-residential growth that is expected under the growth management ordinance (for residential uses) and based on market trends (for non-residential uses). The TMP development steps for developing the Horizon Year travel demand model volumes are listed below; this chapter documents the results of step 3.



1. Prepare the Tracy Travel Demand Model to project conditions to Horizon Year, including the addition of a component that can model the effect of sustainable land use and transportation strategies (the "Ds")
2. Obtain Horizon Year and build-out land uses for each future service in the General Plan Update from the City
3. Develop Horizon Year and build-out plan-line roadway networks (classification and number of lanes), based on the model link volume forecasts, incorporating the effects of the sustainability strategies
4. Develop Horizon Year detailed intersection forecasts at the 65 TMP Tier 1 intersections.

3.3 TRAFFIC FORECASTING METHODOLOGY

This section gives an overview of the Tracy Travel Demand Model, including the current validation years in use (2004 and 2006), the preparation of the Horizon Year and Build-Out models, and the incorporation of a new model component to assess the effects of sustainability strategies on vehicle trip generation and VMT. **Section 3.4** describes the land uses and trip generation assumed within the Tracy Sphere of Influence (SOI), for the Horizon Year and Build-Out scenarios.



As discussed later in this chapter, the Build-Out scenario reflects a time horizon that is well beyond Horizon Year Conditions and contains speculative assumptions regarding land uses and development.

3.3.1 TRACY TRAVEL DEMAND MODEL VALIDATION YEARS

The Tracy Travel Demand Model was developed by Fehr & Peers and has been updated and re-validated several times. It underwent a full validation to 2004 conditions, as described in Fehr & Peers' Technical Memorandum, *Tracy Citywide Model Documentation* (March 27, 2006). In late 2009, the model was validated to 2006 conditions to support the development of baseline transportation information (vehicle trips and vehicle-miles traveled) for the *Sustainability Action Plan* (SAP). The year 2006 was chosen for the SAP baseline year because it is the most recent year for which the City has comprehensive input data for the greenhouse gas baseline calculations. Fehr & Peers Technical Memorandum, *Tracy Sustainability Plan Transportation Inputs* (January 22, 2010) describes the 2006 validation.



Table 3.1 shows the 2004 and 2006 employment and housing totals for the 2004 and 2006 models, within the Tracy SOI boundary. The 2006 land uses were developed by adding all approved, constructed and occupied projects to the 2004 land use data set, using a list compiled by City staff.

It is important to note that 2004 remains the Setting (i.e., baseline year) for the General Plan Update EIR and the Transportation Master Plan/EIR, even though the SAP's baseline year is 2006. However, for purposes of forecasting the TMP's future (Horizon Year and Build-Out) conditions, Fehr & Peers is using the 2006 validated model, because it is the most recent validation available.

Table 3.1: Land uses in the Tracy Travel Demand Model: 2004 and 2006

Scenario	SF	MF	SF+MF	Retail	Service	Other	Total Employment
2004 Validation	18,578	6,594	25,172	3,512	9,298	10,850	23,660
2006 Validation	20,195	6,594	26,789	3,610	9,644	10,850	24,104

1. Residential (SF and MF) is presented in units of dwelling units
2. Non-residential is presented in units of employees
Source: Fehr & Peers, March 2010.

3.3.2 HORIZON YEAR – EXTRAPOLATION FROM GENERAL PLAN 2030 CASE

The Horizon Year model was developed by beginning with the 2030 network and land uses that were developed for the General Plan Update EIR, and adjusting the land uses in the 18 future services to represent reasonable expectations for development to Horizon Year. The land use assumptions were derived from the General Plan by City staff. The model was run iteratively, testing network adjustments (adding new connections and widening roadways where needed) with the goal of achieving volume-to-capacity ratios under 1.0, and ideally under 0.9 where the capacity of roadways is as defined in the Tracy General Plan. This process represents an initial screening of network adjustments. The intersection level analysis determined the necessity of infrastructure improvements. The land use growth within the Tracy SOI for this scenario is discussed in **Section 3.4**. The land uses outside the Tracy SOI were retained at the 2030 levels.

3.3.3 BUILD OUT – LONG RANGE FORECAST

The Build-Out model was developed as described for Horizon Year, but using the full build-out potential for all 18 future services. The land use growth within the Tracy SOI at build-out is discussed in **Section 3.4**. The land uses outside the Tracy SOI, which includes the following regions/counties of San Joaquin, Bay Area, Stanislaus, Mountains/Foothills (Amador/Calaveras/Tuolumne), and SACOG regions, were factored up to represent 2050 levels, using Department of Finance population and employment projections. This was done to bring the regional land uses closer to the actual build-out horizon for Tracy, which based on the land uses, is well beyond the year Horizon Year. The land uses for Horizon Year and 2050, outside the Tracy SOI, are shown in **Table 3.2**.

As indicated earlier, the Build-Out scenario reflects a time horizon that is well beyond Year Horizon Year Conditions and contains speculative assumptions regarding land uses and development. Thus, the recommendations in the TMP are based upon the Horizon Year scenario.

Table 3.2: Land uses outside Tracy SOI: Horizon Year and 2050

Scenario	SF	MF	SF+MF	Retail	Service	Other	Total Employment
Horizon Year	3,164	1,573	4,737	1,123	2,944	3,005	7,072
2050	3,829	1,830	5,659	1,375	3,505	3,567	8,447

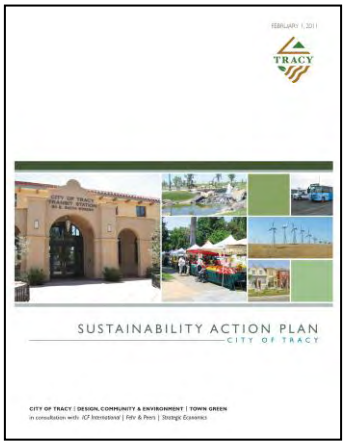
1. Residential (SF and MF) is presented in thousands of dwelling units

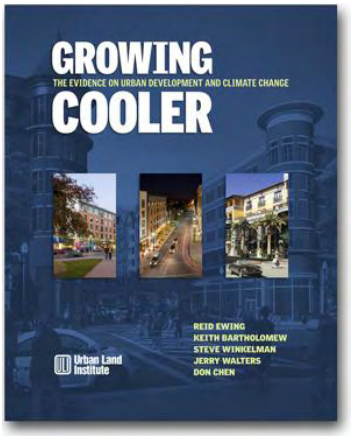
2. Non-residential is presented in units of thousands of employees

3. Horizon Year data is extrapolated from 2030 Tracy Travel Demand Model. 2050 data is taken from California Department of Finance projections.

Source: Fehr & Peers, March 2010.

3.3.4 SUSTAINABILITY STRATEGIES ASSESSMENT





Fehr & Peers developed a new component of the Tracy Travel Demand Model that allows the model to more accurately reflect the benefits of the sustainability strategies being developed for the SAP and the TMP. The 4D's adjustments, named for the variables of land use Density, Diversity, Design, and access to regional Destinations that affect vehicle trip generation and internalization, are based on nationally validated elasticities as documented in the publication *Index 4D Method: A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes* (U.S. EPA/Criterion/Fehr & Peers, October 2001). The adjustments allow the travel demand model trip generation to reflect the reductions that can be achieved when the land use reflects an increase in smart growth characteristics (denser, more diverse, designed with more connectivity, or in a location with good access to regional destinations) compared to the typical development in a given area, such as a new future service. The model was also adjusted to allow the benefits of the other sustainability strategies developed for the SAP to be quantified. **Appendix C** contains a more detailed description of these model adjustments.

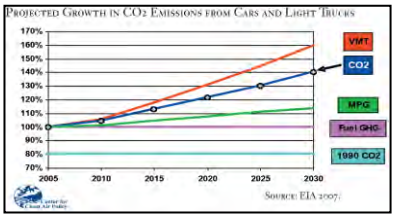
The strategies are shown in **Table 3.3**, along with the VMT reductions on a daily basis in 2020 for each strategy. A more detailed discussion of the SAP strategies is presented in Appendix B of Fehr & Peers' Technical Memorandum, *Tracy Sustainability Plan* (SAP) – 2020 VMT and GHG Estimates (January 29, 2010). The VMT reductions shown in **Table 3.3** come from a combination of reduced trip generation, reduced trip lengths, and fuel efficiency improvements. The Horizon Year traffic volume projections discussed in the next section incorporate the same strategies as analyzed for 2020 for the SAP, and reflect corresponding reductions in vehicle trips and VMT.

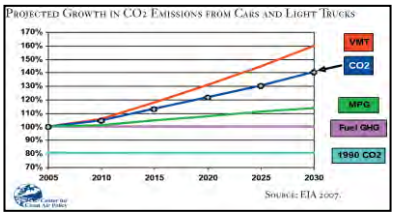
Table 3.3: Reduction Summary – Daily VMT in 2020

Measure	VMT Reduction per day in 2020	GHG (metric tons CO2) Reduction per day in 2020
Density	4,463	2.31
Diversity	21,415	11.09
Design	76,089	39.39
Charge for Downtown Parking	825	0.4
Bicycle Amenities	799	0.38
Park and Ride Lot Master Plan	1,189	0.62
Car-Sharing	9,368	4.55
Inter-City Bus Coordination	258	0.14
ACE Altamont Route Upgrades	5,827	3.14
Parking Cash-Out	718	0.37
Low-Carbon Fuel[1]	-	32.75
Expand Local Bus Service	7,053	3.42
Congestion Relief	-	1.85
School Programs	3,016	1.45
Remote Offices	1,140	0.61
Transit Subsidy	1,570	0.8
Live/Work Units	3,537	0.8
TOTAL	137,267	104.07

1. This GHG reduction is assumed in all of the 2020 scenarios to reflect planned county-wide improvements in fleet and fuels

Source: Fehr & Peers, January 2010.





3.4 TMP LAND USE AND TRIP GENERATION

3.4.1 LAND USE ASSUMPTIONS – HORIZON YEAR AND BUILD OUT

The Horizon Year development assumptions were derived from the General Plan by City staff, with the Growth Management Ordinance controlling total residential growth, and recent development trends guiding the estimation of non-residential growth. City staff allocated the growth to the various future services shown in **Figure 3.1** based on a combination of considerations, including how advanced each area is in the entitlement process, existing or expected conditions of approval, and anticipated environmental or jurisdictional constraints.

Build-out development assumptions were also provided by City staff, and were developed based on consultations with each of the land owners.

Table 3.4 shows the Existing (2006), Horizon Year and Build-Out citywide land use totals. These are shown in the shaded rows, along with the 2030 General Plan (SOI Update) scenario, and the 1994 Roadway Master Plan land use assumptions, for comparative purposes.

The Horizon Year housing and employment totals represent growth of about 51 percent and 167 percent, respectively, over 2006 conditions. Relative to the 2030 General Plan SOI Update land uses, the housing grows by an additional 1,600 units, and employment grows by about 15,600 jobs.

Build-Out population and employment totals represent growth of 63 percent and 663 percent, respectively, over 2006 conditions. While the Build-Out case includes modest housing growth over Horizon Year conditions, at about 3,000 units, the employment growth is much greater, at an additional 120,000 jobs, approximately.

Table 3.4: Transportation Master Plan Land Use Assumptions Within Tracy SOI

Scenario	SF	MF	SF+MF	Retail	Service	Other	Total Employment
Existing (2006)	20,195	6,594	26,789	3,610	9,644	10,850	24,104
2030 GP SOI[1]	29,068	9,858	38,926	11,500	15,276	21,777	48,553
Horizon Year	27,229	13,297	40,506	15,091	18,751	30,340	64,182
Buildout	29,214	14,343	43,557	35,189	59,915	88,928	184,033
1994 RMP—"Development Capacities"[4]			46,300				116,000
1994 RMP – Horizon Year[4]			46,300				70,000 – 82,000[5]

1. 2030 General Plan with Updated Sphere of Influence

2. Residential (SF and MF) is presented in units of dwelling units

3. Non-residential is presented in units of employees

4. From 1994 Roadway Master Plan land use assumptions -- not including Mountain House, which adds 12,750 dus (using 3.45 pop/hhld) and 20,000 jobs

5. 90,000 total; three out of four Horizon Year scenarios included 8,000 jobs at MH; the fourth included 20,000 jobs at MH

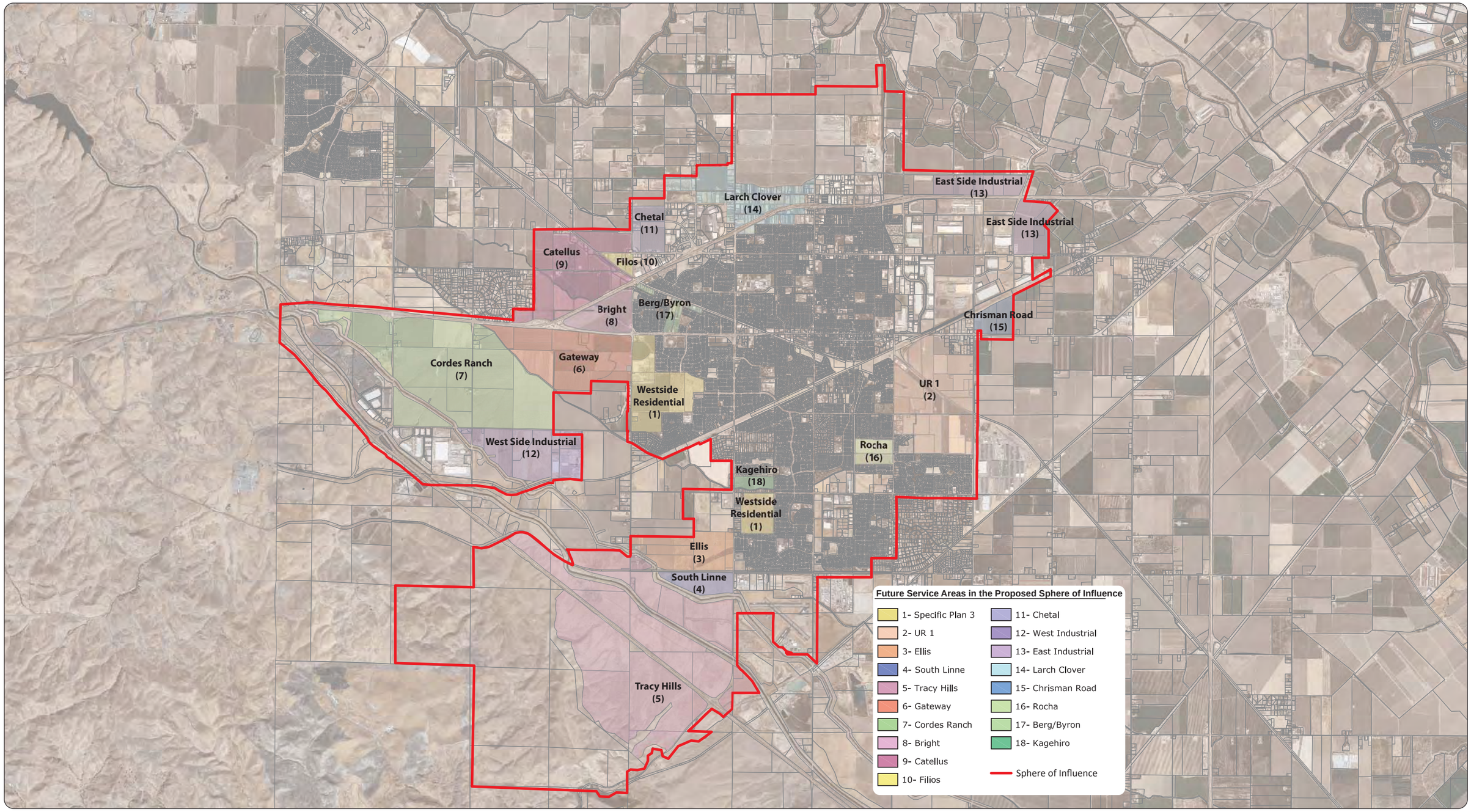
Source: Fehr & Peers, March 2010.

3.4.2 TRIP GENERATION CHARACTERISTICS

Table 3.5 shows the floor area ratios and employee densities that were used to convert raw acreages of non-residential development to employees, which is the variable the Tracy Travel Demand model uses.

Table 3.6 shows the raw vehicle trip generation rates used in the Tracy Travel Demand Model. These rates are based on local trip generation surveys, and are thus locally validated Tracy rates. The vehicle trip generation reductions discussed in **Section 3.4.3** effectively reduces the vehicle trip generation indicated by these rates, in the areas where the various sustainability strategies apply. The citywide effect of these reductions is discussed in **Section 3.4.3**.

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Figure 3.1: Tracy Future Service Areas

City of Tracy Transportation Master Plan

Table 3.5: FARs and Employment Densities

	Retail	Office	Other
Employees / KSF[1]	2	3	1
Floor Area Ratio (FAR)	0.30	0.45	0.50

1. KSF = 1,000 square feet

Source: Fehr & Peers, March 2010.

Table 3.6: Tracy Model Approximate Peak Hour Vehicle Trip Generation Rates

Lane Use Type	Units	AM Model	AM ITE	PM Model	PM ITE
Single Family	Dwelling Units	0.55	0.75	1.05	1.01
Multi Family[1]	Dwelling Units	0.31	0.51	0.59	0.62
Retail[2]	Employees	1.90	1.00	3.46	3.73
Office[3]	Employees	0.22	0.48	0.42	0.46
Other[4]	Employees	0.17	0.51	0.33	0.59

The above rates are approximate because the actual rates depend on the individual trips' origins and destinations.

Other employment is mostly comprised of industrial employment

1. Land Use Code 220 (Apartment)
2. Land Use Code 820 (Shopping Center)
3. Land Use Code 710 (General Office Building)
4. Land Use Code 150 (Warehousing)

Source: Fehr & Peers, March 2010; Tracy Travel Demand Model.

3.4.3 TRIP GENERATION REDUCTIONS DUE TO SUSTAINABILITY STRATEGIES

Table 3.7 presents the trip reductions due to the SAP transportation measures for the future services and for Tracy as a whole. The future services achieve a greater reduction in trips than Tracy as a whole because many of the SAP transportation measures address only new developments – most of which occur in the future services.

Table 3.7: Trip Reductions Due to SAP Measures – Horizon Year

Area	Trip Reduction %
Future Services	5.8%
Tracy Citywide (SOI)	4.4%
Source: Fehr & Peers, March 2010.	

3.4.4 TRIP GENERATION BY FUTURE SERVICE

Table 3.8 shows the AM and PM peak hour trip generation for each future service, at Horizon Year and Build-Out. The Horizon Year trip generation for the 18 future services represents growth of about 125 percent compared to existing citywide trip generation. Build-out trip generation for the future services represents growth of 385 percent compared to existing citywide trip generation.

In Horizon Year, the future services with the highest trip generation growth are Tracy Hills, Cordes Ranch, and Gateway, all with between 7,000 and 10,000 PM peak hour trips. Westside Residential, Bright Triangle, Catellus, and Filios all have between 3,000 and 5,000 PM peak hour trips.

At Build-Out, the Larch-Clover Planning area has the highest trip growth, at about 45,000 PM peak hour trips. Tracy Hills and Cordes Ranch have between 22,000 and 26,000 trips, Gateway has about 17,500 trips, and Bright Triangle and Catellus have 9,000 – 10,000 trips.

Table 3.8: Tracy Model Estimated Peak Hour Vehicle Trip Generation for Service Areas

Service Area	Horizon Year		Buildout	
	AM Trips	PM Trips	AM Trips	PM Trips
Service Area 1 (Westside Residential)	1,800	3,400	1,800	3,400
Service Area 2 (Urban Reserve 1)	900	1,700	1,900	3,650
Service Area 3 (Ellis)	1,150	2,150	1,150	2,150
Service Area 4 (South Linne)	0	0	450	850
Service Area 5 (Tracy Hills)	5,250	9,850	14,150	26,150
Service Area 6 (Gateway)	3,850	7,100	9,300	17,450
Service Area 7 (Cordes Ranch)	4,800	8,950	11,650	22,100

Service Area	Horizon Year		Buildout	
	AM Trips	PM Trips	AM Trips	PM Trips
Service Area 8 (Bright Triangle)	2,450	4,500	5,600	10,250
Service Area 9 (Catellus)	1,650	3,100	4,750	8,950
Service Area 10 (Filios)	1,900	3,450	1,900	3,450
Service Area 11 (I-205 Expansion)	1,550	2,850	4,500	8,150
Service Area 12 (West Side Industrial)	0	0	1,800	3,500
Service Area 13 (East Side Industrial)	0	0	1,350	2,650
Service Area 14 (Larch Clover)	1,000	1,800	24,750	45,050
Service Area 15 (Chrisman)	900	1,650	1,950	3,650
Service Area 16 (Rocha)	50	100	300	550
Service Area 17 (Berg/Byron)	100	150	200	350
Service Area 18 (Kagehiro)	150	250	150	250
Service Area Totals	27,500	51,000	87,650	162,550
Existing (2006) Citywide Total for Comparison	24,000	45,200	24,000	45,200
Source: Fehr & Peers, March 2010. Tracy Travel Demand Model.				

3.4.5 TRIP DISTRIBUTION

Table 3.9 shows the trip distribution for the City of Tracy for both the existing year (2006) and the Horizon Year scenario. The addition of jobs in the city increases the internal capture of trips, from 62 percent in 2006 to 64 percent in Horizon Year. There is still a large trip interaction with San Joaquin County because the increase in jobs attracts trips from residents in the County. However, trips between Tracy and the Bay Area drop from 13 percent in 2006 to 7 percent in Horizon Year.

Graphic plots that illustrate the model's trip assignment for each future service are included in the **Appendix D**. These plots do not represent the final trip accounting that will be used for proportional share calculations, but can be viewed as illustrative of the individual future services' trip paths and regional distribution.

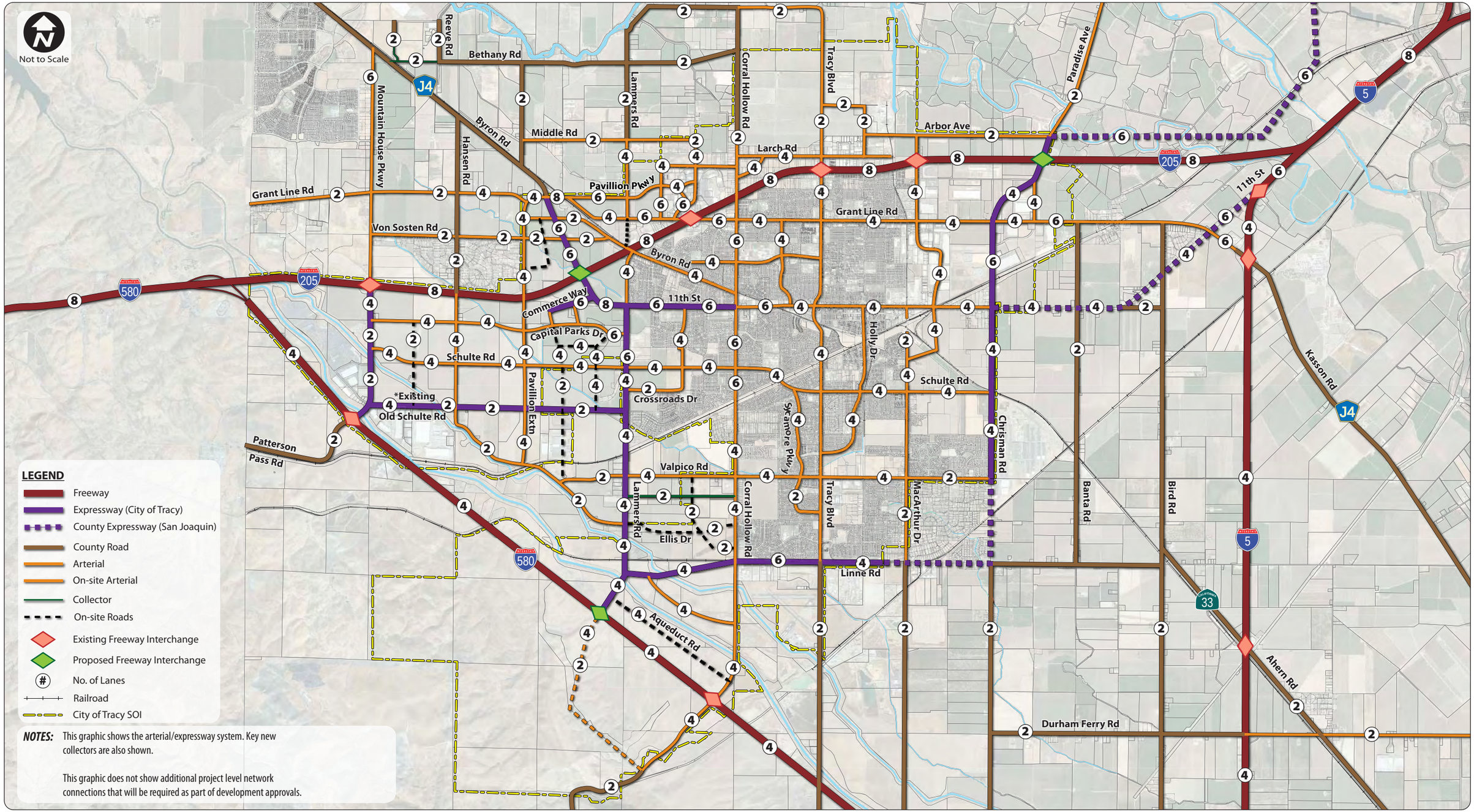
Table 3.9: Citywide Trip Distribution

	Tracy	North Valley	South Valley	Bay Area	San Joaquin County
Existing (2006)	62%	8%	3%	13%	14%
Future (Horizon Year)	64%	4%	4%	7%	21%
Source: Fehr & Peers, March 2010.					

3.5 HORIZON YEAR FORECASTS, NETWORK SIZING AND PERFORMANCE

Figure 3.2 shows the recommended Horizon Year roadway network. This network was developed in consultation with City staff and based on iterative Tracy Travel Demand Model runs, incorporating the effects of the SAP strategies. Some of the guiding principles that underlie this network are:

- Consistency with the San Joaquin County Expressways Study
- Preservation of 4-lane maximum arterial widths where possible, to promote a more walkable, bikeable environment, particularly in new areas of future development where sustainable practices can be applied in an equitable manner
- Consistency with the roadway plans in entitled project areas (Ellis Specific Plan and Gateway)



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Figure 3.2: Horizon Year Roadway Network

City of Tracy Transportation Master Plan

- Provision of maximum v/c ratios of 0.8 – 0.9 (roughly corresponding to a LOS D - E operation on a link-volume basis) to the maximum extent possible
- Provision of key roadway connections and freeway interchanges that are needed to serve substantial traffic volumes by Horizon Year, even if full use of those roadway connections and interchanges is not projected until beyond Horizon Year

It is very important to note that the link-based v/c ratios provide a general guide to how the major roadway segments would function in Horizon Year. A more accurate assessment of roadway capacity will be available when intersection turn movement forecasts are developed and service level calculations are performed, following this link-level forecasting step.

Figures 3.3A and **3.3B** present roadway segment forecasts for the AM and PM peak hours, respectively. For segments where existing peak hour counts are available, growth on the link was recorded between the existing (2006) model and the future (Horizon Year) model.[1] This growth was added to the existing counts to represent a Horizon Year estimate of volume on each link. This method of forecasting is called the difference method. These forecasted volumes were then compared to the capacity of the links based on the Tracy General Plan roadway capacities, and a volume-to-capacity ratio was calculated. The v/c ratios are shown in **Figures 3.4A** and **3.4B** for the AM and PM peak hours, respectively.

The volumes presented on **Figures 3.3A** and **3.3B** do not represent the final volumes used for the intersection level analysis. Adjustments based on current and expected future travel patterns were performed after the raw model forecasts were reviewed. The volumes on these figures represent an order of magnitude estimate of volumes on major roadways in Tracy.

[1] Existing counts from 2006, corresponding to the base model year, and 2009 were used. The link forecasts that pivot off 2009 counts may thus be slightly off, since theoretically traffic growth between 2006 and 2009 would be double-counted; however, this error is likely to be small due to the relatively low traffic growth in the last three years. The intersection volumes to be developed will better-account for the different count years.

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Not to Scale

LEGEND

- Freeway
- Expressway (City of Tracy)
- County Expressway (San Joaquin)
- County Road
- Arterial
- On-site Arterial
- Collector
- On-site Roads
- Existing Freeway Interchange
- Proposed Freeway Interchange
- Horizon Year Forecast
- Railroad
- City of Tracy SOI

NOTES: This graphic shows the arterial/expressway system. Key new collectors are also shown.

This graphic does not show additional project level network connections that will be required as part of development approvals.

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Figure 3.3a: Horizon Year AM Peak Hour Volunes

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Not to Scale

LEGEND

- Freeway
- Expressway (City of Tracy)
- County Expressway (San Joaquin)
- County Road
- Arterial
- On-site Arterial
- Collector
- On-site Roads
- Existing Freeway Interchange
- Proposed Freeway Interchange
- (#) Horizon Year Forecast
- Railroad
- City of Tracy SOI

NOTES: This graphic shows the arterial/expressway system. Key new collectors are also shown.

This graphic does not show additional project level network connections that will be required as part of development approvals.

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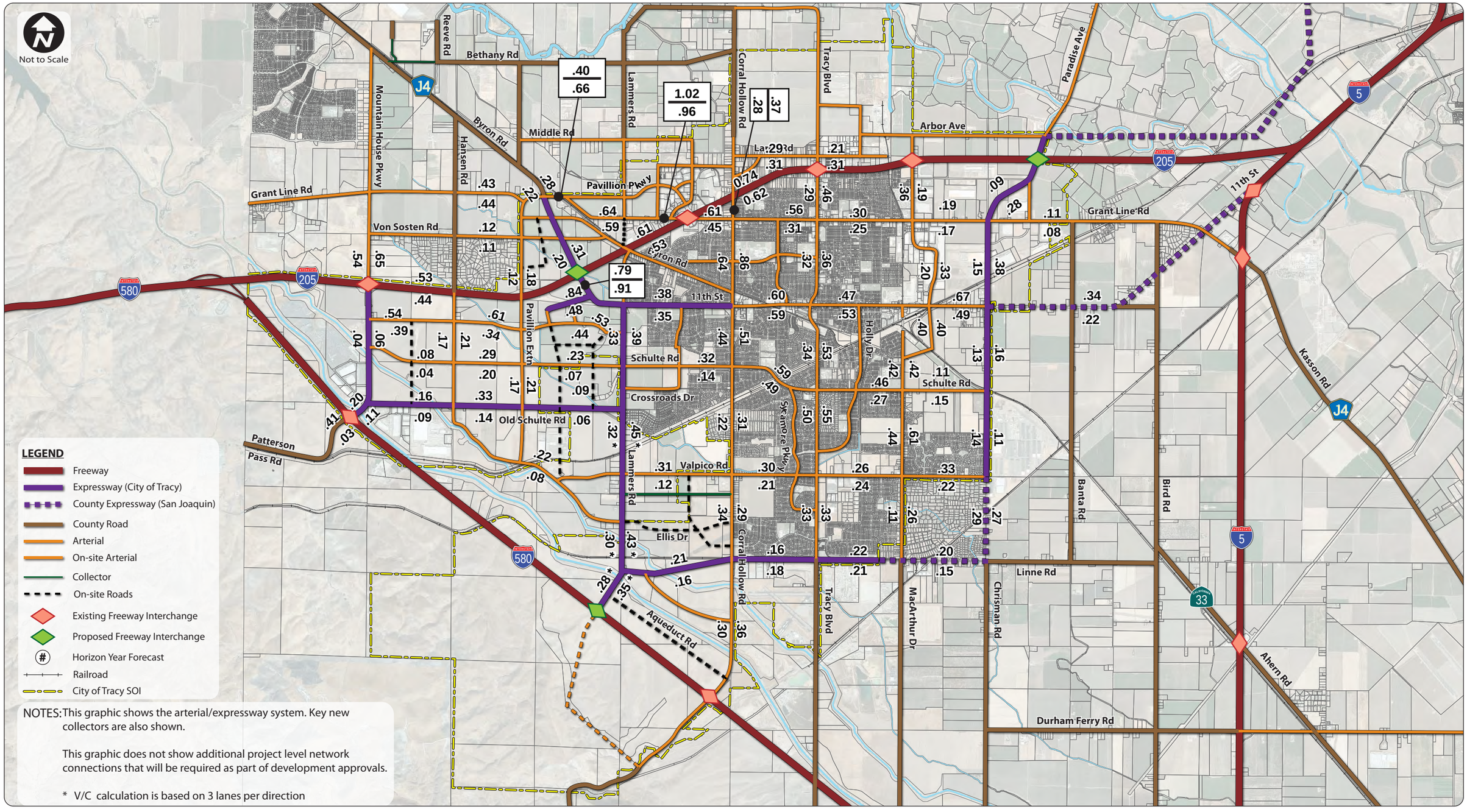
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Figure 3.3b: Horizon Year PM Peak Hour Volunes

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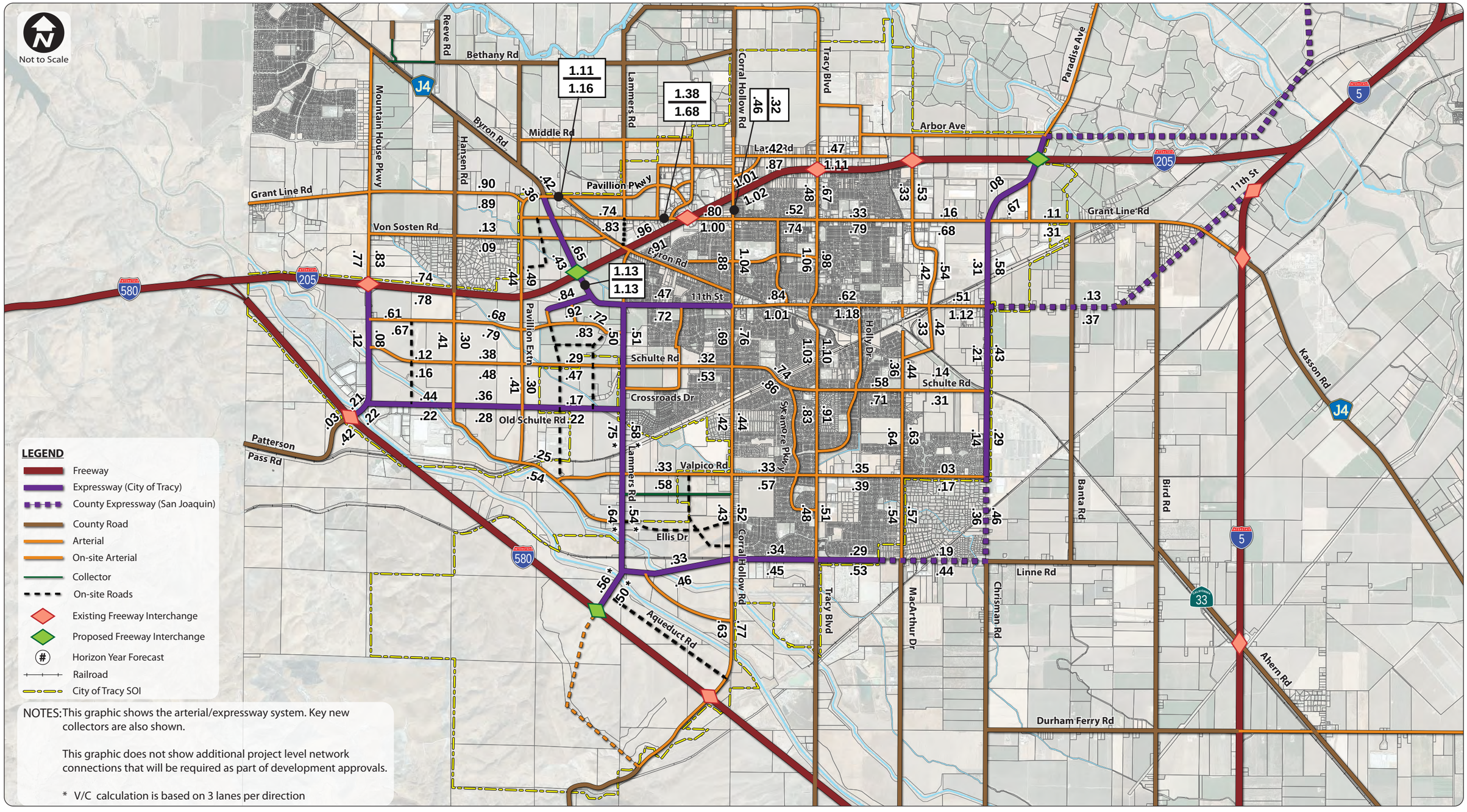
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Figure 3.4a: Horizon Year AM Peak Hour V/C Ratios

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Figure 3.4b: Horizon Year PM Peak Hour V/C Ratios

City of Tracy Transportation Master Plan

3.6 BUILD-OUT PLAN LINES

Figure 3.5 shows the Build-Out plan lines. Relative to the Horizon Year network, this network upgrades certain roadways from collector to arterial classification, and widens roadways where feasible (primarily in the western and northern development areas). This network does not provide sufficient capacity to serve the build-out land use plan; many additional connecting roadways and roadway widenings would be needed to serve the traffic generated by the additional residential development, and significantly higher employment levels, in the Build-Out case. Given the long-range horizon for the Build-Out case, and the corresponding unknowns as to how certain future services will ultimately develop, a complete and adequate Build-Out network cannot be designed. However, **Figure 3.5** provides the recommended core facilities on which to plan for growth beyond Horizon Year levels. Further study will be necessary to plan for the Build-Out condition.

Figure 3.6a and **Figure 3.6b** presents the AM and PM peak-hour volume-to capacity ratios for the roadway segments.

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Not to Scale

LEGEND

- Freeway
- Expressway (City of Tracy)
- County Expressway (San Joaquin)
- County Road
- Arterial
- On-site Arterial
- Collector
- On-site Roads
- Existing Freeway Interchange
- Proposed Freeway Interchange
- (#) No. of Lanes
- Railroad
- City of Tracy SOI

NOTES: This graphic shows the arterial/expressway system. Key new collectors are also shown.

This graphic does not show additional project level network connections that will be required as part of development approvals.

* Pavillion Parkway Interchange will not be constructed but is included in the analysis.

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Figure 3.5: TMP Right Of Way Map

City of Tracy Transportation Master Plan

Not to Scale

LEGEND

- Freeway
- Expressway (City of Tracy)
- County Expressway (San Joaquin)
- County Road
- Arterial
- On-site Arterial
- Collector
- On-site Roads
- Existing Freeway Interchange
- Proposed Freeway Interchange
- (#) TMP Buildout V/C Ratios
- Railroad
- City of Tracy SOI

NOTES: This graphic shows the arterial/expressway system. Key new collectors are also shown.

This graphic does not show additional project level network connections that will be required as part of development approvals.

\+ Pavillion Parkway Interchange will not be constructed but is included in the analysis.

* V/C calculation is based on 2 lanes per direction

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Figure 3.6a: Buildout AM Peak Hour V/C Ratios

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Not to Scale

LEGEND

- Freeway
- Expressway (City of Tracy)
- County Expressway (San Joaquin)
- County Road
- Arterial
- On-site Arterial
- Collector
- On-site Roads
- Existing Freeway Interchange
- Proposed Freeway Interchange
- (#) TMP Buildout V/C Ratios
- Railroad
- City of Tracy SOI

NOTES: This graphic shows the arterial/expressway system. Key new collectors are also shown.

This graphic does not show additional project level network connections that will be required as part of development approvals.

\+ Pavillion Parkway Interchange will not be constructed but is included in the analysis.

* V/C calculation is based on 2 lanes per direction

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Figure 3.6b: Buildout PM Peak Hour V/C Ratios

City of Tracy Transportation Master Plan

4. HORIZON YEAR TRANSPORTATION MASTER PLAN

4.1 INTRODUCTION

This chapter of the TMP presents recommendations to support the Horizon Year network as it relates to the railroad crossings, intersections, bicycle and pedestrian facilities, bridges and culverts, the roadway classification system, park and ride facilities, ITS facilities, and truck routing system. Recommended actions to support the Circulation Element of the General Plan are included along with transportation strategies, principles, and design elements to work towards meeting sustainability and green house gas emission reduction goals. Elements of smart growth design elements are included in the TMP.

4.2 GOALS, OBJECTIVES, POLICIES, AND ACTIONS

4.2.1 INTRODUCTION

The City of Tracy *General Plan* provides the foundation for the goals, objectives, policies and actions for the Transportation Master Plan (TMP). The TMP brings overlap with policies and goals regarding a "complete streets" policy, context-sensitive design, mode split targets, vehicle miles traveled (VMT) and per capita reduction goals. The TMP provides further clarification on specific policies and actions to meet the goals and objectives of the City's General Plan.

Each of the four Circulation Element goals from the General Plan are listed below along with their respective objectives. Recommended actions for future transportation planning, design and implementation, supplements each objective and are provided to meet the goals, objectives, and policies.

4.2.2 RECOMMENDED ACTIONS FOR CIRCULATION ELEMENT GOAL 1

Goal 1 of the circulation element states: A roadway system that provides access and mobility for all of Tracy's residents and businesses while maintaining the quality of life in the community.

Objective Cir-1.1 - Implement a hierarchical street system in which each street serves a specific, primary function and is sensitive to the context of the land uses served.

Actions: Implement a complete streets policy for new and retrofitted roads that ensures that adequate right-of-way is provided to enable safe access for all users (motorists, pedestrians, bicyclists, transit vehicles and users). Include flexibility in the policy to balance the

function and users for various roadway classifications. Include amenities such as street lighting, landscaping, and transit stops that contribute to the complete street concept.

Incorporate context sensitive design features to improve mobility for all users. Refer to the cross sections presented in **Section 4.7** for details on travel lane widths, median widths, shoulders, bicycle and pedestrian facilities, and landscaping and public utility easements.

Objective CIR-1.2 Provide a high level of street connectivity.

Actions: Utilize access management techniques to provide appropriate spacing of access points on parkways, arterials, and collectors. Utilize context sensitive design principles from *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach* (Institute of Transportation Engineers, 2010) such as:

- Building network capacity and redundancy through a dense, connected network rather than through an emphasis on high levels of vehicle capacity on individual arterial facilities
- Minimizing direct property access onto parkways, arterials through design of a connected network of closely spaced arterial and collector thoroughfares and local street connections.
- Providing closer spacing of roadways and shorter blocks for areas with higher pedestrian and bicycle activity.
- Provide a well connected road system that encourages walking and cycling and maintains a quality of life for all Tracy residents.

Objective CIR-1.3 Adopt and enforce LOS standards that provide a high level of mobility and accessibility, for all modes, for residents and workers.

Actions: The City shall strive for LOS D on all streets and intersections. The following locations are exempt from the City's LOS D standard:

- Any intersections or roadways within ¼ mile of any freeway where LOS E is allowed to discourage inter-

regional traffic from using City streets.

- Any intersections or roadways located in the Downtown and Bowtie area where LOS E shall be allowed.

- At intersections where construction of physical improvements would be infeasible prohibitively expensive, significantly impact adjacent properties or the environment, or have a significant adverse effect on the character of the community, including pedestrian mobility, crossing times, and comfort/convenience, the LOS may fall below the City's LOS standard.

- During construction of intersection improvements, the LOS may temporarily fall below the City's LOS standard.

- Caltrans facilities where Caltrans endeavors to maintain a target LOS at the transition between LOS C and LOS D on all State Highway facilities (i.e., freeway segments, signalized intersections, on- or off-ramps, etc.), however, Caltrans recognizes that it may not always be feasible. For Caltrans intersections, City of Tracy impact criteria applies. For freeway segments, LOS D or better is considered acceptable.

- County of San Joaquin facilities where LOS D is the minimum acceptable LOS for roadway and intersection operations.

- Develop multi-modal LOS analysis procedures and standards to evaluate other facilities (bicycle, pedestrian, and transit) in addition to roads.

Objective CIR-1.4 Protect residential areas from commercial truck traffic.

Actions: Erect signs providing notice of adopted truck routes (see **Section 4.10** for map of existing and future truck routes) and enforce the use of designated truck routes except for the purpose of pick-up or delivery of materials or merchandise. Provide the heavy vehicle roadway system to encourage commercial growth.

Objective CIR-1.5 Protect residential areas from through traffic and high travel speeds by facilitating free flow of traffic on major streets.

Actions: Utilize sustainable transportation system operation elements (see the sustainability matrix **Tables 4.1** and **4.2** at the end of this section) to improve system efficiency. For example, implementation of ITS technologies such as corridor signal timing plans and traffic signal interconnect enhance the flow of traffic.

Objective CIR-1.6 Maximize traffic safety for automobile, transit, bicycle users, and pedestrians.

Actions: Implement traffic calming on residential or collector streets as appropriate in accordance with the city's traffic calming program. Construct roadways to discourage speeding.

Objective CIR-1.7 Minimize traffic-related impacts such as noise and emissions on adjacent land uses.

Actions: Utilize rubberized asphalt in roadway projects to reduce roadway noise. Implement ITS technologies, such as signal coordination, to manage traffic progression and to lower speeds.

Consider implementation of roundabouts, instead of traffic signals or stop-control, to reduce delays and emissions.

Objective CIR-1.8 Minimize transportation-related energy use and impacts on the environment.

Actions: As indicated in **Table 4.2**, utilize sustainable materials such as recycled materials, permeable surfaces, non-toxic, and bio-degradable materials for roadway projects.

Utilize LED (light emitting diodes) or solar panels for traffic signals and street lights to lower operating and maintenance costs and to decrease energy consumption.

4.2.3 RECOMMENDED ACTIONS FOR CIRCULATION ELEMENT GOAL 2

Goal 2 is: Adequate interregional access.

Objective Cir-2.1 - Support regional planning and implementation efforts to improve interregional highways and interregional travel efficiency.

Actions: Coordinate between adjacent municipalities and jurisdictions along

arterials, crossing borders and at interchanges with freeways.

Objective CIR-2.2 Discourage interregional travel from diverting from freeways onto Tracy streets.

Actions: In conjunction with actions under Objective Cir-1.5, utilize ITS technologies to manage the flow of traffic onto city streets.

4.2.4 RECOMMENDED ACTIONS FOR CIRCULATION ELEMENT GOAL 3

Goal 3 is: Safe and convenient bicycle and pedestrian travel as alternative modes of transportation in and around the city.

Objective CIR-3.1 Achieve a comprehensive system of citywide bikeways and pedestrian facilities.

Actions: Consistent with the cross sections standards in **Section 4.7**, provide Class I bike trails on parkways and arterials and Class II bike lanes on collectors. Class III bike routes shall be considered on roadways where sufficient width for a dedicated lane is not provided.

Implement a comprehensive Safe Routes to School Program.

Seek funding opportunities at all levels to implement pedestrian improvements and projects.

Provide pedestrian enhancements at intersections, where feasible. Enhancements include high visibility crosswalks, pedestrian countdown timers, and adequate crossing times, median refuge islands for wide streets, smaller curb radii, and shorter cycle lengths.

Consider preparation of a streetscape plan to define & coordinate design elements (street furniture, lighting, landscaping, width of pedestrian path, and buffer zones) when planning a walkable thoroughfare.

Create a pedestrian and bicycle safety action plan to identify steps to reducing the number of pedestrian and bicycle crashes. The

plan will present existing deficiencies, identify appropriate improvements to address these deficiencies, and include implementation strategies. This plan should include public education programs to educate pedestrians, bicyclists, and motorists.

4.2.5 RECOMMENDED ACTIONS FOR CIRCULATION ELEMENT GOAL 4

Goal 4 is: A balanced transportation system that encourages the use of public transit and high occupancy vehicles.

Objective CIR-4.1 Promote public transit as an alternative to the automobile.

Actions: Utilize sustainable transportation system operation elements (see **Tables 4.1** and **4.2** at the end of this section) to encourage and improve transit usage. For example, implementation of measures such as transit signal priority, queue jump lanes, dedicated bus lanes, and improved shelter facilities will provide faster service, increased rider satisfaction and ridership.

Require new employment centers to participate in trip reducing strategies such as Transportation Demand Management program and to provide incentives for their participation.

Provide transit service/connections to major pedestrian generators such as major employment and retail centers and transit-oriented developments.

Consider changes to the Zoning Ordinance to allow a reduced parking supply that is less than code requirements thus encouraging use of alternative modes of transportation.

Objective CIR-4.2 Work to achieve connectivity between all modes of transportation.

Actions: Seek reconstruction opportunities on thoroughfares to provide and improve multi-modal access and circulation.

Measure T-5 of the City's *Sustainable Action Plan* – February 1, 2011 (SAP) lists several smart growth, urban design and planning measures including amendments to the zoning ordinance to require adequate pedestrian access, closure of sidewalk

gaps, establishment of walkability standards, and amendment or creation of subdivision design standards to address spacing and connectivity. These goals must be implemented in the development of all specific plans in the city and where roads and intersections are reconstructed.

4.2.6 SUSTAINABILITY POLICIES, STANDARDS, AND PERFORMANCE MEASURES

In addition to the transportation and land use measures discussed in the SAP, a sustainability benefits matrix table was developed that lists various methods in which the TMP can achieve a more sustainable transportation system. The methods run the vertical range from specific physical roadway design elements, to planning document elements, to city policy shifts. **Tables 4.1** and **4.2** present the various methods in four areas: transportation system operations (motorized and non-motorized transport), land use integration, performance measures, and transportation infrastructure.

Transportation System Operations – This area include system operations and maintenance elements that will guide how the physical infrastructure – the roadway network and off-street paths/trails – are utilized. Intelligent Transportation System (ITS) technologies including Transit Signal Priority, Corridor Signal Timing, Traveler Information Systems, Ramp Metering Systems, Pedestrian and Bicycle Signalized Intersection Enhancements, and others will be effective ways for the city to maximize efficiency of the physical system.

Land Use Integration - Research is clear that land use design, density, mix, and related elements are directly linked to traveler mode choice and the efficiency of the surrounding transportation system. In Tracy, the land use design elements that are most likely to influence mode choice and improve efficiency are High Density Mixed Use Development, Development Within ¼-Mile of Transit (Amtrak station and primary bus routes), and Connectivity Between Land Uses. Even in specific plan areas located on the edge of the developed city, these principles can be employed to move the city toward a less vehicle-dependent and more sustainable transportation system.

Performance Measures - As the city conducts periodic reviews of both its own performance – TMP updates, General Plan updates, signal performance reviews, CMP compliance, etc. – and of development project impacts, it has more options than before in methods of assessing performance. Where once there was only peak hour vehicle Level of Service (LOS), now there are multi-modal assessment methods, system-wide as opposed to "spot" assessment methods, and methods that acknowledge the transportation -- energy use -- land use -- quality of life connection. The city should consider incorporating evaluation methodologies that are more in line with the city's ultimate desired system, possibly one that does not

elevate vehicle service over service and performance of other modes, or that considers the system-wide or larger-area performance along with, or instead of, individual intersection performance.

Transportation Infrastructure - The ultimate size of the roadway system, including allocation of space to autos, buses, bicyclists, pedestrians and heavy vehicles, is defined in the TMP. This sizing and allocation, more than any subsequent implementation steps, will drive the success of the Plan in reducing auto dependence, vehicle-miles traveled, and greenhouse gas impacts. Matrix elements such as Constrain Roadway (Auto) Capacity, Infrastructure/Smart Streets, Bus Lanes, Complete Bike Routes, and Citywide Pedestrian Connectivity directly lead to the width and allocation of space in the TMP roadway element.

Sustainable Policies	Transportation System	Transportation Elements	Sustainability Benefits[1]											Costs/Impacts/Risks[2]			
(a)	(b)	(c)	(d)											(e)			
			VMT	GHG	VHD	VF	VTL	PH	MC	EFF	EQ	LE	ACC	VHD	COST	IMP	LEG
SB 375	**Motorized Transport**																
AB 32	Passenger Vehicles	Constrain Roadway Capacity (Design /Roundabout /Lanes /Parking Supply)		✓				✓	✓		✓	✓		✓			✓
Smart Streets		Vehicle Technology		✓				✓		✓					✓	✓	
New Urbanism		ITS		✓	✓	✓		✓		✓					✓		
Complete Streets		Rideshare	✓	✓	✓	✓				✓						✓	
AB 1358		Infrastructure (Smart Streets /Roundabout)	✓	✓	✓	✓				✓					✓		✓
SAFETEA-LU		Shared Parking Management		✓					✓	✓		✓					✓
DD 64		Roadway Pricing		✓	✓	✓				✓						✓	✓
		Increase Transit		✓													
	Heavy Vehicles	Vehicle Technology		✓				✓		✓					✓	✓	
		Routes and Management	✓	✓	✓	✓	✓	✓	✓	✓				✓			✓
		Truck Lanes		✓	✓	✓				✓					✓	✓	
		Truck Parking Management		✓													✓
		Facilities (Truck Stops)		✓		✓				✓					✓		✓
	Transit	Education/Outreach	✓	✓	✓	✓		✓		✓			✓		✓		
		Bus Lanes	✓	✓	✓	✓		✓		✓	✓		✓	✓	✓	✓	✓
		Signal Priority	✓	✓	✓	✓				✓	✓			✓			✓
		BRT	✓	✓	✓	✓		✓		✓	✓		✓	✓	✓	✓	✓
		Safety															
		Park and Ride Facilities and Safety	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓		✓		
		Transportation System Management		✓											✓	✓	
		Smart Technology (ITS)	✓	✓	✓	✓		✓		✓	✓		✓		✓		
		Fleet Management		✓				✓	✓	✓					✓	✓	
		Vehicle Technology		✓				✓		✓					✓	✓	
		Incentives for Transit Use	✓	✓	✓	✓		✓					✓				
		Transit Promotion		✓													
		Safety and Comfort		✓													
		Information & Operation		✓													
		Traveler Preference		✓													
		Multimodal connectivity		✓													
		Bike racks facilities @ station	✓	✓	✓	✓		✓		✓	✓		✓				
	Non-Motorized Transport																
	Bicycles	Complete Bike Route Network	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓	✓
		Safe Route to Schools Plan	✓	✓	✓			✓			✓		✓				
		Education/Outreach		✓						✓	✓				✓		
		Short and Easy Connectivity to Land Use and Transit	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓		
		Ample Bike Parking	✓	✓							✓		✓				
		Signal Detectors		✓						✓	✓		✓	✓	✓	✓	
		Incentives	✓	✓	✓	✓		✓			✓		✓				
		Bike Technology and Safety Programs		✓				✓		✓			✓		✓		
		Showers /lockers at employment sites	✓	✓							✓						✓
		Increase commuting by bike	✓	✓													
		Recreation		✓													
	Pedestrians	Site Pedestrian Access		✓				✓		✓	✓	✓	✓				
		City-wide Pedestrian Connectivity	✓	✓	✓	✓		✓		✓	✓	✓	✓		✓	✓	
		Safe Route to Schools Plan	✓	✓				✓			✓		✓				
		ADA Upgrades		✓							✓		✓		✓		
		Education/Outreach	✓	✓				✓		✓	✓				✓		
		Safety		✓													
		Pedestrian preference	✓	✓													
		Technology/Lighting		✓						✓	✓				✓		
	Performance Measures																
	LOS	Multi-modal LOS Standards - physically facility-based						✓		✓	✓	✓	✓	✓	✓	✓	✓
		Multi-modal LOS Standards - person-delay based						✓		✓	✓	✓	✓	✓	✓	✓	✓
		Lower Vehicle LOS Standard								✓	✓	✓	✓	✓			✓
		Tiered Vehicle LOS Standards								✓	✓	✓	✓	✓		✓	✓
		Drop Vehicle LOS Standard								✓	✓		✓	✓			✓
		Exempt certain streets from vehicle LOS standard								✓	✓	✓	✓	✓		✓	✓
		Replace intersection LOS standard with system-wide LOS measurement								✓	✓	✓	✓		✓	✓	✓
	Smart Mobility	Accessibility and Connectivity		✓						✓	✓	✓	✓		✓	✓	✓
		Multi-modal Quality of Service		✓				✓		✓	✓	✓	✓	✓	✓	✓	✓
		Pedestrian & Bicycle Mode Share		✓				✓			✓	✓	✓		✓	✓	✓
		Climate and Energy Conservation	✓	✓				✓				✓			✓	✓	✓
		Network Performance Optimization	✓	✓	✓	✓				✓	✓				✓	✓	✓
	Land Use Integration																
	Policies and Requirements	Incentives for Developers									✓	✓	✓				✓
		Transit Orientated Development (TOD)	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	✓
		4-D Principles	✓	✓			✓	✓		✓	✓	✓	✓			✓	✓
		Accessible transit within ¼ mile.	✓	✓			✓	✓		✓	✓	✓	✓		✓	✓	
		High density mixed use	✓	✓			✓	✓	✓	✓		✓	✓			✓	
		Infill / Redevelopment	✓	✓			✓	✓	✓	✓		✓	✓		✓	✓	
		High FAR		✓			✓		✓	✓		✓	✓				
		Connectivity between Land Use that does not require vehicles.	✓	✓				✓	✓	✓	✓	✓	✓				
		New Urbanism	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	
		Open space management / proximity		✓				✓									

Notes:

1. VMT = Vehicle Miles of Travel, GHG = Green House Gas Emmissions, VHD = Vehicle Hours of Delay, VF = Vehicle Flow, VTL = Vehicle Trip Length, PH = Public Health, MC = Maintenance Cost, EFF = System Efficiency, EQ = System Equity, LE = Land Use Efficiency,
2. VHD = Vehicle Hours of Delay, COST = Higher Costs To Implement, IMP = Complexity/Difficulty to Implement, LEG = Potential for Legal Challenge

Source: Input from Fehr & Peers

Sustainable Policies	Transportation System	Transportation Elements	Sustainable Benefits
(a)	(b)	(c)	(f)
SB 375	**Infrastructure**		
AB 32	Roads	Street design (Smart Streets)	Reduced Street Widths increases opportunities for permeable pavements,
Smart Streets		Sustainable materials	Use of recycled materials , permeable surfaces, non-tixic, bio degradable materials
New Urbanism		Hierarchy in transportation elements	Provides opportunity for reducing street widths where lower capacity is needed
Complete Streets		Roundabouts/Intersection control	Reduction in GHG Emmissions (CO2, CO, HC, NOx), noise, particulates, impervious surfaces.Increases walkability, safety, green areas
AB 1358		Manage delay	Manage traffic flow to promote transit ridership and non-motorized transportation
SAFETEA-LU	Transit	Station/Stop Location and amenities	Increase in transit usage will reduce private vehicle trips
DD 64		Routes	Distribution na dlocation of routes close to origins and destinations will improve ridership and decrease automobile use
		Signal priority	Increase transit usage by providing efficient/faster transit service through signal priority control
		Dedicated Lanes/Turnouts/Pass Lanes	Increase transit usage by providing efficient/faster transit service through dedicated bus lanes during peak hours and at intersections
	ITS	Infrastructure - backbone	Efficient transportation management, reduce delay, reduce roadway improvements, reduce GHG
		ATMS	Efficient transportation management, reduce delay, reduce roadway improvements, reduce GHG
		CMS	Efficient transportation management, reduce delay, reduce roadway improvements, reduce GHG
		CCTV	Efficient transportation management, reduce delay, reduce roadway improvements, reduce GHG
		TMC	Efficient transportation management, reduce delay, reduce roadway improvements, reduce GHG
		511	Efficient transportation management, reduce delay, reduce roadway improvements, reduce GHG
		Signal Coordination	Efficient transportation management, reduce delay, reduce roadway improvements, reduce GHG
		Parking Management	Efficient transportation management, reduce delay, reduce roadway improvements, reduce GHG
	Bicycles	Bicycle network (commute and recreation)	Increased ono-motorized transport, increased health
		Bicycle racks & lockers	User acilities to promote bicycle usage
		Signal detection	Improved bike travel times
	Pedestrians	Sidewalk connectivity	Improve access, pedestrian health and safety
		Pedestrian Crossings	Improve pedestrian health and safety
		Safety	Improve pedestrian health and safety
	Heavy Vehicles	Routes	Efficient delivery of goods
		Facilities	Eliominates on-street parking, pollution
	Parking	Shared facilities	Efficient use of parking, lees parking spaces/non permaeble surfaces
		Standards	Promotes alternative forms of transportation
		On-street and on-site parking	An effective use of on-street parking spaces may reduce off street requirements

Source: Input from Fehr & Peers

4.3 RAILROAD FACILITIES

4.3.1 INTRODUCTION

This section documents infrastructure related to Railroad Crossing facility planning. The existing Railroad Crossings are presented in **Chapter 2**, Existing Conditions. The City of Tracy Railroad Crossings was integrated into the TMP to develop a comprehensive circulation system that minimizes conflict and delay points between railroad traffic and automobile, transit, pedestrian, and bicycle traffic within the City. Graphics are provided to illustrate existing and future Railroad Crossing facilities. Planning for at-grade and grade separated facilities is based on review of forecast local and regional trains, vehicular, bicycle and pedestrian traffic, and coordination between City of Tracy, the California Public Utilities Commission (CPUC), and Union Pacific Railroad (UPRR). Discussion is provided regarding existing and future railroad crossings, facility design, and resource documents.



4.3.2 PLANNING RAILROAD CROSSING FACILITIES

Planning for Railroad Crossings where roadways currently or will cross the railroad has been coordinated between City staff, traffic engineers and representatives from the CPUC, and UPRR. Consideration was given to the frequency of use for each railroad, the type of trains using each line, and the current and forecast vehicular traffic crossing each railroad, and taking cognizance of pedestrian and bicycle travel needs. Balancing the needs between railroad traffic and automobile traffic is important to determine where at-grade crossings are adequate, and where grade separations are required. The railroad industry provided the impetus for creating the community of Tracy and therefore, multiple rail lines are embedded in the community, often traversing diagonally across the roadway network. Typically, at-grade crossings can accommodate 4-lane roadways, however 6-lane roadways may require grade separation between the railroad and the automobile roadway. Additionally, the CPUC requires no new at-grade railroad crossings unless a crossing is relocated from another location and merited. Discussion and review of new and relocated crossings requires discussion with the CPUC to confirm expectations and establish a transportation network serving operational and safety needs for both rail and non-rail traffic. The TMP establishes a platform from which design and continued discussions with CPUC and UPRR can occur. It should be noted that several locations have been earmarked as possible grade separated facilities. In calculating future traffic impact fees, the facilities are regarded as being grade separated.



4.3.3 FUTURE RAILROAD CROSSING FACILITIES

Figure 4.1 shows the City of Tracy Railroad Crossing Facility Plan, which includes the existing and future facilities identifying widening of existing crossings, future at-grade crossings, and future grade separated crossings.

As identified in **Figure 4.1** and based on meetings with the CPUC and UPRR, the following improvements to the railroad crossings are recommended to address Horizon Year forecasted demand:

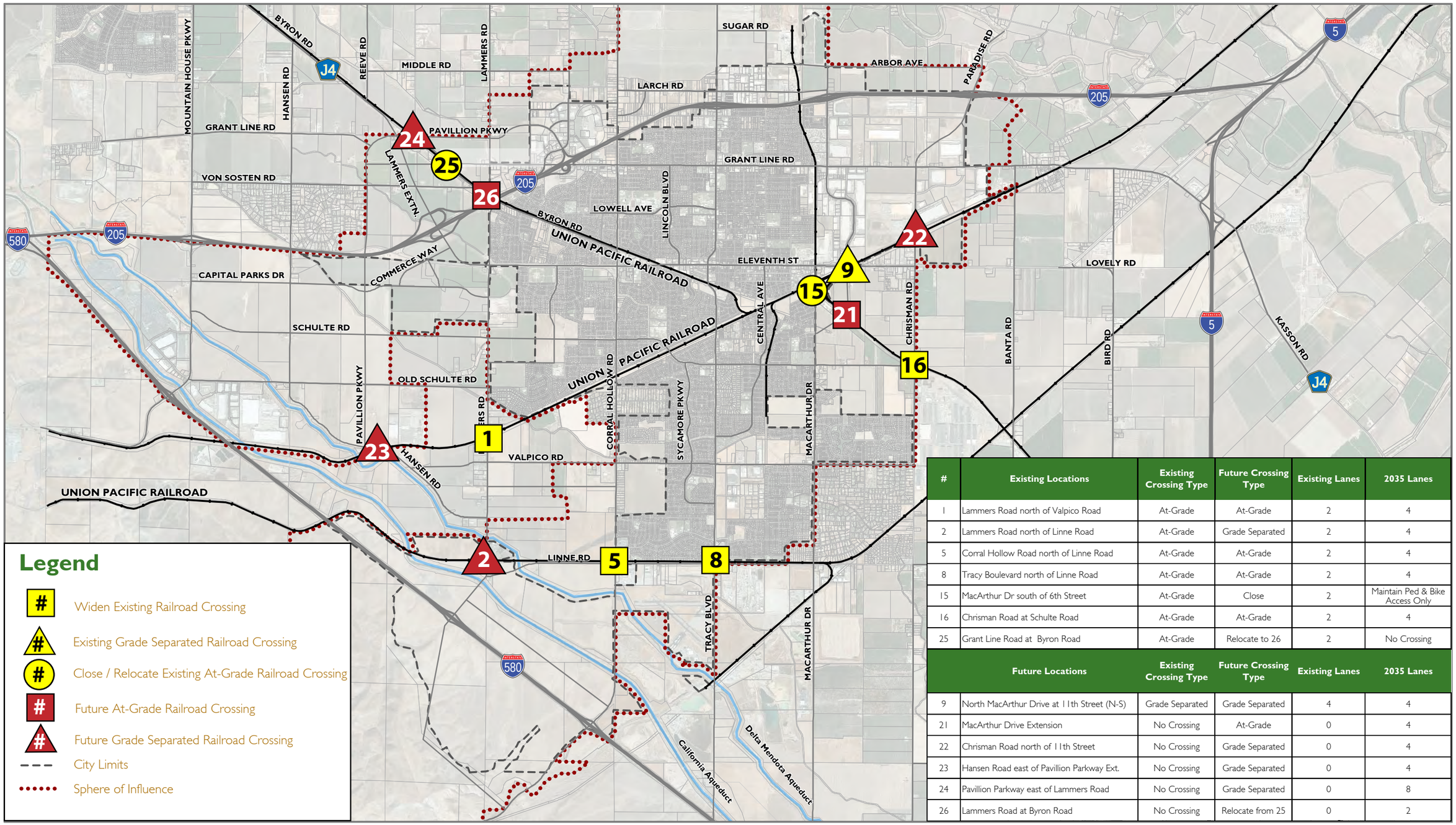


Maintain At-Grade Crossings:

- **#1: Lammers Road north of Valpico Road.** Lammers Road future widening will increase roadway from 2 lanes to consist of 4 lanes to accommodate Horizon Year traffic volumes. The 4-lane roadway/railroad crossing may remain at-grade. Future roadway improvements should accommodate pedestrian and bicycle crossings per standard designs.
- **#5: Corral Hollow Road north of Linne Road.** Coral Hollow Road future widening will increase roadway from 2 lanes to consist of 4 lanes to accommodate Horizon Year traffic volumes. The 4-lane roadway/railroad crossing will remain at-grade. Future roadway improvements should accommodate pedestrian and bicycle crossings per standard designs.
- **#8: Tracy Boulevard north of Linne Road.** Tracy Boulevard widening will increase roadway from 2 lanes to consist of 4 lanes to accommodate Horizon Year traffic volumes. The 4-lane roadway/railroad crossing will remain at-grade. Future roadway improvements should accommodate pedestrian and bicycle crossings per standard designs.



- **#16: Chrisman Road at Schulte Road.** Chrisman Road widening will increase roadway from 2 lanes to consist of 4 lanes to accommodate Horizon Year traffic volumes. The 4- lane roadway/railroad crossing will remain at-grade. Future roadway improvements should accommodate pedestrian and bicycle crossings per standard designs.
- **#21: MacArthur Drive Extension.** MacArthur Dive extension will consist of 4 lanes to accommodate Horizon Year traffic volumes. The 4-lane roadway/railroad crossing will remain at-grade. Future roadway improvements should accommodate pedestrian and bicycle crossings per standard designs.



Legend

- # — Widen Existing Railroad Crossing
- # — Existing Grade Separated Railroad Crossing
- # — Close / Relocate Existing At-Grade Railroad Crossing
- # — Future At-Grade Railroad Crossing
- # — Future Grade Separated Railroad Crossing
- City Limits
- Sphere of Influence

#	Existing Locations	Existing Crossing Type	Future Crossing Type	Existing Lanes	2035 Lanes
1	Lammers Road north of Valpico Road	At-Grade	At-Grade	2	4
2	Lammers Road north of Linne Road	At-Grade	Grade Separated	2	4
5	Corral Hollow Road north of Linne Road	At-Grade	At-Grade	2	4
8	Tracy Boulevard north of Linne Road	At-Grade	At-Grade	2	4
15	MacArthur Dr south of 6th Street	At-Grade	Close	2	Maintain Ped & Bike Access Only
16	Chrisman Road at Schulte Road	At-Grade	At-Grade	2	4
25	Grant Line Road at Byron Road	At-Grade	Relocate to 26	2	No Crossing

	Future Locations	Existing Crossing Type	Future Crossing Type	Existing Lanes	2035 Lanes
9	North MacArthur Drive at 11th Street (N-S)	Grade Separated	Grade Separated	4	4
21	MacArthur Drive Extension	No Crossing	At-Grade	0	4
22	Chrisman Road north of 11th Street	No Crossing	Grade Separated	0	4
23	Hansen Road east of Pavillion Parkway Ext.	No Crossing	Grade Separated	0	4
24	Pavillion Parkway east of Lammers Road	No Crossing	Grade Separated	0	8
26	Lammers Road at Byron Road	No Crossing	Relocate from 25	0	2

RBF CONSULTING

North

0 0.5 1 2 Miles (Approximate)

Figure 4.1: Railroad Crossings - Improvements and Future Locations

Provide Grade-Separated Crossings:

- **#2: Lammers Road north of Linne Road.** Lammers Road widening will increase roadway from 2 lanes to consist of 4 lanes to accommodate Horizon Year traffic volumes. The 6-lane roadway/railroad crossing will change from at-grade to a grade separated crossing. Currently private Lammers Road will become a public roadway. Future roadway improvements should accommodate pedestrian and bicycle crossings per standard designs.



- **#9: Eleventh Street at re-aligned MacArthur Drive.** Eleventh Street future improvements will modify grade separated bridge to a 4-leg intersection accommodating MacArthur Road Extension. Automobile traffic will remain grade separated from the railroad. The improved roadway/intersection will remain grade separated. Preliminary engineering design is underway at this location, and should accommodate pedestrians and bicycles per standard designs. The existing railroad crossing on MacArthur Drive just south of 11th Street will be eliminated for vehicular traffic, but pedestrian and bicycle traffic may have access across the rail road tracks per the standard crossing design criteria.

- **#22: Chrisman Road north of 11th Street.** Chrisman Road construction will consist of 4 lanes to accommodate Horizon Year traffic volumes. The 4-lane roadway/railroad crossing will be grade separated. Future roadway improvements should accommodate pedestrian and bicycle crossings per standard designs.



- **#23: Hansen Road east of Pavilion Parkway.** The future Hanson Road improvements will provide 4-lane roadways intersecting over railroad in grade separated crossing. Future roadway/intersection improvements should accommodate pedestrian and bicycle crossings per standard designs.

- **#24: Pavillion Parkway east of Lammers Extension.** The future Pavillion Parkway roadway improvements will include an 8-lane roadway intersecting over the railroad in grade separated crossing. Future roadway/intersection improvements should accommodate pedestrian and bicycle crossings per standard designs.

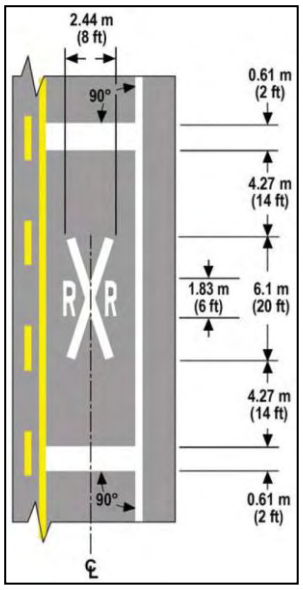
Close or Relocate Crossings:

- **#15: MacArthur Drive south of 6th Street.** This vehicular roadway crossing will be eliminated once the 11th Street/MacArthur railroad crossing is re-constructed and MacArthur Drive realigned. The City plans to retain the pedestrian and bicycle crossing at crossing #15.

- **#25: Grant Line Road at Byron Road.** Grant Line Road will be eliminated along with its intersection at Byron Road. The crossing will be relocated to #26, Lammers Road, at Byron Road.

- **#26: Lammers Road at Byron Road.** The current Grant Line Road at-grade crossing will be eliminated and replaced with a 2-lane at-grade crossing at Lammers Road just north of the I-205 under crossing to accommodate Horizon Year traffic volumes. Based on meetings with the CPUC and UPRR, the 2-lane roadway/railroad crossing may remain at-grade since the crossing is being relocated only. Future roadway improvements should accommodate pedestrian and bicycle crossings per standard designs.

4.3.4 RAILROAD CROSSING FACILITY DESIGN PLANNING



To obtain grant funding from State and Federal resources, railroad crossing facilities are required to adhere to applicable design standards such as required by the CPUC or Federal Railroad Administration (FRA). At-grade railroad crossings should accommodate all users, including traffic from automobiles, buses, pedestrians, and bicyclists. Design standards and guidance for automobile, pedestrian, and bicyclist traffic crossing railroads at-grade is provided through the following documents:

- *Pedestrian-Rail Crossings in California* (California Public Utilities Commission, May 2008)
- *Highway Design Manual*, Chapter 1000 Bikeway Planning and Design (Caltrans, September 2006);
- *California Manual on Uniform Traffic Control Devices*, Part 9 Traffic Controls for Bicycle Facilities (2010);
- *Rails-with-Trails: Lessons Learned, Literature Review, Current Practices, Conclusions* (Federal Highway Administration, August 2002); and
- *Railroad-Highway Grade Crossing Handbook* (Federal Highway Administration, September 1986).

Consideration of the safety of pedestrians at at-grade crossings is important during project planning and design, to ensure adequate right-of-way for the approach and crossing. The CPUC pedestrian-rail compendium provides discussion on design principles, design elements, and examples for review. Examples of design elements include swing gates, detectable warnings, signage, crossing surfacing, channelization, pavement markings, and in-roadway lights.

Consideration of the safety of bicyclists at at-grade crossings is important during project planning and design, to ensure adequate right-of-way for the approach and crossing. As identified in the Caltrans *Highway Design Manual* (HDM), the bikeway

crossing should be at least as wide as the approaches of the bikeway, and the crossing should be straight and at right angles to the rails. If a skew is unavoidable, the shoulder/Class II bike lane should be widened. Safety for cyclists can be accommodate through provision of adequate right-of-way, warning signage, pavement delineations, pavement material design and markings of obstacles such as cattle guards. An example of hazard prevention is incorporation of timber planks at crossings to avoid asphalt cement concrete (ACC) deformation/ridge buildup.

4.3.5 SMART GROWTH DESIGN ELEMENTS

The following Smart Growth design elements are relevant to railroad crossing planning:

- Provide safe and efficient crossings for all modes across railroads to enhance connectivity between land uses and amenities.

4.4 LEVEL OF SERVICE

4.4.1 INTRODUCTION

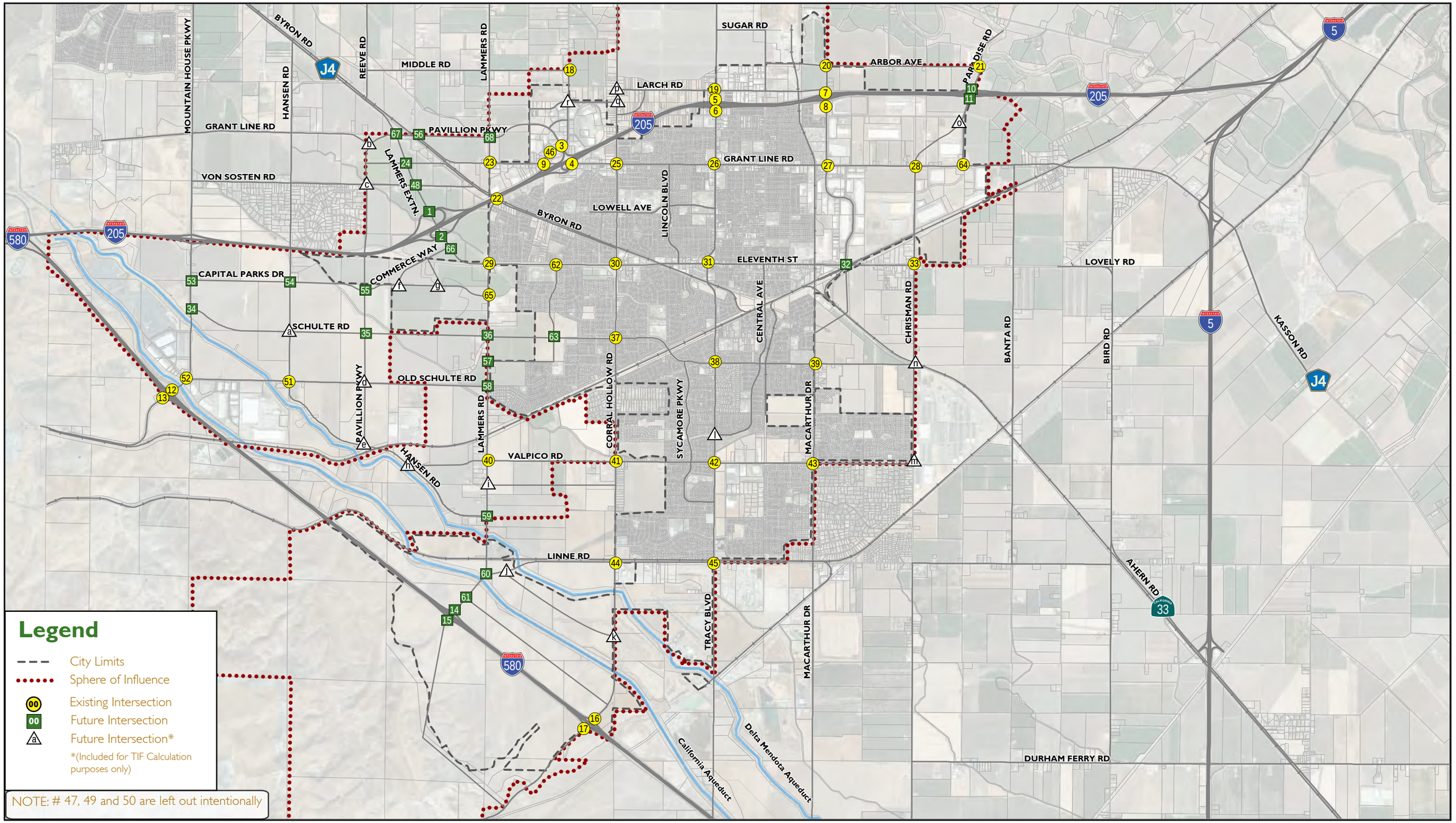
The roadway network forms the backbone for the City of Tracy transportation system. Tracy's future Horizon Year vision demands extensive improvements to the existing transportation system. Several entities and agencies provide transportation facilities and services to accommodate travel to and from, and within the City. Tracy's transportation network is envisioned as a multi-modal network of roads, bicycle lanes and paths, transit services, and pedestrian facilities that will support the planned land uses in the City by providing mobility to residents and visitors alike.

Based on the City's visioning as discussed in **Chapter 3**, the Horizon Year housing and employment represent growth of about 51 percent and 167 percent respectively, over 2006 conditions. As such, the City's roadway system must be continually maintained and improved to keep pace with development. This presents a unique and fortunate situation for the City of Tracy because it provides an opportunity to develop the transportation system to modern standards and implement transportation improvements as growth occurs. This TMP incorporates several Smart Growth principles to facilitate sustainable provision of transportation infrastructure to accommodate future growth.

This section provides insight on transportation within the City to establish policies and priorities to maintain and improve the transportation system. By implementing an improved transportation network the City can proactively enhance the system, accommodate future growth, and maintain the quality of life in Tracy. City policies established in this document are intended to be comprehensive, but also dynamic, and will be revised as needed to adapt to the changing needs of the region. City officials and staff will use these policies to guide ongoing development, use of City resources and implementation of projects and programs. This section defines a vision and sets overall policy.

4.4.2 HORIZON YEAR INTERSECTION TRAFFIC VOLUMES

Figure 4.2 shows the location of the study intersections. Based on the Horizon Year traffic modeling and forecast volumes discussed in **Chapter 3**, forecast volumes from the model were post-processed to obtain intersection traffic volumes for Horizon Year future traffic volumes. Post-processing of the model data to provide peak hour intersection volumes was conducted in accordance with industry standards which included review of existing traffic volumes for consistency on major corridors within the City. **Figures 4.3a** and **4.3b** show the forecasted AM and PM peak hour intersection traffic volumes for the major study intersections in the City.



Legend

- City Limits
- Sphere of Influence
- 00 Existing Intersection
- 00 Future Intersection
- a Future Intersection*

*(Included for TIF Calculation purposes only)

NOTE: # 47, 49 and 50 are left out intentionally

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North

0 0.5 1 2 Miles (Approximate)

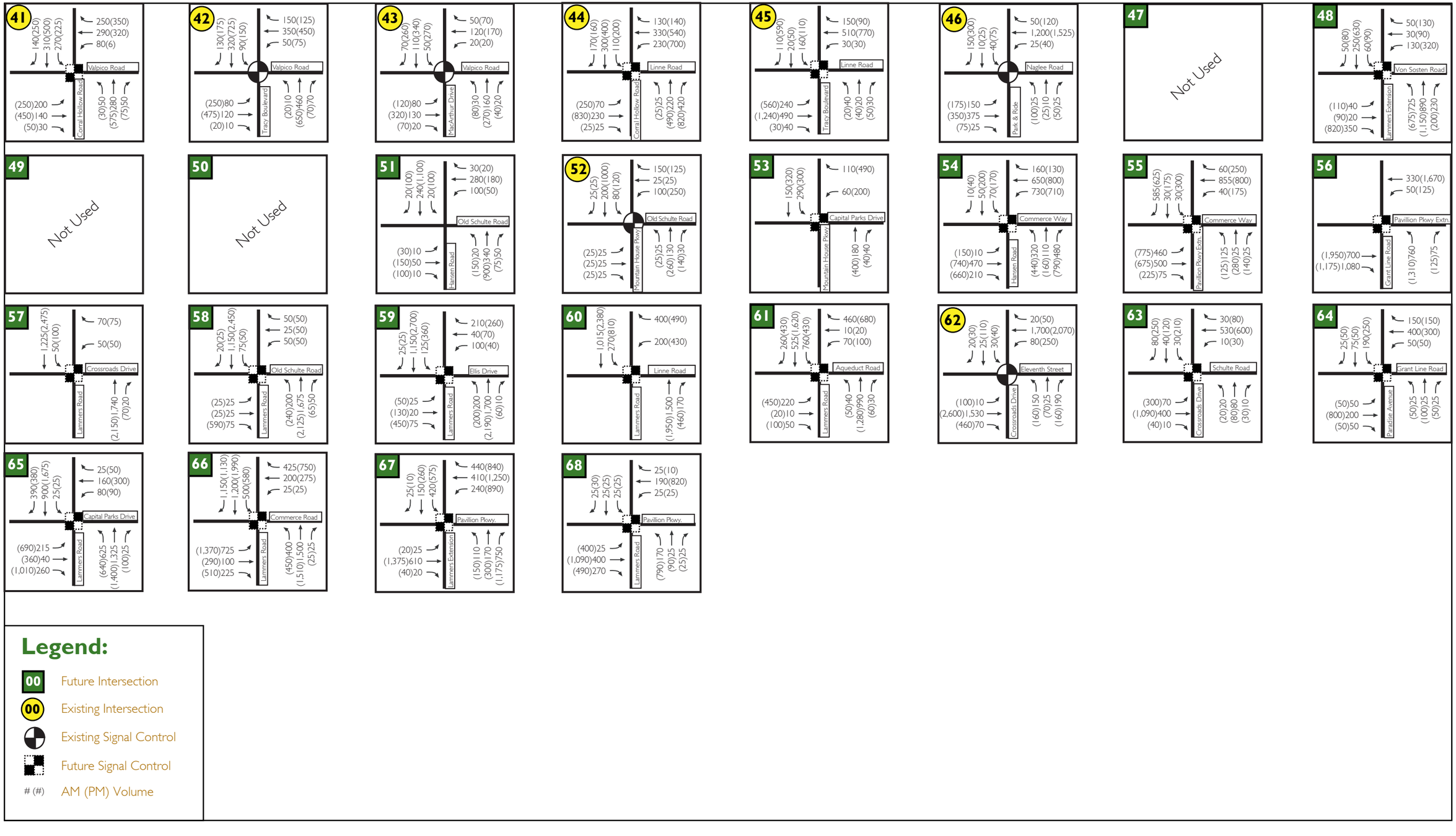
Figure 4.2: Study Intersection Locations

City of Tracy Transportation Master Plan



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Figure 4.3a: Horizon Year AM (PM) Peak Hour Traffic Volumes



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Figure 4.3b: Horizon Year AM (PM) Peak Hour Traffic Volumes

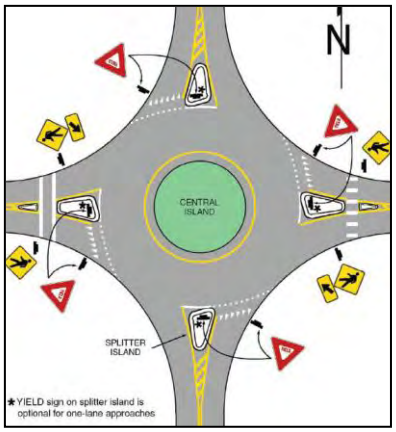
City of Tracy Transportation Master Plan

4.4.3 HORIZON YEAR INTERSECTION CONFIGURATION AND OPERATION

This section presents an assessment of the forecasted Horizon Year traffic conditions and the recommended transportation system improvements to support this growth.

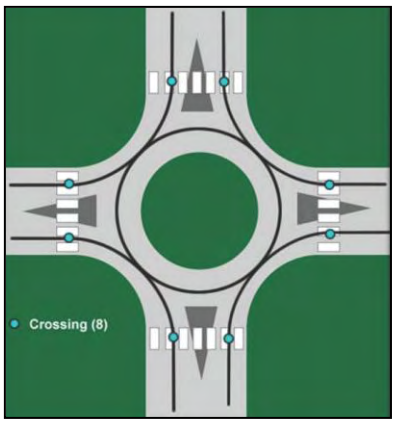
4.4.3.1 TRAFFIC OPERATION EVALUATION METHODOLOGIES AND LEVEL OF SERVICE STANDARDS

Chapter 2 provides an overview of traffic operation evaluation methodologies and level of service standards for study intersections. Intersection control for existing conditions includes signalized and stop-controlled intersections. The following provides discussion for analysis of intersections controlled through implementation of roundabouts which is planned at two future study intersections.



4.4.3.2 LEVEL OF SERVICE CRITERIA FOR ROUNDABOUTS

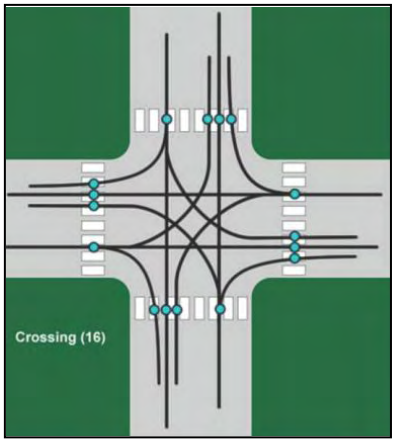
The standardized analysis methodology identified by Federal Highway Association (FHWA) is the Volume to Capacity (V/C) analysis methodology. Typical roundabout traffic analysis does not assign an LOS performance grade; instead, the V/C ratio is identified to determine acceptable or deficient operation. The V/C ratio of a roundabout provides a direct assessment of the demand at the roundabout entry to the capacity at the entry. A V/C ratio of 0.85 or less corresponds to acceptable roundabout operation and a V/C ratio greater than 0.85 corresponds to deficient roundabout operation. Roundabout analysis was prepared utilizing the Synchro software package which includes roundabout analysis parameters such as vehicular traffic volumes, lane geometry, and approximate dimensions of roundabouts.



4.4.4 LANE CONFIGURATION/LEVEL OF SERVICE

Figures 4.4a and **4.4b** show the lane configuration by approach and intersection control for both existing and future intersections. The lane configuration figures identify where improvements are recommended to accommodate future Horizon Year traffic demand. It should be noted that the improvements shown are identified to maintain level of service threshold per the City of Tracy and Caltrans level of service standards as appropriate.

Level of service calculations were conducted using the Synchro software program to determine the weekday Future AM and PM peak-hour operations at the study intersections. **Figure 4.5** presents the Horizon Year AM and PM peak-hour intersection LOS, and **Table 4.3** summarizes the delay and LOS results. As shown



in **Table 4.3**, all the study intersections are forecast to operate at LOS D or better during the future conditions weekday AM and PM peak hours except for the following intersections:

- Corral Hollow Road/Eleventh Street
- Tracy Boulevard/Eleventh Street
- Corral Hollow Road/Schulte Road
- Tracy Boulevard/Schulte Road
- Lammers Road/Commerce Way

The Synchro output calculations are provided in **Appendix B**.

Analysis with Lammers-Byron Connector

A connection from Grant Line Road along a Lammers Road alignment to Byron Road via a new railroad over crossing immediately north of the Byron Road under crossing of the I-205 has been added to the TMP at a late stage in the project study. This connection is also dependant on the approval of a relocated railway crossing.



Lammers-Byron Connector

The construction of the link will alleviate traffic conditions at all the intersections for the north and the west of the project site, since trips will be diverted from those streets to the Byron connector. The intersections of Byron Road/Lammers Road, Byron Road /Grant Line Road and Lammers Road /Eleventh Street are expected to increase in delay. This roadway connection is the City's preferred alternative.

To determine required improvements related to this planned extension, three intersections were selected based on the potential worsening of operating conditions that would occur. These intersections were analyzed only for weekday AM and PM peak period. The analysis was performed for the Horizon Year TMP conditions, consistent with SJCOG regional transportation model. Traffic forecast for this scenario is prepared by Fehr and Peers using the TMP Travel Demand Model (TDM), which was updated in 2010 to be consistent with the current San Joaquin County Council of Governments (SJCOG) regional TDM.

The analysis results indicate that the additional improvements are required for the intersection to operate at acceptable LOS. These improvements include:

Intersection # 22: Lammers Road / Byron Road (S):
Northbound: Add a second northbound left turn lane.

Intersection # 23: Lammers Road / Grant Line Road

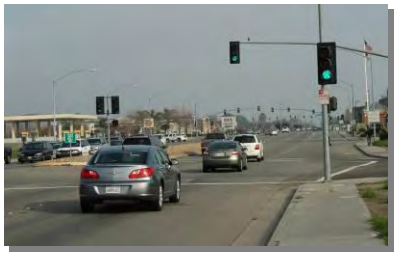
Westbound: Add a second westbound left turn lane.
Eastbound: Provide a eastbound right turn lane
Northbound: Add a second northbound left turn lane. Add a separate northbound right turn lane.

Intersection # 69: Lammers Road / Byron Road (N):

The intersection is constrained due to railroad crossing, and thus, the City should allow a lower LOS threshold.

Table 4.3: Horizon Year Intersection Level of Service

Number	Intersection	Control Type	Delay		LOS	
			AM	PM	AM	PM
1	I-205 WB Ramps/Lammers Extension	Signal	15	18	B	B
2	I-205 EB Ramps/Lammers Extension	Signal	3	5	A	A
3	I-205 WB Ramps/Naglee Road	Signal	23	28	C	C
4	I-205 EB Ramps/Grant Line Road	Signal	10	14	B	B
5	I-205 WB Ramps/Tracy Boulevard	Signal	25	23	C	C
6	I-205 EB Ramps/Tracy Boulevard	Signal	28	23	C	C
7	I-205 WB Ramps/MacArthur Drive	Signal	15	15	B	B
8	I-205 EB Ramps/MacArthur Drive	Signal	21	19	C	B
9	Naglee Road (I-205 WB Ramps) /Grant Line Road	Signal	7	20	A	B
10	I-205 WB Ramps/Chrisman	Signal	16	8	B	A
11	I-205 EB Ramps/Chrisman	Signal	11	16	B	B
12	I-580 WB Ramps/Mountain House Parkway	RAB	0.58	0.77	*	*
13	I-580 EB Ramps/Patterson Pass Road	RAB	0.55	0.67	*	*
14	I-580 WB Ramps/Lammers Road	Signal	7	14	A	B
15	I-580 EB Ramps/Lammers Road	Signal	9	18	A	B
16	I-580 WB Ramps/Corral Hollow Road	Signal	9	7	A	A
17	I-580 EB Ramps/Corral Hollow Road	Signal	8	14	A	B
18	Naglee Road/Middle Road	SSS	9	9	A	A
19	Larch Road/Tracy Boulevard	Signal	19	23	B	C
20	MacArthur Drive/Arbor Avenue	SSS	11	19	B	C



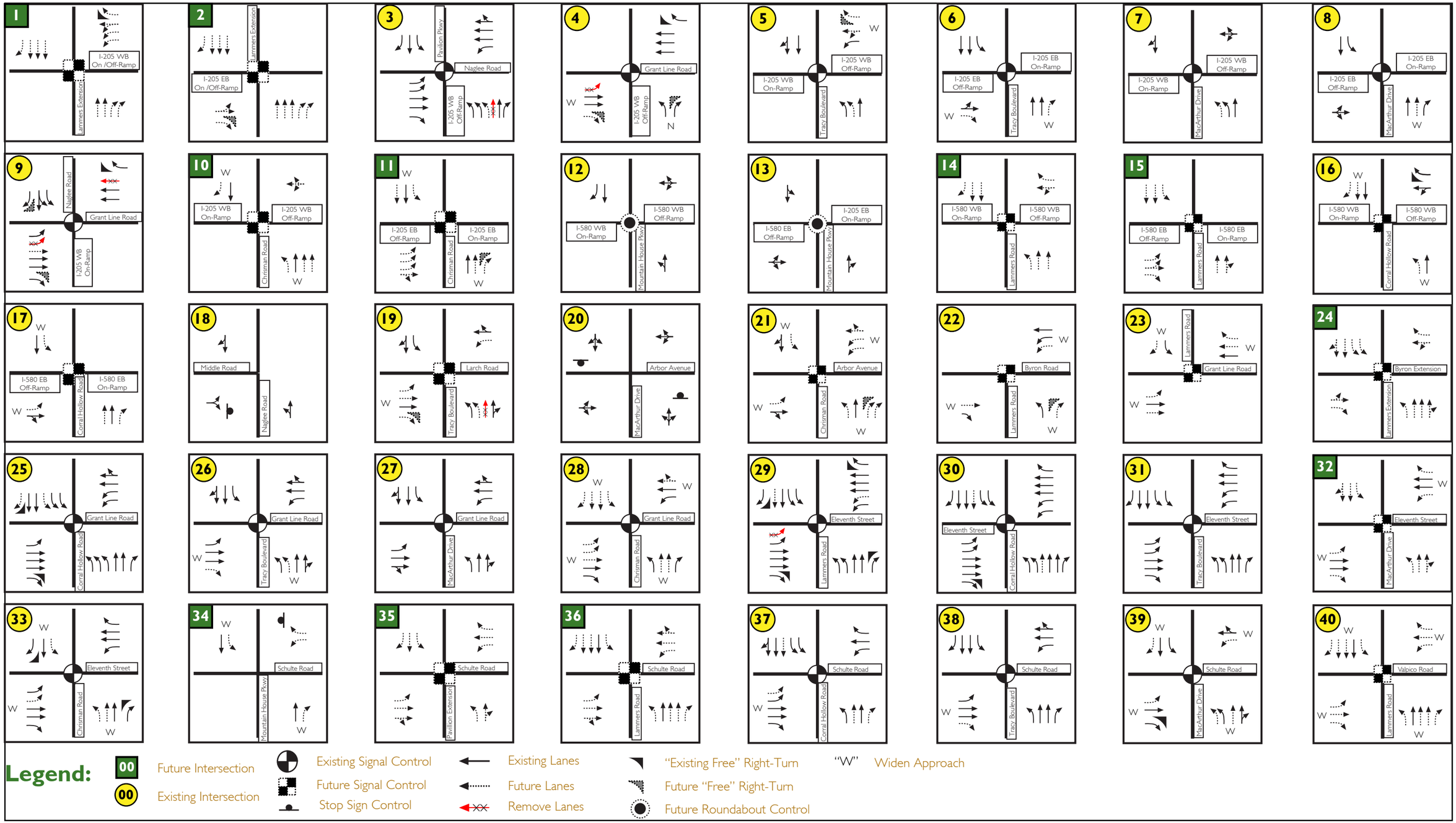


Number	Intersection	Control Type	Delay		LOS	
			AM	PM	AM	PM
21	Paradise Road / Arbor Avenue	Signal	12	16	B	B
22	Lammers Road/Byron Road	Signal	15	17	B	B
23	Lammers Road/Grant Line Road	Signal	7	10	A	B
24	Byron Extension/Lammers Extension	Signal	12	20	B	B
25	Corral Hollow Road/Grant Line Road	Signal	29	30	C	D
26	Tracy Boulevard/Grant Line Road	Signal	27	47	C	D
27	MacArthur Drive/Grant Line Road	Signal	27	35	C	C
28	Chrisman Avenue/Grant Line Road	Signal	21	32	C	C
29	Lammers Road/Eleventh Street	Signal	32	44	C	D
30	Corral Hollow Road/Eleventh Street	Signal	59	82	E	F
31	Tracy Boulevard/Eleventh Street	Signal	39	108	D	F
32	MacArthur Drive/Eleventh Street (North)	Signal	28	31	C	C
33	Chrisman Avenue/Eleventh Street (South)	Signal	33	30	C	C
34	Mountain House Parkway/ New Schulte Road	SSS	10	13	A	B
35	Pavillion Extension/New Schulte Road	Signal	21	28	C	C
36	Lammers Road/New Schulte Road	Signal	19	54	B	D
37	Corral Hollow Road/New Schulte Road	Signal	38	88	D	F
38	Tracy Boulevard/New Schulte Road	Signal	29	63	C	E
39	MacArthur Drive/ New Schulte Road	Signal	34	34	C	C
40	Lammers Road/Valpico Road	Signal	19	36	B	D
41	Corral Hollow Road//Valpico Road	Signal	25	32	C	C
42	Tracy Boulevard/Valpico Road	Signal	19	27	B	C
43	MacArthur Drive/Valpico Road	Signal	33	51	B	D
44	Corral Hollow Road/Linne Road	Signal	18	50	B	D
45	Tracy Boulevard/Linne Road	Signal	27	38	C	D

Number	Intersection	Control Type	Delay		LOS	
			AM	PM	AM	PM
46	Naglee Road/Park and Ride	Signal	5	21	A	C
48	Lammers Extension/Van Sosten	Signal	23	31	C	C
51	Hansen Road/Old Schulte Road	Signal	14	22	B	C
52	Mountain House Parkway/Old Schulte Road	Signal	14	14	B	B
53	Mountain House Parkway/Capital Parks Drive	Signal	5	10	A	A
54	Hansen Road/Capital Parks Drive	Signal	24	45	C	D
55	Pavillion Extension/Capital Parks Drive	Signal	17	42	B	D
56	Pavillion Extension/Grant Line Extension	Signal	12	29	B	C
57	Lammers Road/Crossroads Drive	Signal	5	6	A	A
58	Lammers Road/Old Schulte Road	Signal	13	15	B	B
59	Lammers Road/Ellis Drive	Signal	20	44	B	D
60	Lammers Road/Linne Road	Signal	13	24	B	C
61	Lammers Road/South Aqueduct Road	Signal	19	34	B	C
62	Crossroads Drive/Eleventh Street	Signal	16	44	B	D
63	Crossroads Drive/New Schulte Road	Signal	9	16	A	B
64	Paradise Road/Grant Line Road	Signal	17	20	B	B
65	Lammers Road/Capital Parks Drive	Signal	23	55	C	D
66	Lammers Road/Commerce Way	Signal	28	60	C	E
67	Pavillion Parkway/Lammers Extension	Signal	24	45	C	D
68	Pavillion Parkway/Lammers Road	Signal	22	42	C	D
CONDITIONS WITH PLANNED LAMMERS -BYRON CONNECTOR						
	Lammers Road / Byron Road (S) (City)	Signal	23	48	C	D
	Lammers Road / Grant Line Road (County)	Signal	22	33	C	C
	Lammers Road / Byron Road (N) (City)	Signal	21	51	C	D

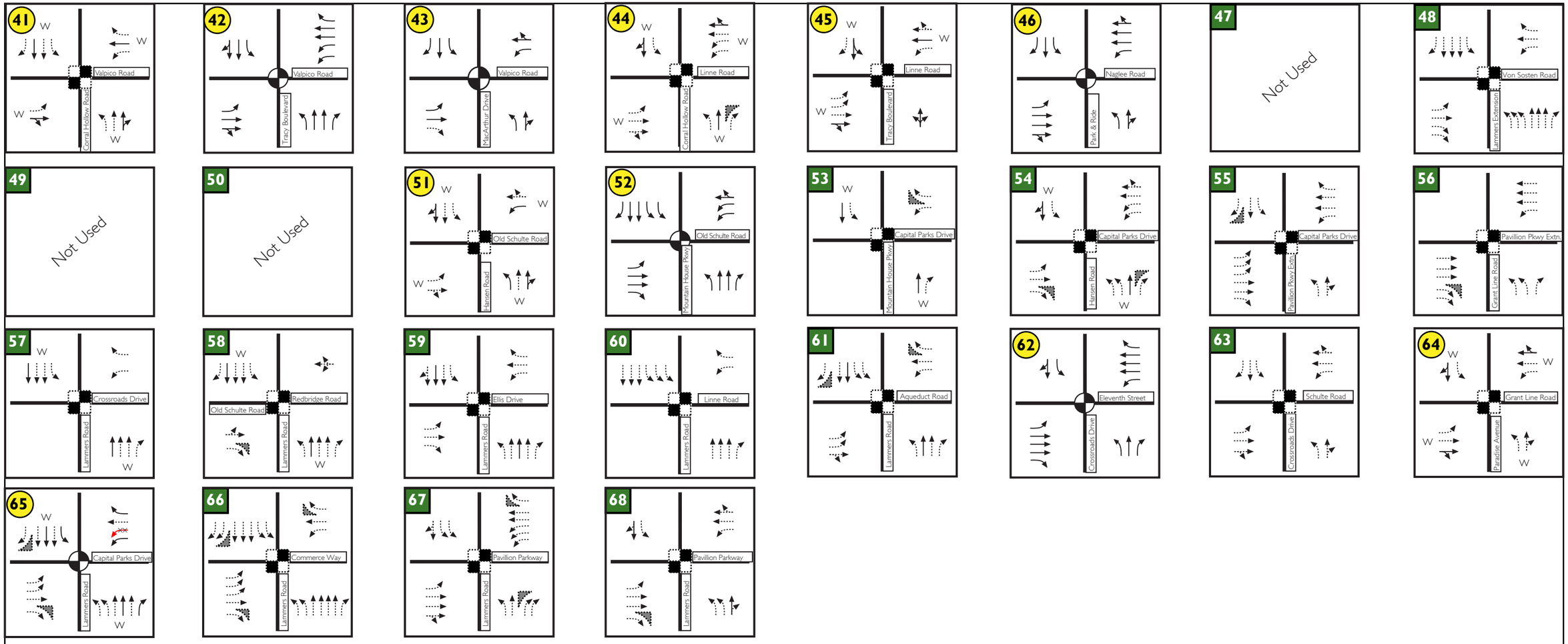
Note: (*) Intersection analyzed as roundabout; operates acceptably since V/C ratio less than 0.86.
Note: 47, 49, and 50 are not used in this table.

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Figure 4.4a: Horizon Year Intersection Lane Configuration



Legend:

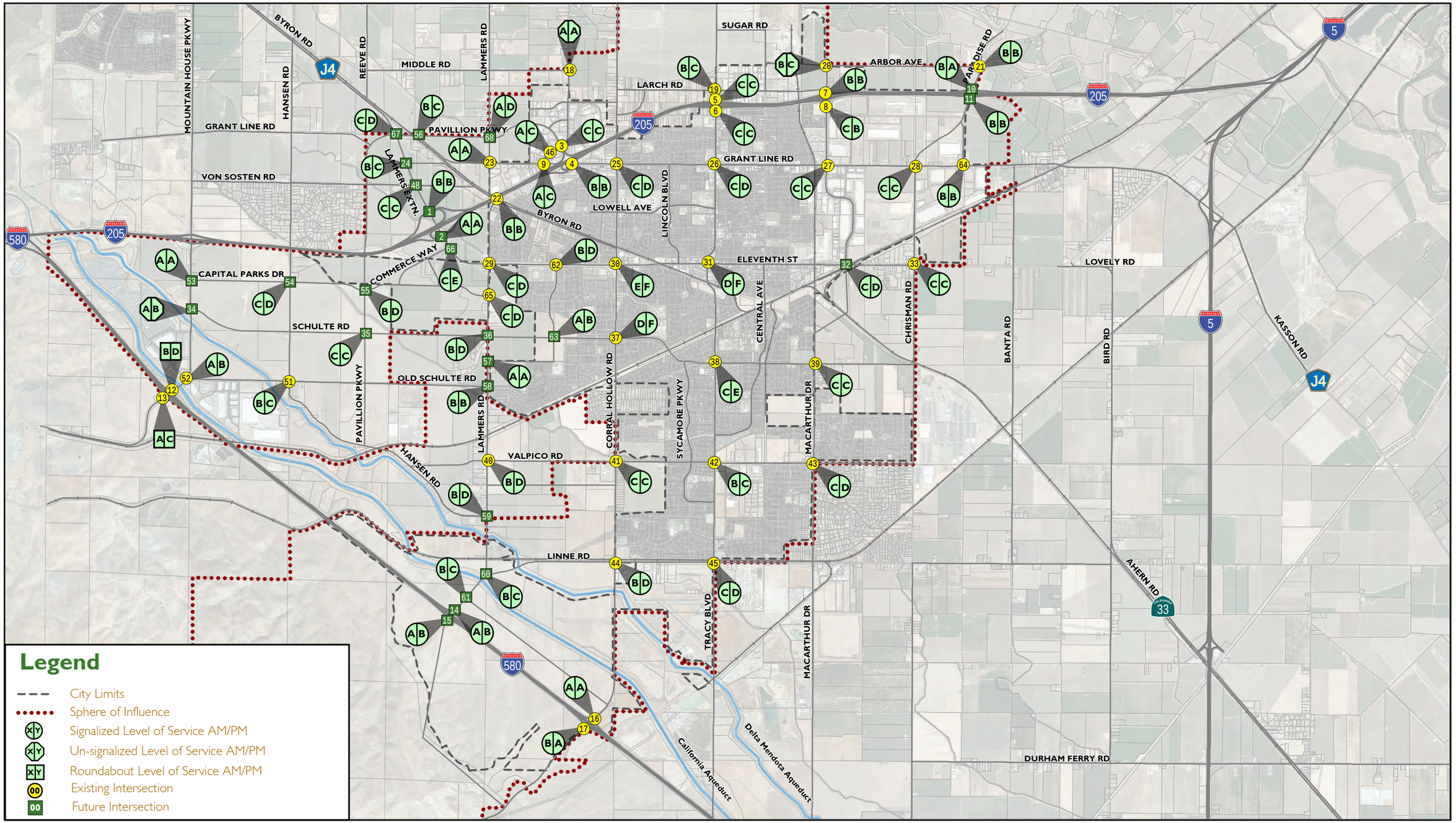
- 00 Future Intersection
- 00 Existing Intersection
- Existing Signal Control
- Future Signal Control
- Stop Sign Control
- Existing Lanes
- Future Lanes
- Remove Lanes
- "Existing Free" Right-Turn
- Future "Free" Right-Turn
- Future Roundabout Control
- "W" Widen Approach

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Figure 4.4b: Horizon Year Intersection Lane Configuration

City of Tracy Transportation Master Plan



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Figure 4.5: Horizon Year AM (PM) Level of Service

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4.5 BICYCLE AND PEDESTRIAN CIRCULATION

4.5.1 INTRODUCTION

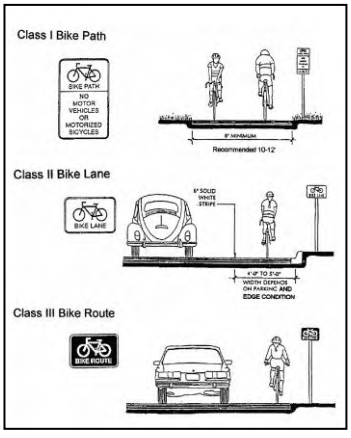
Bicycle travel is anticipated to increase significantly in the future. Recreational cycling and more avid cyclist activities are growing. Funding sources for providing and improving bicycle facilities are available from State and Federal resources. The provision of bicycle and pedestrian facilities that connect people and places is therefore the primary goal of this section in the TMP.



The existing bicycle infrastructure is described in **Chapter 2**, Existing Conditions. The City of Tracy Bicycle and Pedestrian Plan was integrated with the TMP to develop a comprehensive Bicycle and Pedestrian system that ensures a multimodal infrastructure development network. Graphics are provided to illustrate existing and future bicycle trails and sidewalks. Additionally, discussion is provided relative to current innovations for bicycle facilities such as bicycle detection, colored bike lanes, bicycle racks and bicycle lockers and other design elements to enhance the bicycle environment and raise prominence of bicyclists within the transportation system. It should be noted that bicycle facilities will be provided on every proposed parkway (expressway), arterial and collector road network segment in the TMP. It will also be expected that every new commercial and office development provides bicycle facilities on-site per new zoning standards.

4.5.2 FEDERAL HIGHWAY ADMINISTRATION FOUR E'S

The Federal Highway Administration has identified four design components to make bicycling and walking more viable and attractive. The "4-E" program emerged since the 1960's when communities' emphasis in bicycle use needed expanded perspective beyond only the provision of bicycle facilities. The 4-E's are defined below:



- Engineering: Design bicycle facilities to the "best available practices" and beyond.
- Education: Tailor education programs to adult and student bicyclists and to motorists to inform on safe cycling and driving.
- Enforcement: Establish routine enforcement measures to enforce rules design for the safety of the rider.
- Encouragement: Offer encouragement activities and events that are fun, safe, and easy to entice would-be cyclists and reward children to ride effectively and safely.

4.5.3 BICYCLE FACILITIES AND USERS



As identified in **Chapter 2**, bike facilities are defined into three categories:

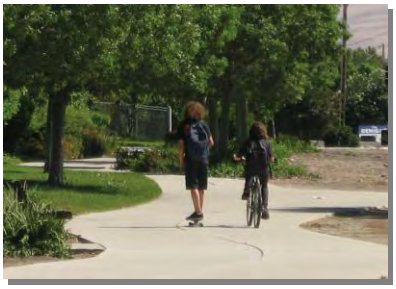
- Class I Bikeway
- Class II Bikeway
- Class III Bikeway

To obtain grant funding from State and Federal resources, bicycle facilities are required to adhere to design standards. The Caltrans standards applicable to bicycle facilities include the following:

- Caltrans *Highway Design Manual*, Chapter 1000 Bikeway Planning and Design (September 2006); and
- *California Manual on Uniform Traffic Control Devices, Part 9 Traffic Controls for Bicycle Facilities* (2010).

Bicycle facilities should encompass a system of interconnected routes, paths and on-street bicycle lanes that provide for safe and efficient bicycle travel. As discussed in *Selecting Roadway Design Treatments to Accommodate Bicyclists* (FHWA, 1994), there exist three distinct types of cyclists, each with different needs:

- Advanced or experienced bicyclists who require facilities for directness and speed and are comfortable riding in traffic and shared lanes.
- Basic or casual bicyclists who require comfortable and direct routes on lower-speed and lower-volume roadways and prefer separated and delineated bicycle facilities.
- Children who require adult supervision and typically only travel on separated paths or very low-volume and low-speed residential streets.



4.5.4 DESIGNING FUTURE ROADWAY RELATED INFRASTRUCTURE TO COMPLEMENT BICYCLE INFRASTRUCTURE

The infrastructure to support bicycle use within the City of Tracy is composed of roadways, intersections, grade separations over/under railroad crossings, freeway crossings, river crossings, and dedicated bicycle trails. Overcoming barriers such as freeways, rivers, channels, railroads and other obstacles is critical to provide continuous facilities to support bicycle usage. Thus every structure that will be constructed in Tracy in the future will include pedestrian and bicycle facilities in order to improve connectivity for these modes of travel. If the approaching roadway segments do not include pedestrian and bicycle facilities, these should still be provided on the structure, to provide for safe and efficient crossings where no other crossing options exist.

Figure 4.6 shows the City of Tracy Bicycle and Pedestrian Plan, which includes future bikeways within the City of Tracy/Sphere of Influence, identifying Class I, Class II, and Class III facilities. This Plan is being expanded upon in the TMP to further provide overall connectivity and the selection of appropriate streets for the provision of bicycle lanes. Potential bicycle routes were evaluated based on the following criteria.



- Street Classification – higher functional classification route was given higher preference.
- Destinations – special consideration was given to routes that provide a direct connection to major destinations, for e.g. park and ride lots, schools and shopping centers.
- Transit – consideration was given to transit routes to enhance transit use by bicyclists.

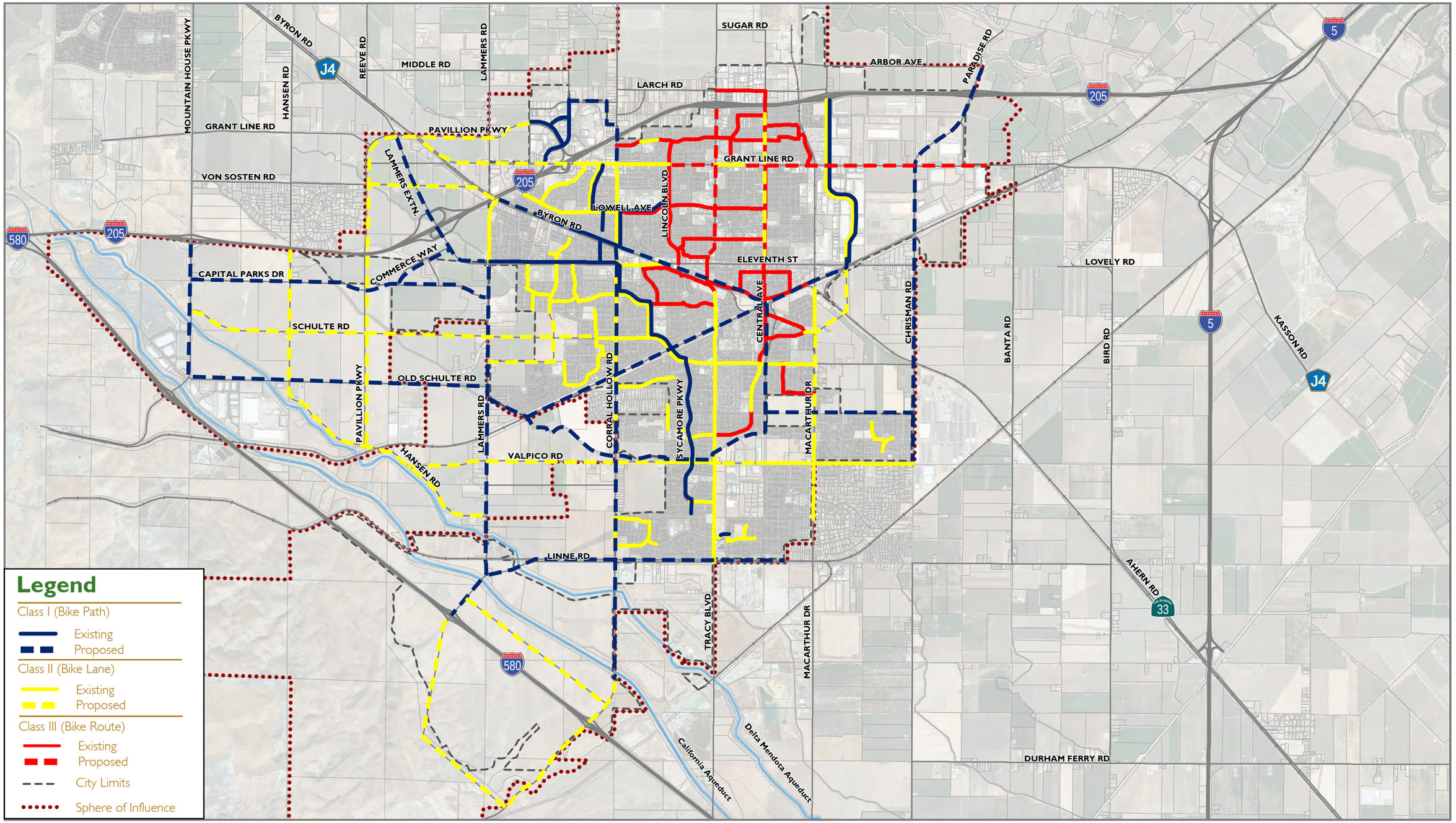
The further development of bicycle lanes and facilities in specific future development areas will complement the bicycle system included in the TMP and the City's *Bicycle and Pedestrian Plan.* Inclusion of bicycle and pedestrian facilities will enhance the multimodal nature of development within the City. The new roadway network in the TMP indicates primarily major roadway facilities. These facilities include Class I and II facilities. However, roadway cross sections for all roadways, including collectors and residential streets, do however indicate the expansion of bicycle facilities into Specific Plan areas as Class II and III facilities.



Implementation of bicycle lanes can address many community objectives, including accessibility, connectivity between destinations, transit access, mobility and increased system capacity. The following observations relative to **Figure 4.6** are provided:

- Crossings of I-205 are limited to Lammers Road Extension (future), Byron Road (future), Grant Line Road (future), Corral Hollow Road (future), Central Avenue, and Chrisman Road (future).
- Crossings of I-580 include two future crossings at Lammers Road and Corral Hollow Road.
- Class I and Class II facilities exist and are planned throughout the City.
- Most Class III facilities are east of Corral Hollow Road and already exist.
- All Parkways include Class I bicycle facilities
- All Arterials include Class I or II bicycle facilities
- All Collectors include Class II bicycle facilities
- All Residential streets include bicycle facilities

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Figure 4.6: Existing & Future Bike Routes

City of Tracy Transportation Master Plan

4.5.4.1 BICYCLE TRANSPORTATION PLAN

Cities often attempt to increase bicycle usage and formalize plans to improve cycling citywide through preparation of a Bicycle Transportation Plan (BTP). Cities are not required to prepare a BTP; however, if one is prepared, the *State of California Streets and Highways Code Article 3*, Section 891.2 requires inclusion of the following items:

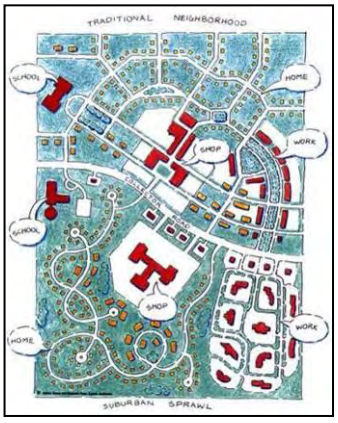


- Current and forecast bicycle commuters.
- A map and description of key existing and proposed land uses.
- A map and description of existing and proposed bikeways.
- A map and description of existing and proposed end-of-trip bicycle parking facilities.
- A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes.
- A map and description of existing and proposed facilities for changing and storing clothes and equipment.
- A description of bicycle safety and education programs conducted in the area, law enforcement activities related to bicycle operation, and resulting effects on accidents involving bicyclists.
- A description of how the bicycle transportation plan has been coordinated and is consistent with key regional transportation, air quality, or energy plans.
- A description of past and future financial allotments for bicycle facilities and projects to improve safety and convenience for bicycle commuters.

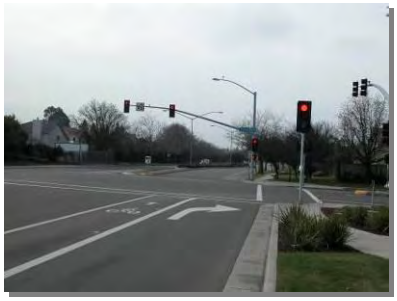
It is recommended as part of the TMP, that the next update of the Bicycle Master Plan include a Bicycle Transportation Plan.

4.5.4.2 BIKEWAYS CONNECTIONS TO LAND USE & TRANSIT

Provision of strong bikeways linkages and connections within land use development projects not only increases the bicycle network, but leads to many secondary benefits. As identified in the Tracy BMP, a maximized multi-modal system with bicycle facilities integrated with transit facilities encourage higher transit and bicycle use. Connections to key nodes of activity should be prioritized, such as bikeways links to schools, parks, and community centers that cater to non-driving users. By coordinating community design to enhance access to bikeways, the following benefits are achieved:



- Improved quality of life for residents.
- Reduction in automobile dependency and automobile trips.

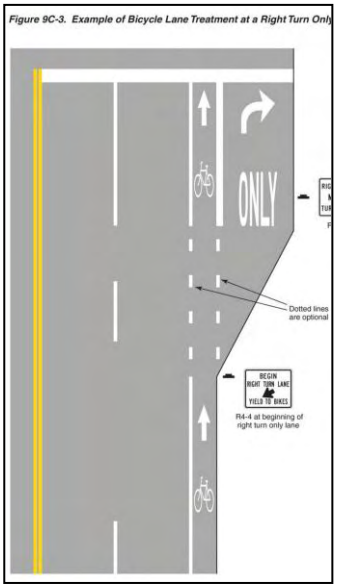


- Reduction of traffic congestion.
- Improved air quality.
- Increased connections to transit.
- Increase in safe travel by multiple user groups.

Integration of bicycle facilities within new land use development areas is not limited to right-of-way dedication or construction of facilities. Bicycle supportive programs can be incorporated into development projects, such as bike to work day and Travel Demand Management (TDM) programs.

4.5.4.3 BICYCLE LANE TREATMENT AT INTERSECTIONS

Uniform design is encouraged for bicycle lanes at intersections to provide consistency in expectations for both motorists and bicyclists. Design aspects related to bicycle lanes include facility design, signs and pavement markings.



Bicycle lane design treatments at conventional stop-controlled and signalized intersections is generally standardized, and is governed by the Caltrans *Highway Design Manual* Chapter 1000 and *MUTCD* Part 9.

Treatment at roundabouts includes careful balancing of motorist and bicyclists travel. Provision of dedicated bike lanes through roundabouts is discouraged as identified in *Roundabouts: An Informational Guide* (FHWA, 2000). At single-lane roundabouts, bicyclists have the option of either mixing with traffic or using the roundabout like a pedestrian, thus exiting the roadway via a ramp prior to entering the roundabout, utilizing the pedestrian crosswalk and then entering the bike lane on the downstream side of the roundabout via an onramp. Providing bicyclists two choices helps accommodate both experienced and less-experienced users within roundabouts. At two-lane roundabouts, a bicycle path separate and distinct from the circulatory roadway is preferable, such as a shared bicycle-pedestrian path of sufficient width and appropriately marked to accommodate both types of users. Experienced bicyclists may prefer provision of an alternative route along another street or path that avoids the roundabout instead of crossing the multi-lane roundabout as a pedestrian. Provision of safe routes through roundabouts for bicyclists should be incorporated into roundabout planning and design regardless of provision of alternate routes.

4.5.4.4 BICYCLE PATH PAVEMENT MATERIAL

Determination of Class I Path construction material includes multiple criteria, such as upfront and maintenance costs, heat retention, and type of user anticipated. Bicycle trails are typically constructed with new or recycled Asphalt Cement concrete (ACC); however, Portland Cement Concrete (PCC) may be utilized to reduce heat retention. PCC may cost more initially, but has lower maintenance costs, while Decomposed Granite (DG) with stabilizer has lower initial costs with

high maintenance costs. Preparation of a lifecycle cost analysis and other key metrics can help rank material type.

The Caltrans *Highway Design Manual* (HDM) identifies pavement structure for bikeways consisting of ACC; therefore, state or federal funding of bicycle facilities may require use of asphalt. Design exceptions can be prepared and submitted to Caltrans for review to change standards as identified in the HDM.



4.5.5 SMART GROWTH DESIGN ELEMENTS

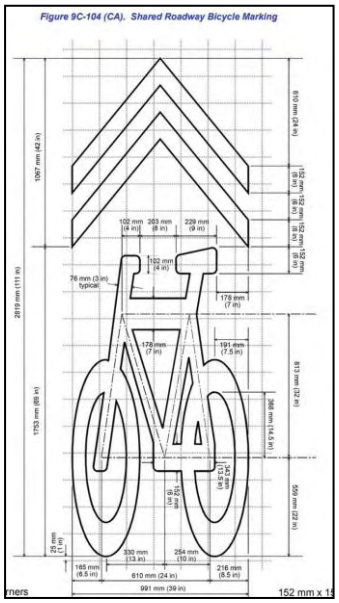
The following Smart Growth design elements are relevant to bicycle master planning.

- Width of on-street bike lanes is recommended at 5 feet with a desired width of 6 feet. However, wider bike lanes also encourage vehicular speeding when cyclists are not present. The TMP recommends 5 feet bicycle lanes where the lane is adjacent to a curb and 4 feet where the travel lane is adjacent to on-street parking. Off-street bicycle paths can be 8 feet for bicycle only facilities and 10 feet for shared (multi-use) facilities accommodating both cyclists and pedestrians.
- Driveway access management varies by roadway type with frequent driveways on lower speed roadways and residential streets, and infrequent driveways on motorist thoroughfares.
- Limit bicycle use on sidewalks to avoid conflicts with streetscape and pedestrians.
- Provide bicycle detection traffic control devices consistent with the California *MUTCD* for Class II facilities.
- Provide shared roadway bicycle marking consistent with the California *MUTCD* for Class III facilities.
- Incorporating bicycle facilities for new and retrofitted roads to meet complete streets design principles which ensure adequate right-of-way is provided to enable safe access for all users (motorists, pedestrians, bicyclists, transit vehicles and users).









4.5.5.1 INNOVATIVE DESIGN ELEMENTS

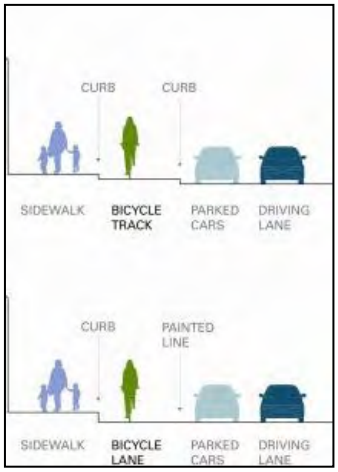
The following innovative bicycle facility design elements are being tested nationwide to enhance bicycle operations, support increased bicycling, and accommodate increased user groups.

- While provision of bike lockers and storage is identified throughout the BMP, private sector vendors have worked with many jurisdictions to provide enhanced bike parking. Bike parking at centralized facilities typically serve to elevate the storage of bicycles through membership, providing security, showers, changing facilities, valet parking, retail sales, and/or maintenance services. Provision of bike station facilities are expected to expand over time to accommodate many other modes such as car sharing, electric vehicle rentals, segway rentals, neighborhood electric vehicle rentals, and other non-polluting modes of transport.
- Incorporation of Bike Boxes at signalized intersections with green roadway striping is used to move cyclists in front of automobiles where high volume bicycle traffic occurs. The Bike Box is intended to cluster bicyclists at the stop line in front of automobiles while waiting for a red traffic signal to change to green. When the traffic signal changes to a green light, the bicyclists proceed forward along the edge of the roadway using a Class II on-street bike lane. Clustering the bicyclists helps raise prominence of bicyclists and provides more opportunity for motorists to turn right at the signal without conflicting with a long queue of bicyclists proceeding straight.
- As identified in the Caltrans *HDM*, shared roadway marking stencils are an accepted treatment for Class III facilities. The Tracy BMP discusses the shared roadway concept and identifies the following benefits; increased motorist awareness of bicyclists in the lane, illustrate the direction of travel for bicyclists, discourage cycling on sidewalks, and improved positioning by bicyclists away from collisions with opening of doors from parked cars (termed "dooring"). The shared lane marking is commonly referred to as a "Sharrow" and is typically centered 11 feet from the curb where on-street parking is provided. The City of Long Beach utilizes Sharrows and supplements the stenciling with Modified W11-1 and Modified W16-1 signs to define the meaning of the stencils on the roadway to motorists and bicyclists.
- Often coordinated with sharrows are coloring of Class II bikeways on roadways to help raise motorists awareness of bicyclists. Bike lane coloring is typically green, however, the increased amount of paint required suggests application at specific locations only.
- While the Tracy BMP discusses bike corrals to park bicycles for temporary events, some cities have instituted conversion of on-street parallel parking

spaces to dedicated permanent bike corrals. Where one automobile could park before, within the same space a bike corral can accommodate parking for 8-12 bicycles. Bike racks are installed within the roadway and protected from automobile traffic using bollards and removable curbs. By placing the bike parking within a protected roadway zone, the bicycles are removed from the sidewalk, maintaining space for pedestrian traffic and commercial space. Within some cities, commercial businesses have begun requesting conversion of on-street parking in front of their business to bike corrals to gain higher turnover and capture more retail foot traffic by cyclists. Since bicycles have lower sightlines, inclusion of bike corrals in no-parking zones may be possible without compromising parking for automobiles.



- Similar to bike corrals is the "bike oasis" concept which provides for bike parking on curb extensions or dedicated spaces supplemented with shelter providing cover and information panels and maps.
- Bicycle boulevards as discussed in the Tracy BMP, can be used to promote bicycle circulation where traffic volumes are low and physical constraints limit separate facilities. Application of bicycle boulevards can provide a through route for bicyclists where automobile through traffic may not be desired. In some cases, application of bicycle boulevards has been coordinated with bicycle only traffic signal crossings of high vehicular traffic roadways. Bicycle boulevards can more easily accommodate turns and diversions to maintain ease in riding despite a potentially more circuitous route. Incorporation of small roadway markings to direct cyclists along the bicycle boulevard is being tested, but is not yet formalized. Coordination of bicycle boulevards with stormwater runoff management practices may provide increased funding opportunities.
- Utilized in Copenhagen, Cologne, and a demonstration project in Portland, Oregon is testing the CycleTrack concept to switch the physical location of on-street parking and a Class II bike lane. In the Portland example, on-street parking is moved away from the curb by 8-10 feet and the Class II bike lane is moved between the parking area and the curb edge. By moving the bike lane closer to the curb, bicyclists are further separated from moving traffic and can more easily access the sidewalk for amenities, destinations, and parking areas. The horizontal separation between motorists and bicyclists can be facilitated through on-street parking, landscaping, or other means. When the separation is occupied by on-street parking, a pedestrian buffer zone is required to allow for entering and exiting parked vehicles. Accommodating bus stops and activity requires careful planning when incorporating a CycleTrack design.



4.5.6 SIDEWALKS



Figure 4.7 shows the existing and future sidewalks within the City of Tracy/Sphere of Influence, identifying sidewalks on both sides of major streets. The following observations relative to **Figure 4.7** are provided:

- Crossings of I-205 are limited to Pavillion Parkway (future), Lammers Road Extension (future), Byron Road (future), Grant Line Road, and Chrisman Road (future).
- Crossings of I-580 include two future crossings at Lammers Road and Corral Hollow Road.
- All Parkways include pedestrian facilities
- All Arterials include pedestrian facilities
- All Collectors include pedestrian facilities
- All Residential streets include pedestrian facilities

All pedestrian facilities must meet the American with Disabilities Act requirements, including minimum grades, ramps and detectable surfaces at intersections and where walkways lead pedestrians onto traveled ways.

4.6 BRIDGE AND CULVERT FACILITIES

4.6.1 INTRODUCTION

This section documents infrastructure related to Bridges and Culverts facility planning for the Tracy Transportation Master Plan (TMP). The existing Bridges and Culverts crossings are indicted in Chapter 2, Existing Conditions. The City of Tracy Bridges and Culverts Facilities was integrated into the TMP to develop a comprehensive circulation system that identifies crossings to minimize traffic conflicts and preserve open space and preservation areas. Graphics are provided to illustrate existing and future Bridge and Culvert facilities. Planning for Bridge and Culvert facilities is based on the planned circulation system at buildout conditions, long-range traffic forecasts, the need for separation of various transportation modes (cars/railroads), location of canals, rivers, and creeks, and open space/preservation areas. Discussion is provided regarding existing and future Bridge and Culvert crossings, facility design, and resource documents.



4.6.2 PLANNING BRIDGE AND CULVER FACILITIES

For the purposes of this report, an over or underpass is described as a freeway-related crossing of another roadway or railroad, bridges are defined as crossings over water bodies, and culverts are enclosed conduits for water to pass under roadways. Consideration was given to the current and forecast vehicular traffic crossing, the need for freeway crossings to serve local traffic, and accounting for canals, sloughs, and aqueducts. The TMP establishes a platform from which design and continued discussions with the Department of Fish and Game (DFG) can occur.



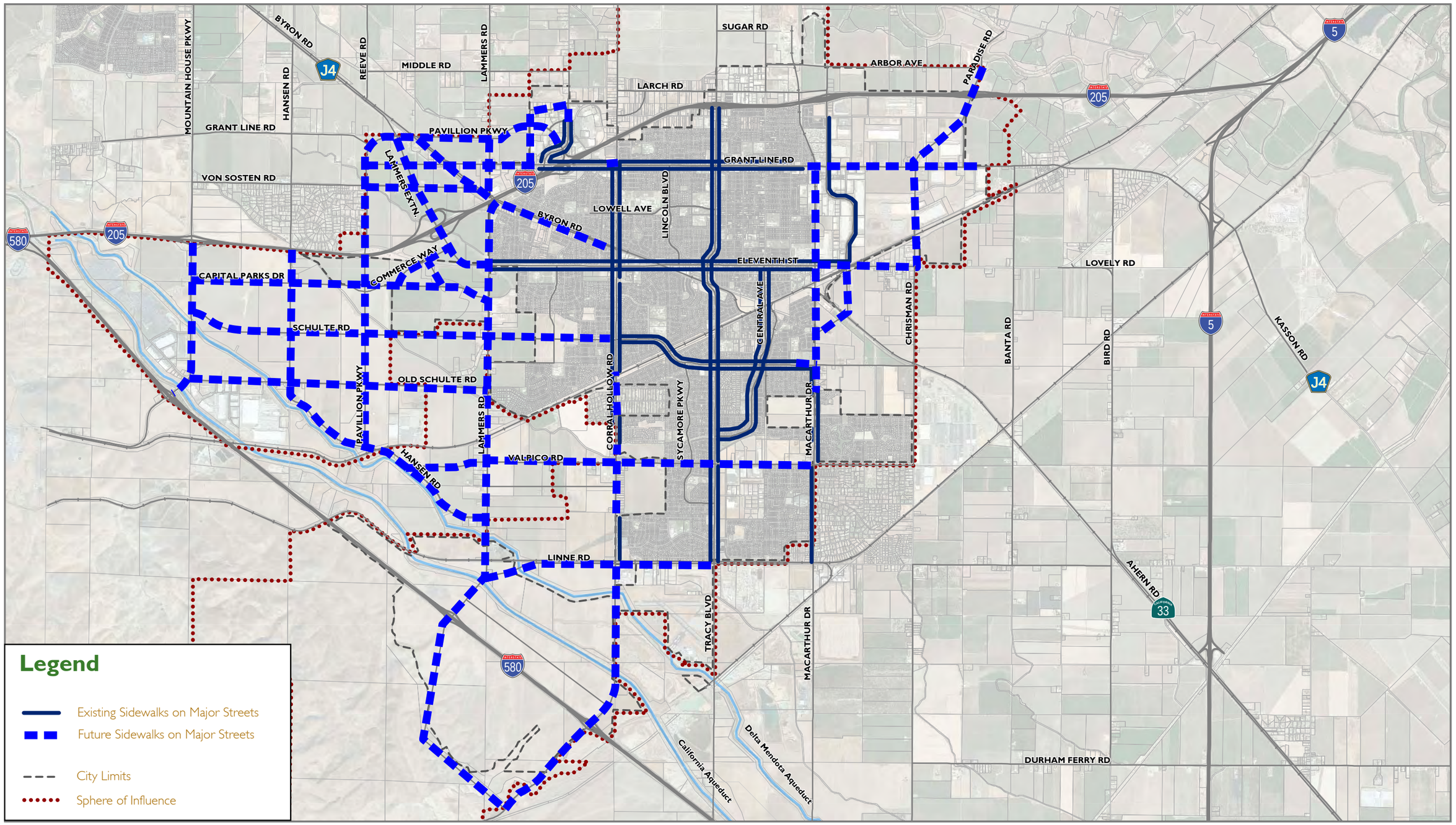
4.6.3 FUTURE BRIDGE AND CULVERT FACILITIES

Figure 4.8 shows the City of Tracy Bridge and Culvert Facility Plan, which includes the existing and future Bridges and Culverts facilities. **Table 4.4** summarizes the over/underpass facilities including existing locations where widening is required.

As shown in **Table 4.4**, fifteen over/underpasses are planned at buildout of the City transportation plan, with widening expected at three locations.

Table 4.5 summarizes the bridge facilities including existing locations where widening is required.

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Figure 4.7: Existing and Future Sidewalks

Table 4.4: Over/Underpass Facilities Summary

#	Location	Status	Widening /Replacement Required?
1	I-205/Mountain House Parkway	Existing	No
2	I-205/Hansen Road	Existing	No
3	I-205/Pavillion Parkway West	Future	N/A
4	I-205/Eleventh Street	Existing	No
5	I-205/Lammers Road Extension	Future	N/A
6	I-205/Lammers Road-Byron Road	Existing	No
7	I-205/Pavillion Parkway East	Existing	No
8	I-205/Corral Hollow Road	Existing	No
9	I-205/Tracy Boulevard	Existing	No
10	I-205/Holly Drive	Existing	No
11	I-205/MacArthur Drive	Existing	No
12	I-205/Paradise Road	Existing	Yes
13	I-580/Mountain House Parkway-Patterson Pass Road	Existing	No
14	I-580/Lammers Road	Existing	Yes
15	I-580/Corral Hollow Road	Existing	Yes
Note: N/A = Not Applicable.			

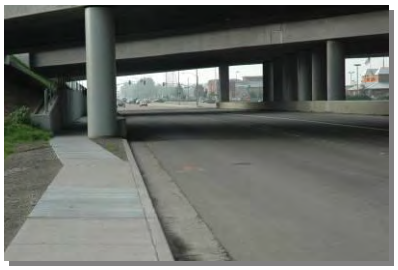


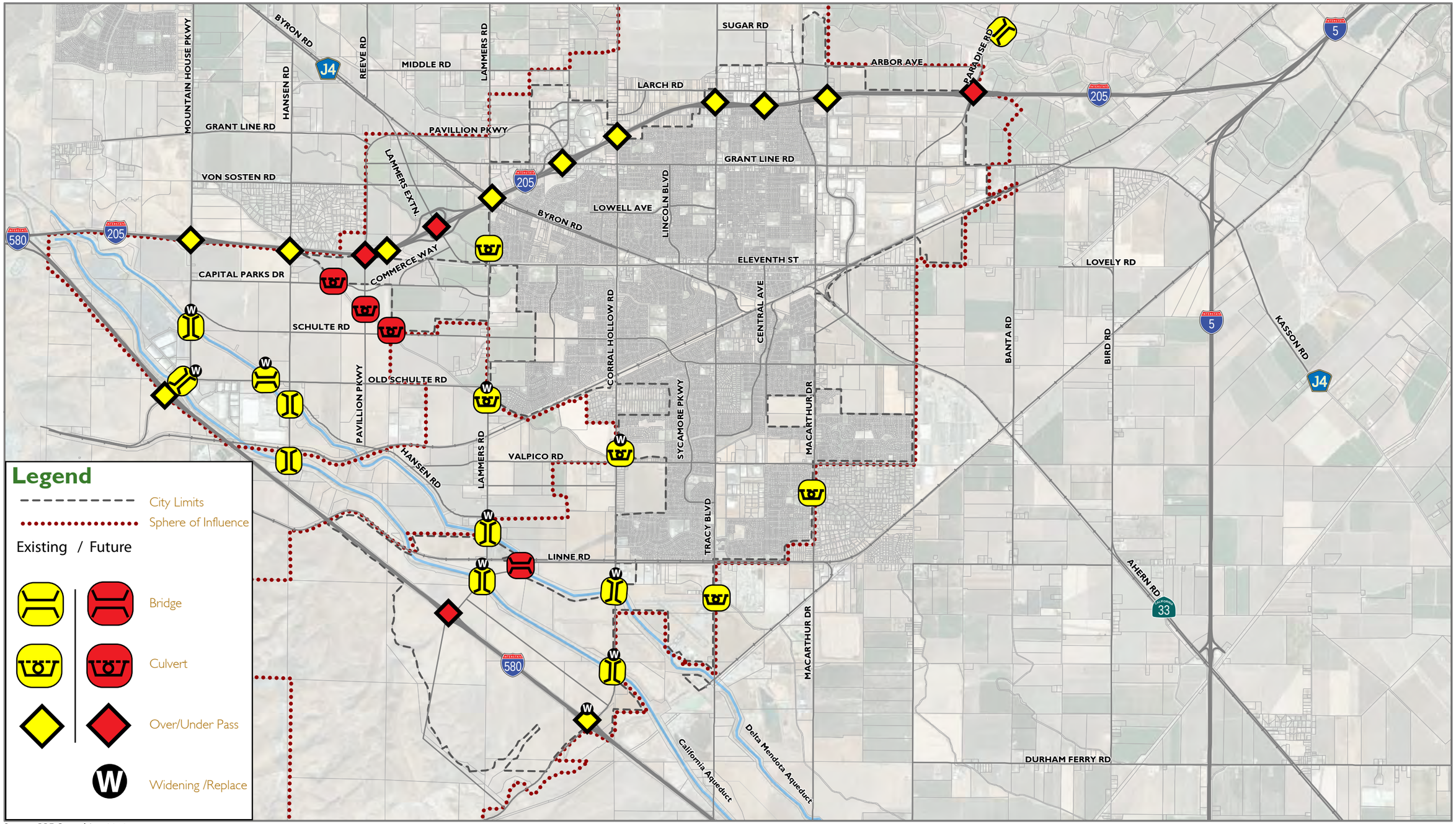


Table 4.5: Bridge Facilities Summary

#	Location	Status	Widening /Replacement Required?
1	Delta Mendota Canal/Mountain House Parkway	Existing	Yes
2	California Aqueduct/Mountain House Parkway	Existing	Yes
3	Delta Mendota Canal/Old Schulte Road	Existing	Yes
4	Delta Mendota Canal/Hansen Road	Existing	No
5	California Aqueduct/Hansen Road	Existing	No
6	Delta Mendota Canal/Lammers Road	Existing	Yes
7	California Aqueduct/Lammers Road	Existing	Yes
8	Delta Mendota Canal/Linne Road	Future	N/A
9	Delta Mendota Canal/Corral Hollow Road	Existing	Yes
10	California Aqueduct/Corral Hollow Road	Existing	Yes
11	Tom Paine Slough/Paradise Road	Existing	No
Note: N/A = Not Applicable.			



As shown in **Table 4.5**, eleven bridge crossings are planned at buildout of the City transportation plan, with widening expected at six existing bridges (crossing Delta Mendota Canal and California Aqueducts).



Source: RBF Consulting 2010

North

0 0.5 1 2 Miles (Approximate)

Figure 4.8: Bridges and Culverts (Excluding Railroad Crossings)

Table 4.6 summarizes the culvert facilities including existing locations where widening is required. As shown in **Table 4.6**, eight culverts are planned at buildout of the City transportation plan, with widening expected at two existing culverts (crossing Upper Main Canal).

Table 4.6: Culvert Facilities Summary

#	Location	Status	Widening /Replacement Required?
1	Lower Main Canal/Lammers Road	Existing	No
2	Upper Main Canal/Capital Parks Drive	Future	N/A
3	Upper Main Canal/Pavillion Parkway	Future	N/A
4	Upper Main Canal/Schulte Road	Future	N/A
5	Upper Main Canal/Lammers Road	Existing	Yes
6	Upper Main Canal/Corral Hollow Road	Existing	Yes
7	Lateral East Aqueduct/Tracy Boulevard	Existing	No
8	Upper Main Canal/MacArthur Drive	Existing	No
9	Upper Main Canal/Old Schulte Road	Existing	No
Note: N/A = Not Applicable.			

4.6.4 BRIDGE AND CULVERT FACILITIES DESIGN PLANNING



To obtain grant funding from State and Federal resources, Bridges and Culverts facilities are required to adhere to applicable design standards such as required by the relevant Authorities. Bridges, over/underpasses, and culvert crossings should accommodate all users, including traffic from automobiles, buses, pedestrians, and bicyclists. Design standards and guidance for bridges and culverts is provided in the Caltrans *Highway Design Manual*.

4.6.5 SMART GROWTH DESIGN ELEMENTS

The following Smart Growth design elements are relevant to Bridge and Culvert facilities planning:

- Provide safe and efficient crossings for all modes across bridges to enhance

connectivity between land uses and amenities.

- Since bridges, culverts, and over/underpasses often are spanning major obstacles within the community, when planning right-of-way, planning and design of facilities, consider opportunities to incorporate trails and bikeways within crossings.

4.7 Roadway Classification and Cross Sections

4.7.1 INTRODUCTION

The roadway system serves to provide consistent information and guidance to road users in a manner that improves vehicular and pedestrian operations and safety, yet maintain quality of life for Tracy road users. The roadway classification includes strategies making existing streets work better, and applying technology to improve traffic flow. The Transportation Master Plan brings overlap with policies and goals regarding a "complete streets" policy, context-sensitive design, mode split targets, vehicle miles traveled (VMT) and per capita reduction goals.

Tracy's street network is the primary transportation system and serves a variety of modes and vehicular types, including automobile, truck, transit, bicycles, and pedestrians. Many new development areas are included in the General Plan. Existing areas are built out and roadways are constrained to their maximum right-of-way requirements thus reducing the ability to implement smart growth and context-sensitive designs.

This section documents the road hierarchy, its functionality, operations and typical cross sections for various types of roadways for the Tracy Transportation Master Plan (TMP).

These standards are designed to accommodate the existing and future needs of the circulation network. Smart Growth principles have been incorporated into to road hierarchy. Graphics are provided to illustrate lane widths, sidewalks, Public Utility Easements, bicycle facilities, medians, landscaping, and right-of-way requirements. A discussion of the various types of roadway classifications and their standard cross sections is provided below.

The design standards and roadway cross sections are guidelines for inclusion in specific plans and tentative map applications. As such, the City may deviate from these guidelines on a case by case basis to accommodate site specific requirements.

4.7.2 ROADWAY CLASSIFICATION

The roadways in the Tracy TMP are defined using a hierarchical classification system. The classification system defines a roadway according to function, capacity, and size. The categories range from parkways (highest capacity) to arterials, collectors, residential streets, and alleys (lowest capacity). Industrial streets are categorized separately. **Figure 4.9a** illustrates the roadway classification for the existing and future roadways in Tracy. **Figure 4.9b** illustrates the recommended CMP network map in Tracy. A representative cross section for each classification type is illustrated below (**Figures 4.10** to **4.14**) and detailed cross sections are contained in **Figures 4.15a** to **4.15f**.

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Not to Scale

LEGEND

- Freeway
- Parkway (City of Tracy)
- County Expressway (San Joaquin)
- County Road
- Arterial
- On-site Arterial
- Collector
- On-site Roads
- Existing Freeway Interchange
- Proposed Freeway Interchange
- Railroad
- City of Tracy SOI

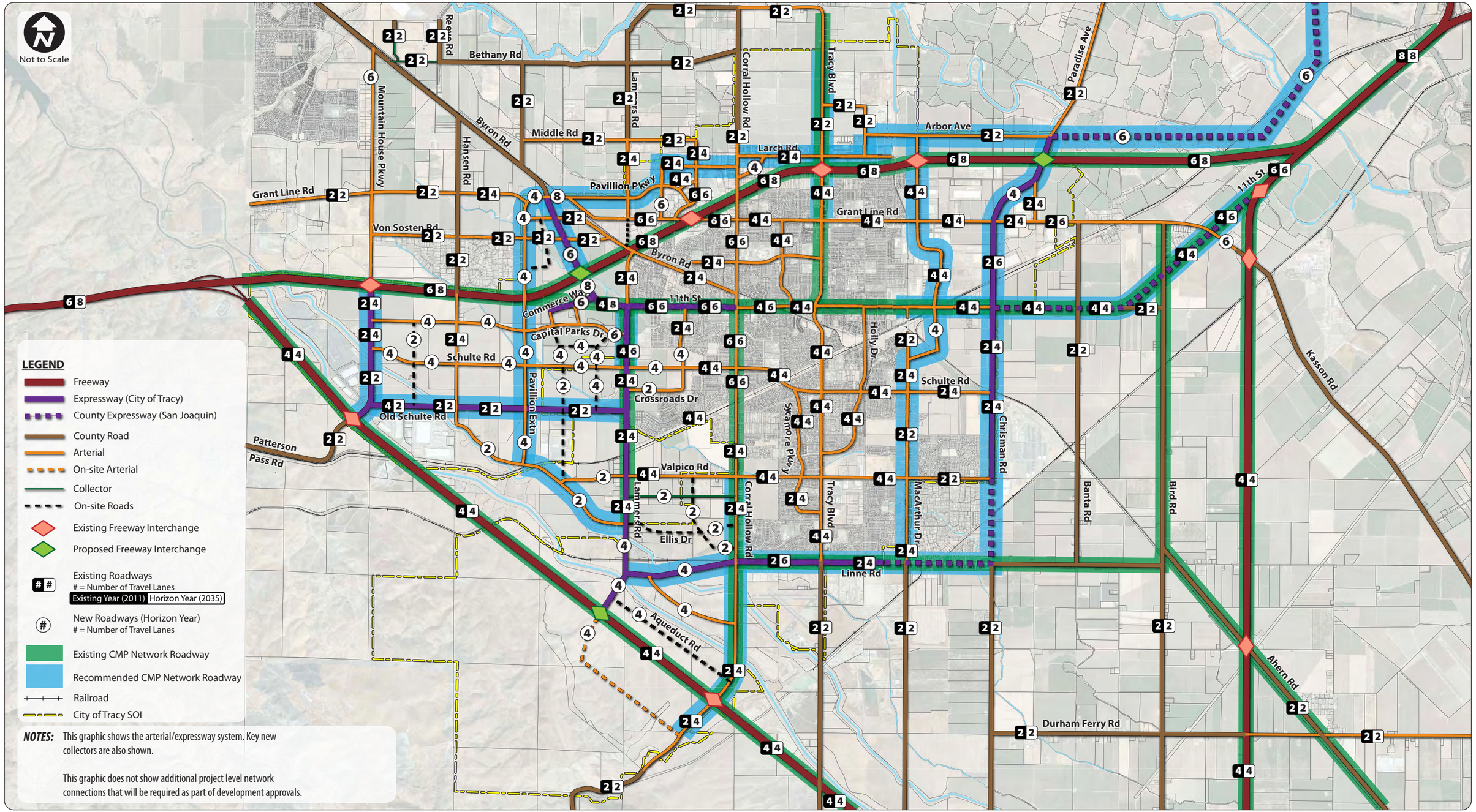
NOTES: This graphic shows the collector/ arterial/ expressway/ parkway system. Key new collectors are also shown.

This graphic does not show additional project level network connections that will be required as part of development approvals.

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Figure 4.9a: Future Roadway Classification Map

City of Tracy Transportation Master Plan



FEHR & PEERS TRANSPORTATION CONSULTANTS

RBF CONSULTING

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Figure 4.9b: Recommended CMP Network Map

City of Tracy Transportation Master Plan

4.7.2.1 PARKWAYS (EXPRESSWAYS)

As discussed in Chapter 2, expressways provide connections to regional roadways such as freeways and are usually designed to accommodate through traffic with limited access to adjacent land uses. For the Tracy TMP, the expressway roadway classification will be relabeled as a parkway. Travel speeds vary between 45 miles per hour and 55 miles per hour. Class I bikeways are provided on all parkways.



Figure 4.10: Typical 6-Lane Parkway

4.7.2.2 ARTERIALS (MAJOR AND MINOR)

Arterials are designed to carry traffic between neighborhoods, central business districts, and major destinations. Arterials provide connections from collectors to parkways and freeway interchanges. Access to adjacent land uses on arterials is limited. Arterials can be divided or undivided and include two to six travel lanes. For 6-lane arterials, shoulders are not provided, thus intermittent pullouts (8 feet wide and 75 feet long with appropriate tapers) should be located every 1,000 feet to accommodate vehicle breakdowns and police vehicles. Vehicular speeds are typically lower than parkways as more access points per mile are provided. Arterials generally serve high traffic volumes (up to 50,000 average daily trips for major arterials). Travel speeds vary between 35 miles per hour and 45 miles per hour. Similar to parkways, Class I bikeways are provided on arterials.



Figure 4.11: Typical 6-Lane Arterial

4.7.2.3 COLLECTORS

Collectors are smaller sized and undivided roadways (two lanes) that link residential roads with arterial roads. Collectors have travel speeds that vary between 25 miles per hour and 35 miles per hour. Class II bike lanes are provided on collectors. High travel speeds are discouraged on collector roads since they provide access to abutting land uses and to neighborhood streets. Collectors shall not include driveways to residential properties.

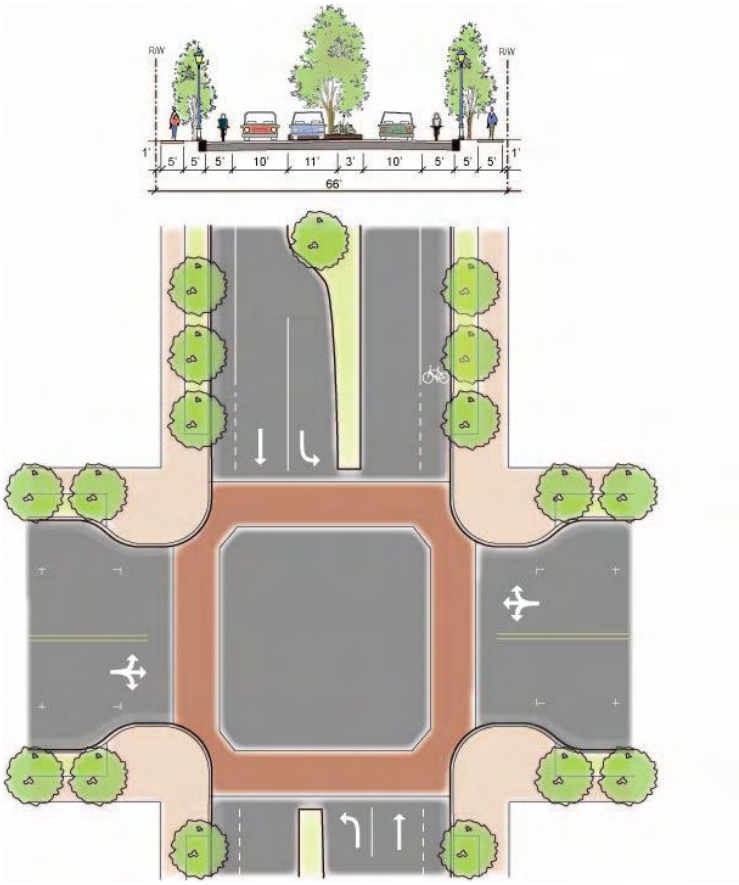


Figure 4.12: Typical 2-Lane Major Collector

4.7.2.4 RESIDENTIAL STREETS AND ALLEYS

These roadways serve residential neighborhoods and emphasize multi-modal (pedestrians, bicyclists, and motorists) use. These roadways may provide one-way or two-way travel and may include parking on one side, both sides, or no parking. Travel speeds on residential streets should be 30 miles per hour or less.

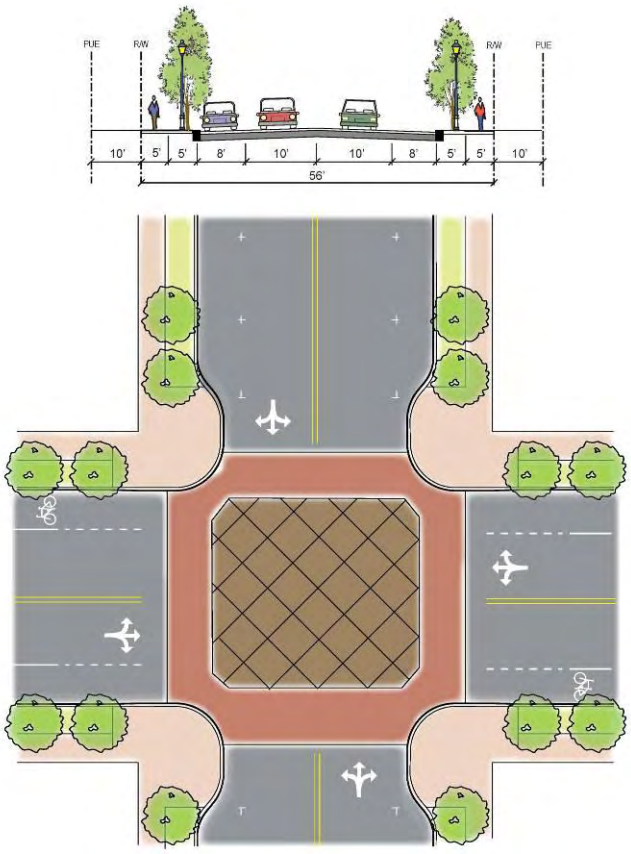


Figure 4.13: Typical 2-Lane Residential Street With Parking on Both Sides

(1,500 to 2,500 Vehicles Per Day)

4.7.2.5 INDUSTRIAL STREETS

These roadways provide access to industrial and commercial uses and therefore require wider travel lanes to accommodate trucks and larger vehicles. Shoulders or two-way left turn lanes are provided. Standard 5-foot sidewalks are provided, however, bicycle facilities are typically not included.

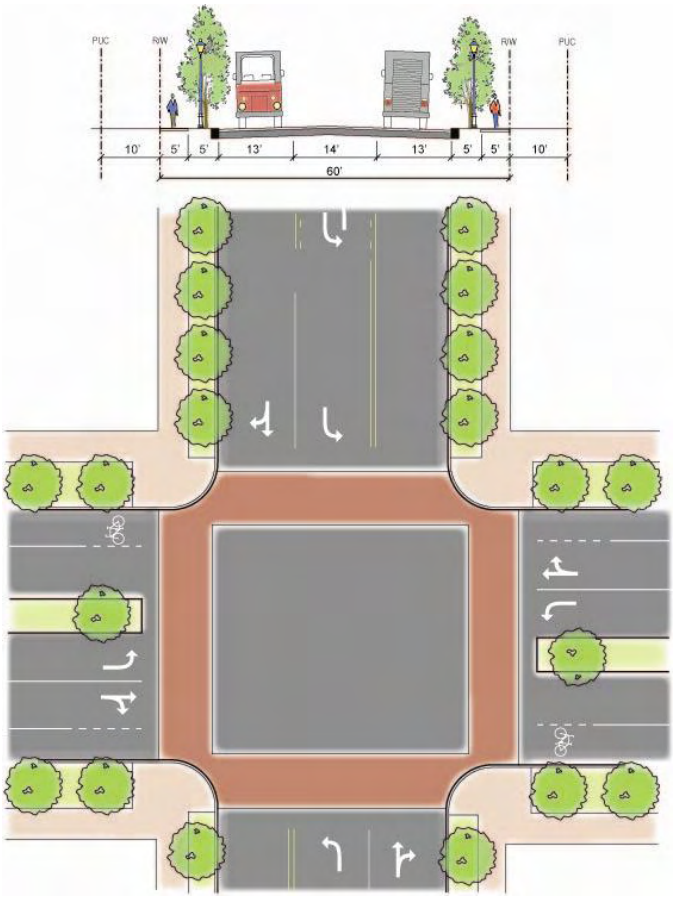
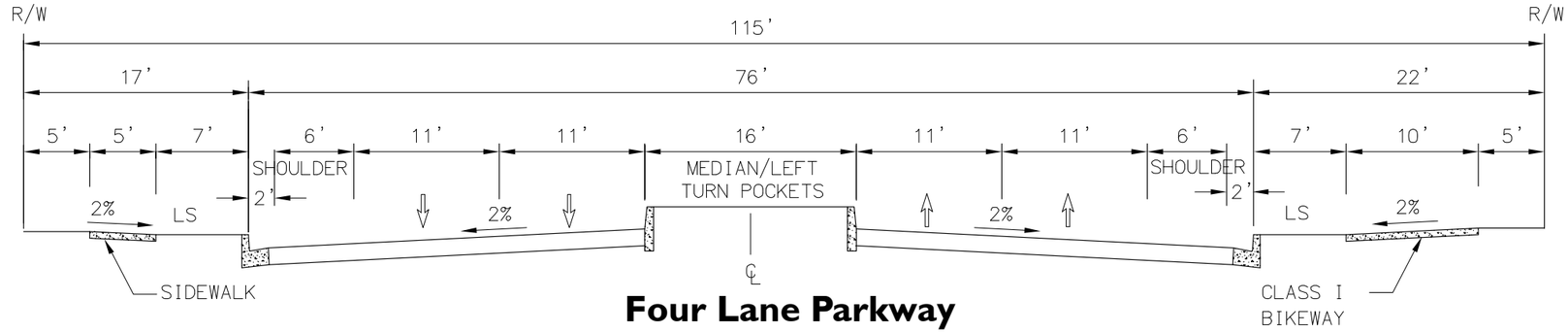
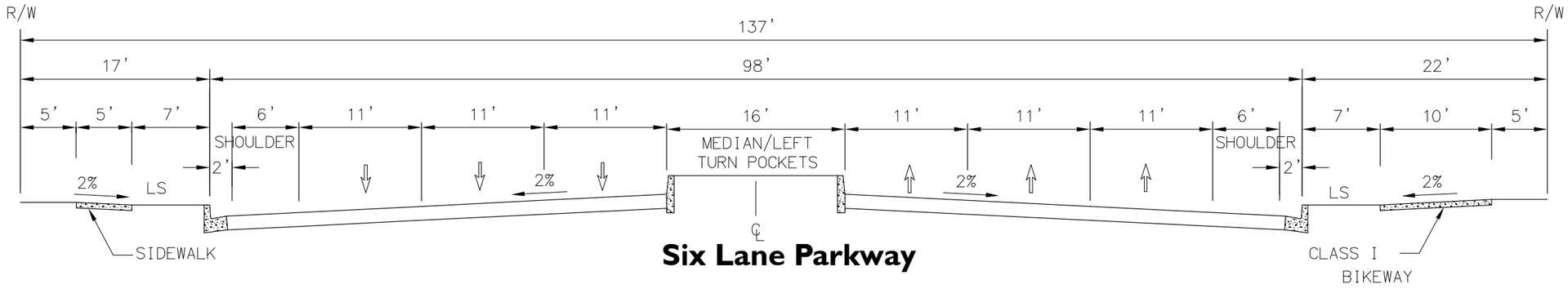


Figure 4.14: Typical Industrial Street with Two-Way Left-Turn Lane

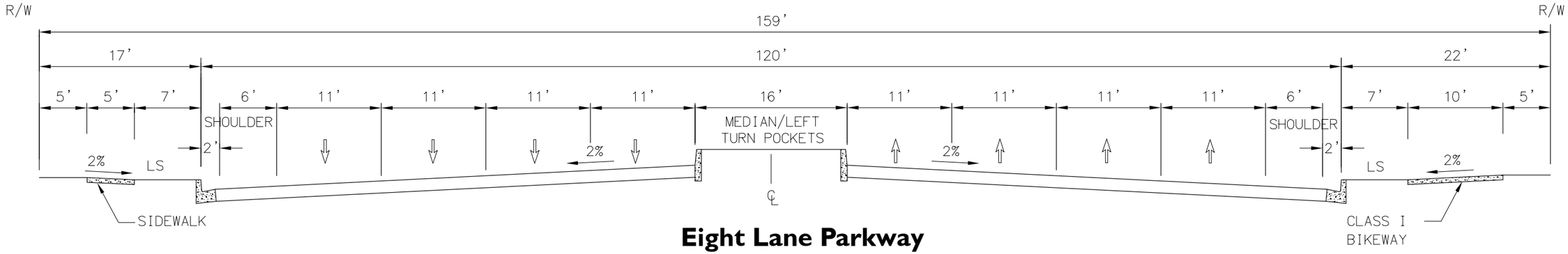
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Four Lane Parkway



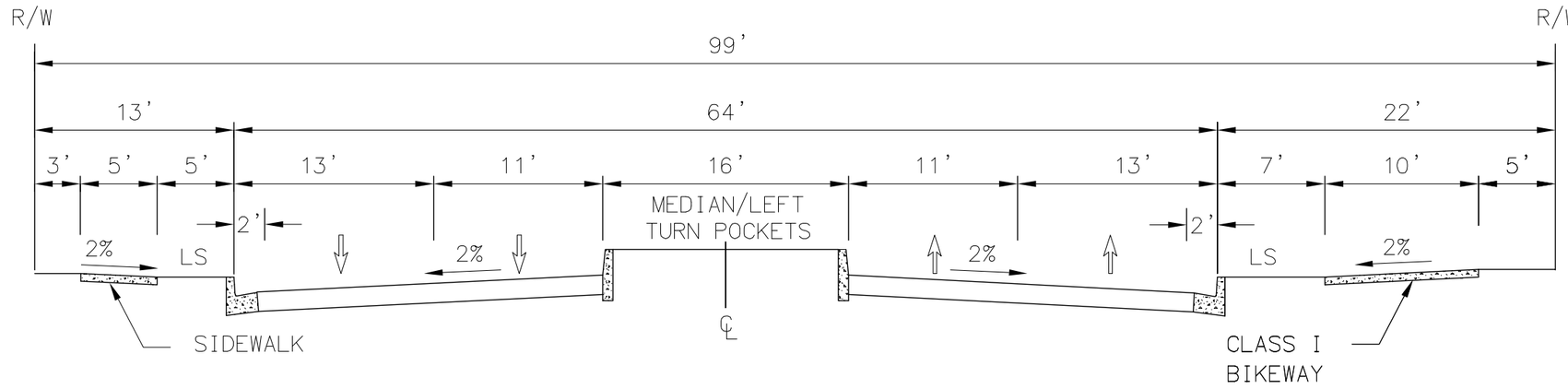
Six Lane Parkway



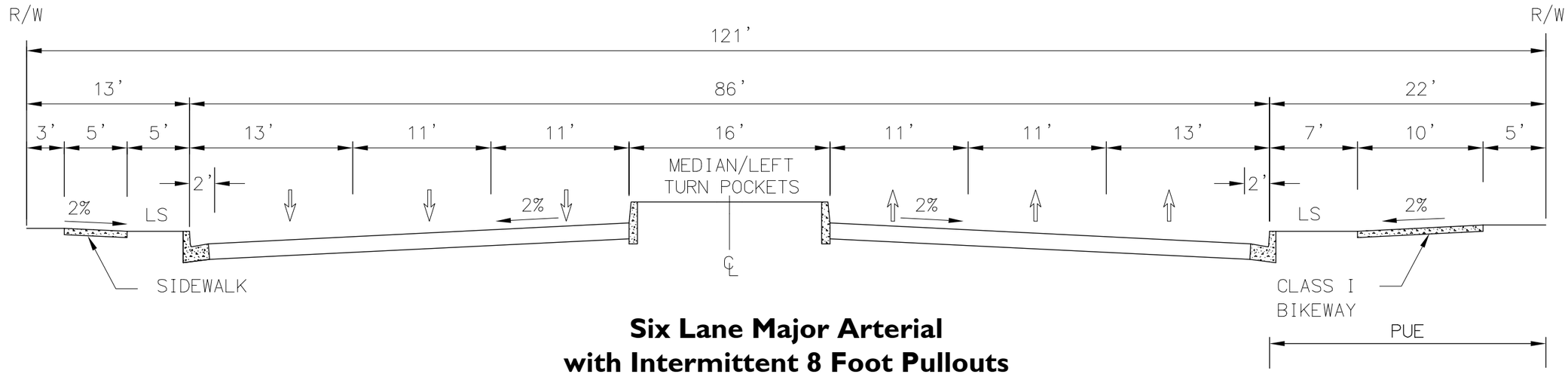
Eight Lane Parkway

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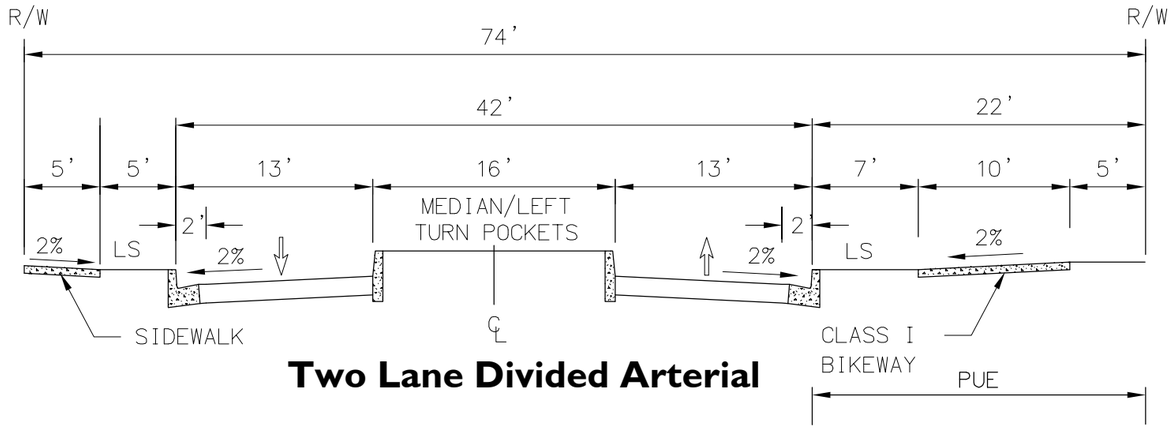
Figure 4.15a: Parkway Roadway Cross Sections



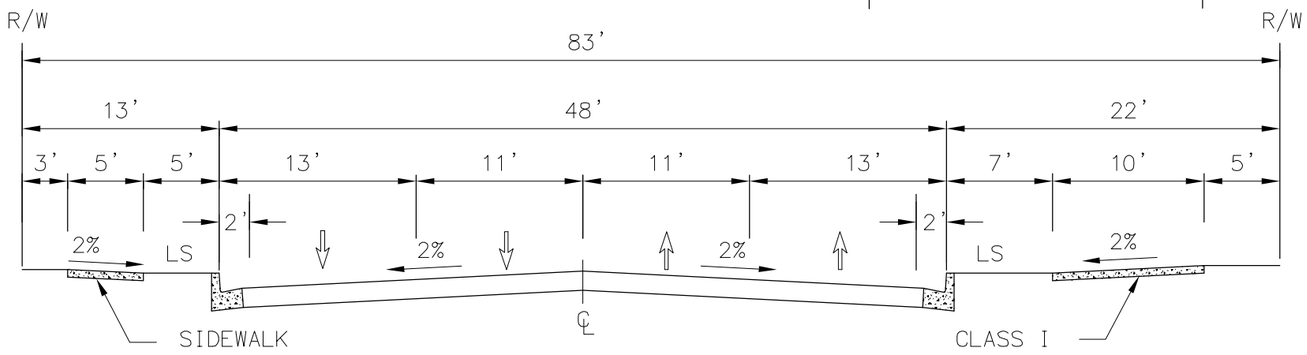
Four Lane Major Arterial With Median



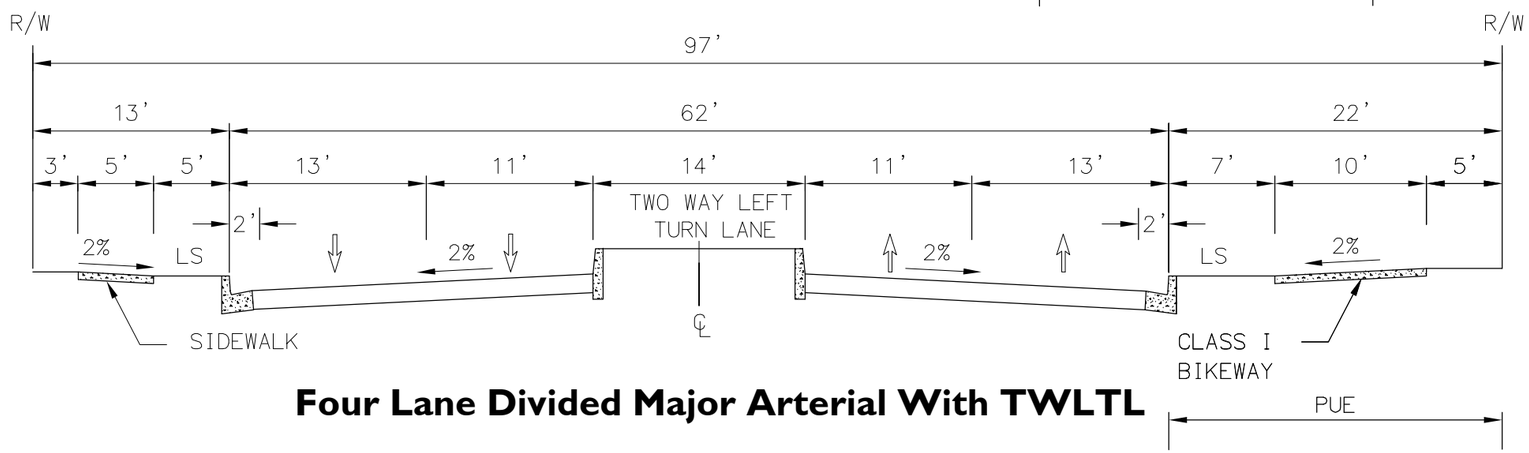
Six Lane Major Arterial with Intermittent 8 Foot Pullouts



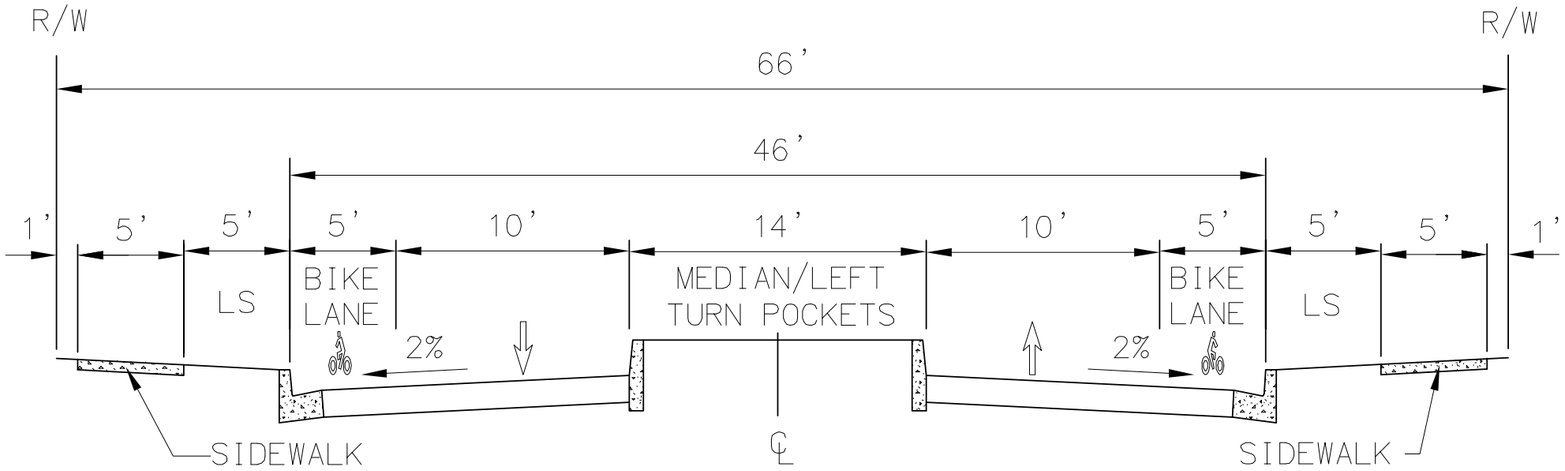
Two Lane Divided Arterial



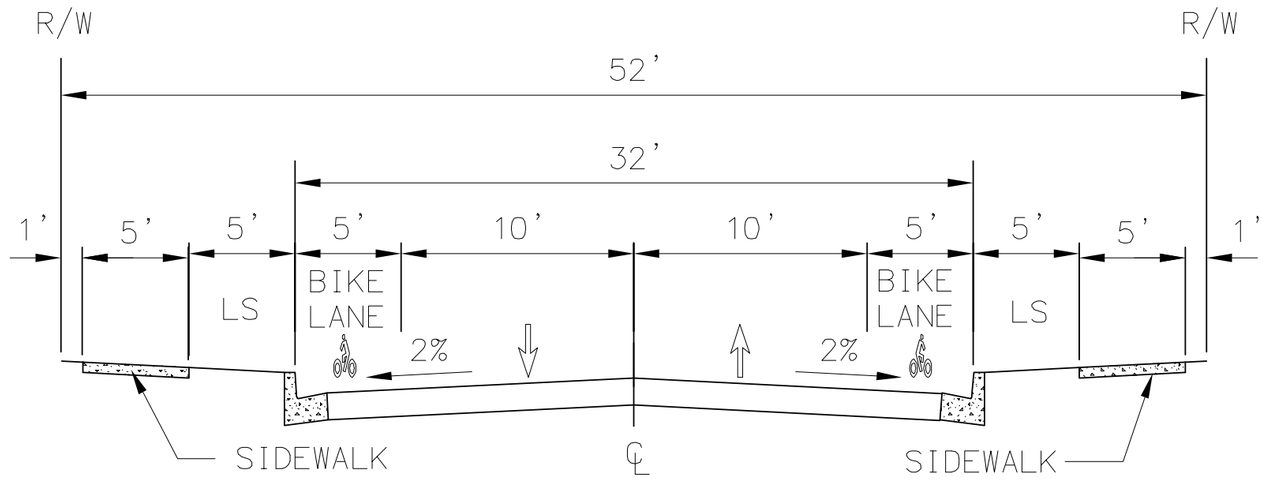
Four Lane Undivided Major Arterial



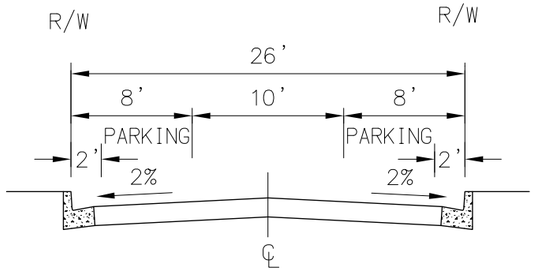
Four Lane Divided Major Arterial With TWLTL



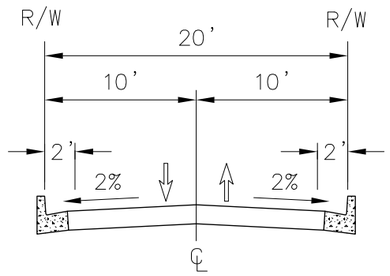
Two Lane Major Collector
2,000 to 5,000 Vehicles Per Day



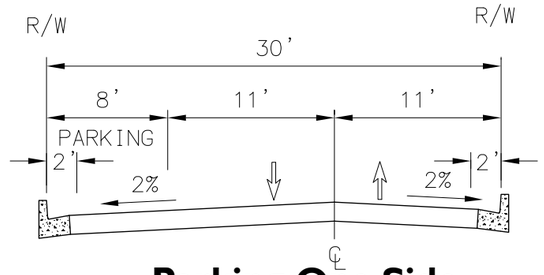
Two Lane Collector
< 2,000 Vehicles Per Day



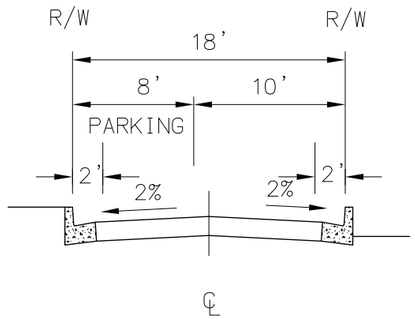
One-Way Street Parking Both Sides



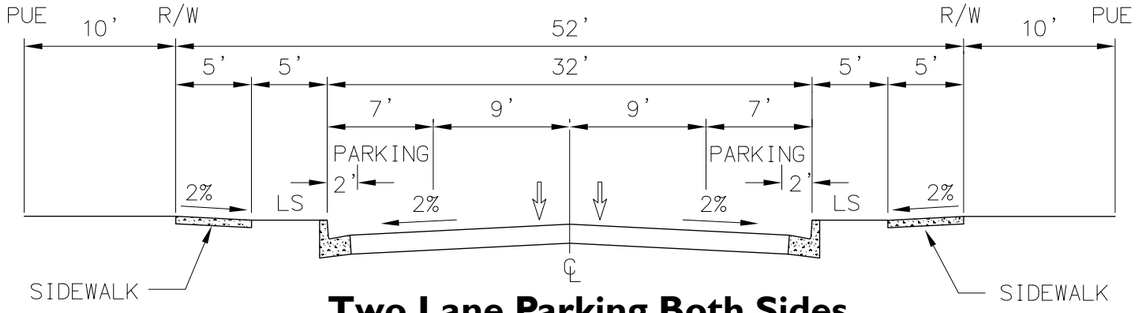
No Parking



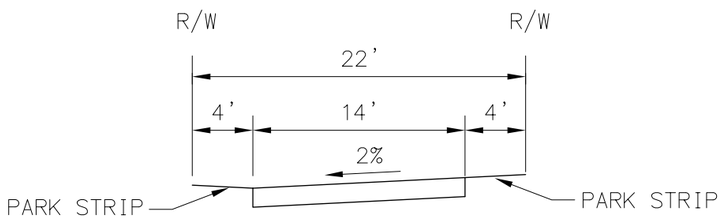
Parking One Side
Low Volume - Up to 500 Vehicles Per Day
Maximum Block Length of 500 Feet



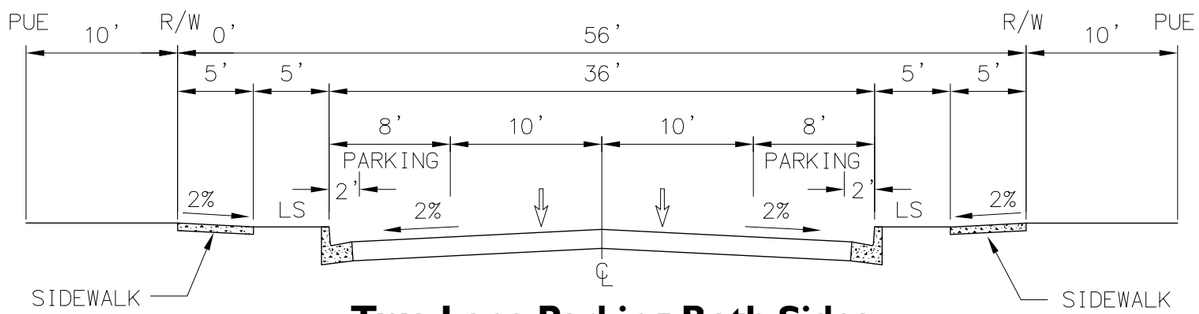
One-Way Street Parking One Side



Two Lane Parking Both Sides
Medium Volume - 500 to 1,000 Vehicles Per Day
Maximum Block Length of 500 Feet



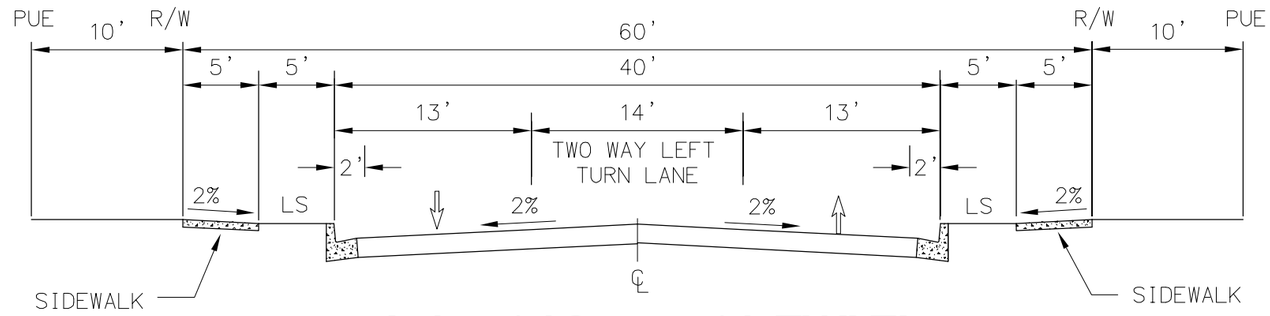
Alley



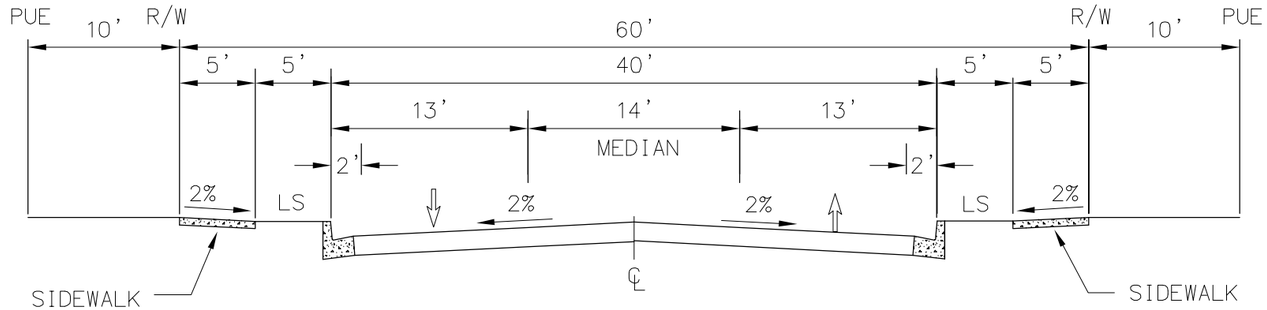
Two Lane Parking Both Sides
High Volume - 1,500 to 2,500 Vehicles Per Day

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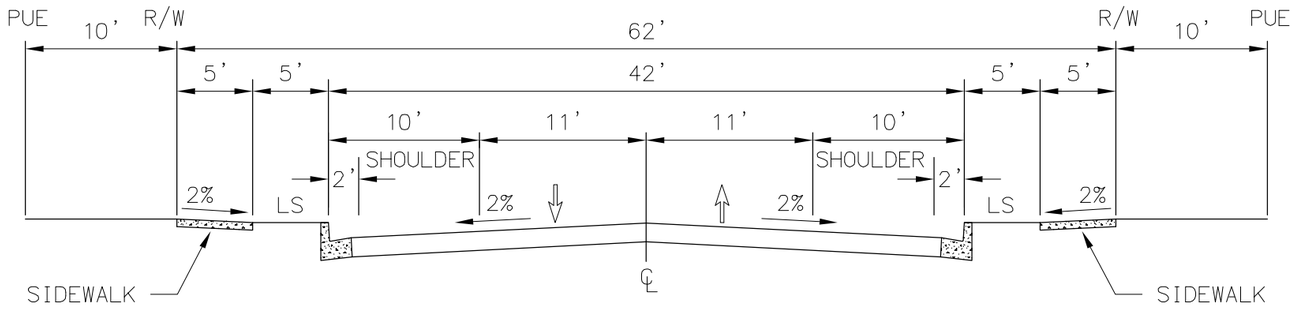
Figure 4.15e: Residential Streets Roadway Cross Sections



Industrial Street with TWLTL



Industrial Street with Median



Industrial Streets

4.7.3 CROSS SECTIONS

Table 4.7 summarizes the key recommended cross section characteristics for the illustrations that were presented above:

Table 4.7: Recommended Cross Section Characteristics

Street Type	Right-Of-Way	Lanes	Bike Facility	Sidewalk
Parkway	115' to 159'	4 to 8	Yes (Class I Bike Path)	Yes
Arterial	74' to 121'	2 to 6	Yes (Class I Bike Path)	Yes
Collector	52' to 66'	2	Yes (Class II Bike Lane)	Yes
Residential/Alley	18' to 56'	1 to 2	No	Yes (2 lanes only)
Industrial	60' to 62'	2	No	Yes

4.7.3.1 ELLIS SPECIFIC PLAN

Cross sections were developed specifically for the Ellis Specific Plan as part of the development process and were approved prior to initiation of the Tracy Transportation Master Plan. Therefore, these cross sections are different from those recommended in the Tracy TMP. Refer to **Appendix E** for the Ellis Specific Plan cross sections.

4.7.3.2 BUS STOPS, UTILITY CABINETS, AND PIPELINES

Sufficient right-of-way may not be provided in these recommended cross sections to accommodate a bus stop or pull-out where the bus moves completely out of the traveled way. For those locations, additional ROW must be provided to meet San Joaquin Regional Transit standards for a bus stop or turnout.

In locations where utility cabinets or other obstructions (e.g. poles, signs, etc.) may be placed within the right-of-way designated for sidewalks and Class I bikeways, the sidewalks and bikeway are to meander around the obstructions. Additional ROW may also be required to implement these meandering paths per the utility company standards.

Portions of the former Old Valley Pipeline (OVP) and Tidewater Associated Oil Company (TAOC) pipelines existed in Tracy. These historic pipelines were

constructed in the early 1900s and carried crude oil from the southern San Joaquin Valley to the Bay Area. Operations for the OVP ceased in the 1940s, and in the 1970s for the TAOC pipelines. Figures 1 through 3 in **Appendix G** illustrate the location of the ROW of these pipelines.

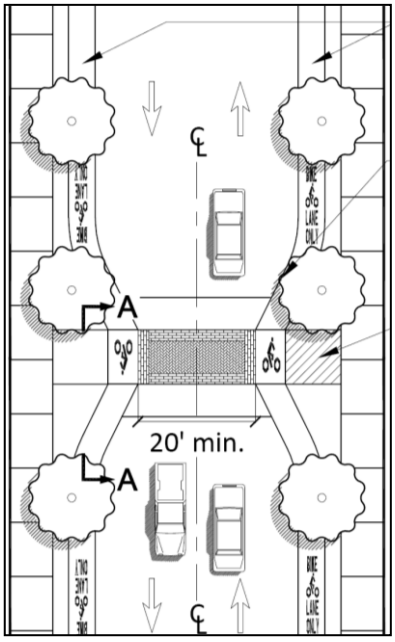


4.7.3.3 LIGHT RAIL OR STREETCARS

Additional right-of-way is required should light-rail or streetcar systems be planned. Approximately 25 to 30 feet is needed to accommodate two rail tracks in the median. An additional 10 feet, beyond the 25 to 30 feet, is required for stations to account for platforms, waiting areas, ticket machines, and other station amenities.

4.7.4 TRAFFIC CALMING

The use of traffic calming devices is intended to reduce vehicle speeds, alter driver behavior, and improve safety for all users. One of the policy statements from the City of Tracy's *Traffic Calming Program* (September 2009) is that "the primary focus of the traffic calming program is residential neighborhoods. Therefore, installation of traffic calming devices will only be considered on local two-lane residential streets with a posted speed limit of 25 mph. These devices shall not be used on arterial or non-residential streets." Thus, the collector or residential street cross sections are likely candidates for traffic calming measures.



The City's traffic calming toolbox includes three tiers: Tier 1 consists of targeted speed enforcement speed monitoring radar trailers, neighborhood speed watch, speed limit signs, restricted turn movements; Tier 2 consists of speed feedback signs, speed lumps, all-way stop signs; and Tier 3 includes neighborhood identification island, median islands, neckdowns or curb extensions, chokers, chicanes, traffic circles, or raised islands.

Future specific plans shall incorporate planning level traffic calming measures. The exact traffic calming measures will be determined at the design phase of the project in conjunction with the procedures outlined in the city's traffic calming program. All residential streets must include traffic calming measures, as appropriate. Collector streets may include traffic calming measures on a case by case basis, which will also be included in the design phase of the project.

4.7.5 TRAFFIC CIRCLES (MINI-ROUNDABOUTS) AND ROUNDABOUTS

The TMP includes traffic circles and roundabouts as an alternative form of traffic control to standard intersection layouts. In addition, traffic circles (mini-roundabouts) are typically provided on residential street and commercial properties as a way to calm traffic and reduce speeds. Roundabouts are typically located on larger streets and can be used to accommodate heavy merge and weaving maneuvers. Roundabouts provide superior benefits to reducing delay,

noise sustainability, and greenhouse gas emissions compared to all-way stop and signalized intersections. **Table 4.8** presents key fundamental and operational elements for various types of traffic circles and roundabouts. This information is obtained from *Roundabouts: An Informational Guide* (Federal Highway Administration, June 2000). The design of the traffic circle and roundabout will vary upon the actual site location and layout; however the values provided in **Table 4.8** can be utilized as a planning tool to size an appropriate facility. Conceptual sketches of the various types of traffic circles and roundabouts, also obtained from *Roundabouts: An Informational Guide*, are included in **Appendix F**.

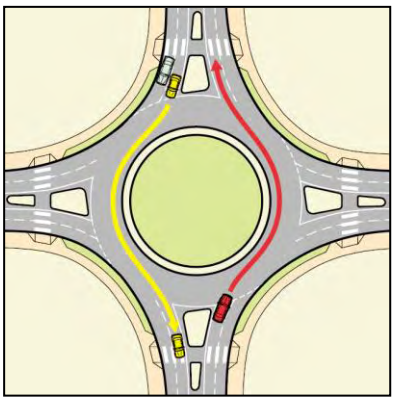


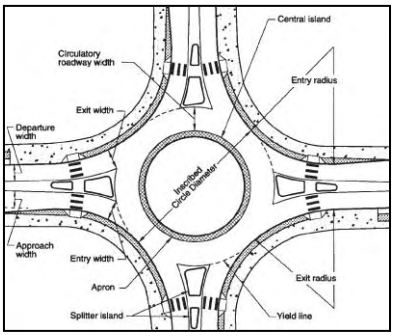
Table 4.8: Comparison of Traffic Circles and Roundabouts Design and Operational Elements

Design Element	Mini-Roundabout	Urban Compact	Urban Single Lane	Urban Double Lane	Rural Single Lane	Rural Double Lane
Recommended maximum entry design speed (mph)	15	15	20	25	25	30
Maximum # of entering lanes per approach	1	1	1	2	1	2
Typical inscribed circle diameter (feet)[1]	45 - 80	80 - 100	100 - 130	150 - 180	115 - 130	180 - 200
Splitter island treatment	Raised if possible, crosswalk cut if raised	Raised, with crosswalk cut	Raised, with crosswalk cut	Raised, with crosswalk cut	Raised and extended, with crosswalk cut	Raised and extended, with crosswalk cut
Typical daily volumes on 4-leg roundabout (veh/day)	10,000	15,000	20,000	Refer to Ch. 4 of the source	20,000	Refer to Ch. 4 of the source

[1] Assumes 90-degree entries and no more than four legs

Source: *Roundabouts: An Informational Guide* (Federal Highway Administration)





The following illustration, **Figure 4.16**, below shows a typical cross-section for a roadway that includes a roundabout.

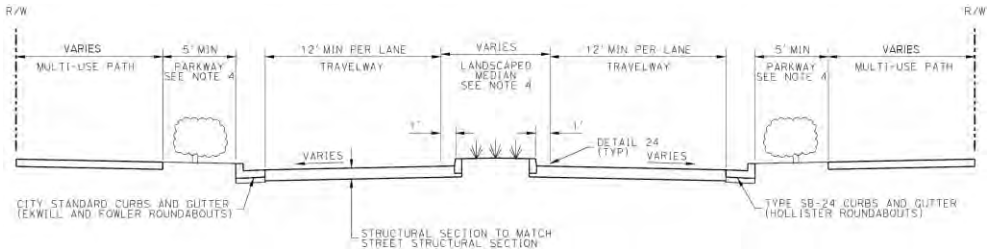
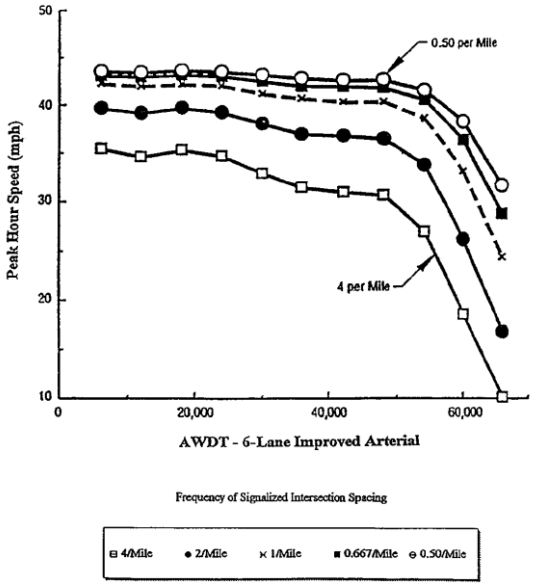


Figure 4.16: Typical Roundabout Approach

4.7.6 ACCESS MANAGEMENT

According to U.S. Department of Transportation Federal Highway Administration, access management is the proactive management of vehicular access points to properties on various types of roadways. The spacing of signals impacts traffic flow operations and travel speeds. The figure below from *NCHRP 420, Impacts of Access Management Techniques Transportation Research Board* indicates the reduction in travel speeds with the increase of signals per mile. Access spacing can affect the efficient movement of goods and traffic: spacing of roadways, spacing of signals and driveways, type of median openings, turn lanes, and right-of-way management. Existing or future roadway networks in specific plans need to consider the impacts of these design variables on reducing congestion, preserving capacity on key roadways, and allowing safe and efficient access to local properties.



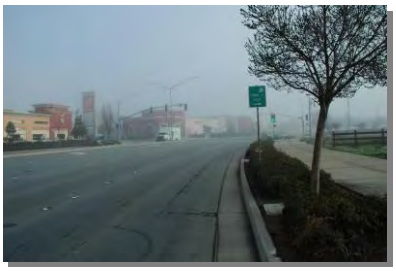
4.7.7 CONTEXT-SENSITIVE DESIGN AND SMARTH GROWTH PRINCIPLES

The recommended cross sections incorporate Context Sensitive and Smart Growth design principles to improve mobility for all users (bicyclists, pedestrians, transit vehicles, and motorists) and to achieve several other purposes including reduced maintenance costs, reduced environmental impacts, slower vehicle speeds, and improved pedestrian safety. These cross sections include narrower street widths (10 and11 feet versus 12 feet) which reduces the amount of right-of-way (ROW) required and reduces the cost of construction. Narrower roads also help to reduce vehicle speeds and reduce the crossing distances for pedestrians at intersections. Furthermore, HCM 2010 indicates that narrow lane has no reduction in saturation flow rate and thus the level of service has no effect. Narrower lanes reduce the capacity of certain roads and care was taken as to minimize the reduction of capacity below acceptable standards. The reduction in ROW provides more space for other uses such as additional landscaping for beautification and for water treatment, wider sidewalks to promote walkability, and room for utility corridors.

4.8 PARK AND RIDE FACILITIES

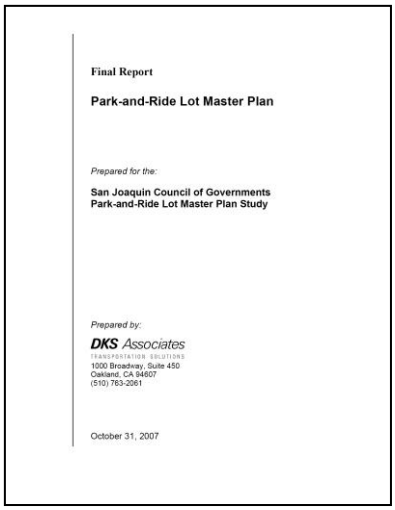
4.8.1 INTRODUCTION

This section documents infrastructure related to Park and Ride lot facility planning for the Tracy Transportation Master Plan (TMP). The existing Park and Ride infrastructure is indicated in **Chapter 2**, Existing Conditions. The City of Tracy Park and Ride facilities was integrated into the TMP to develop a comprehensive Park and Ride system that supports resident transit usage or carpooling to commute from the City. Graphics are provided to illustrate existing and future Park and Ride facilities. Planning for the Park and Ride facilities is based on the San Joaquin Council of Governments prepared *Park-and-Ride Lot Master Plan (DKS Associates, October 31, 2007)*. One additional Park and Ride location is recommended in the vicinity of the future Interstate 580/Lammers Road interchange. Discussion is provided relative to advanced planning for Park and Ride facilities such as connectivity to land use and transit, and design components.



4.8.2 PLANNING PARK AND RIDE FACILITIES

The *Park-and-Ride Lot Master Plan (DKS Associates, October 31, 2007)* determined locations for new Park and Ride facilities based on observed demand, location and source of funding for new facilities during new housing and commercial development projects, utilization of vacant land opportunity sites, availability of Caltrans right-of-way and location of future interchange improvement projects. Traffic modeling forecasts provide a key insight to the potential number of Park and Ride users. Based on citywide traffic modeling prepared in August 2010, approximately 36 percent of trips will leave the City in Horizon Year for destinations in San Joaquin County (21%), the Bay Area (7%), the North Valley (4%), and the South Valley (4%).


Final Report

Park-and-Ride Lot Master Plan

Prepared for the:

San Joaquin Council of Governments
Park-and-Ride Lot Master Plan Study

Prepared by:

DKS Associates
TRANSPORTATION SOLUTIONS
1000 Broadway, Suite 450
Oakland, CA 94607
(510) 763-2061

October 31, 2007

Consideration of opportunity and applicability of Park and Ride facilities is recommended during large land use planning efforts such as the General Plan Update, Specific Plan preparation, and community planning efforts. Additionally, consideration of Park and Ride facilities should be coordinated with bicycle route planning, transit planning, and roadway circulation system planning to provide convenient, efficient, and safe linkages and interoperability between transportation modes. By providing multiple transportation services at one intermodal center, residents and employees within the City can have increased opportunities to use transit and alternative transportation, minimizing single-occupancy vehicles and reducing the financial, environmental, and infrastructure burden placed on the City of Tracy. Early consideration of the Park and Ride facilities as a potential solution to first mile/last mile challenges to transit usage can help identify solutions for a higher utilized and more efficient transportation system.

4.8.3 FUTURE PARK AND RIDE FACILITIES

Figure 4.17 shows the City of Tracy Park and Ride Facility Plan, which includes the existing and future facilities including facilities near interchanges with Interstate 205 (I-205), Interstate 580 (I-580), and Interstate 5 (I-5).

As identified in **Figure 4.17**, the following five Park and Ride facilities serving residents in and around the City of Tracy are planned or recommended:

- In vicinity of I-205/Mountain House Parkway interchange
- In vicinity of I-205/Lammers Road Extension interchange
- In vicinity of I-580/Lammers Road interchange
- In vicinity of Chrisman Road/Lovely Road intersection
- In vicinity of I-205/I-5

While most of the Park and Ride facilities planned or recommended for future construction are outside the City of Tracy jurisdiction, they will be heavily utilized by residents of the City. The *Park-and-Ride Lot Master Plan (DKS Associates, October 31, 2007)* did not recommend the new Park and Ride facility location along I-580, however, based on discussions with City staff this location is recommended for inclusion in the TMP.





4.8.4 PARK AND RIDE FACILITY DESIGN PLANNING

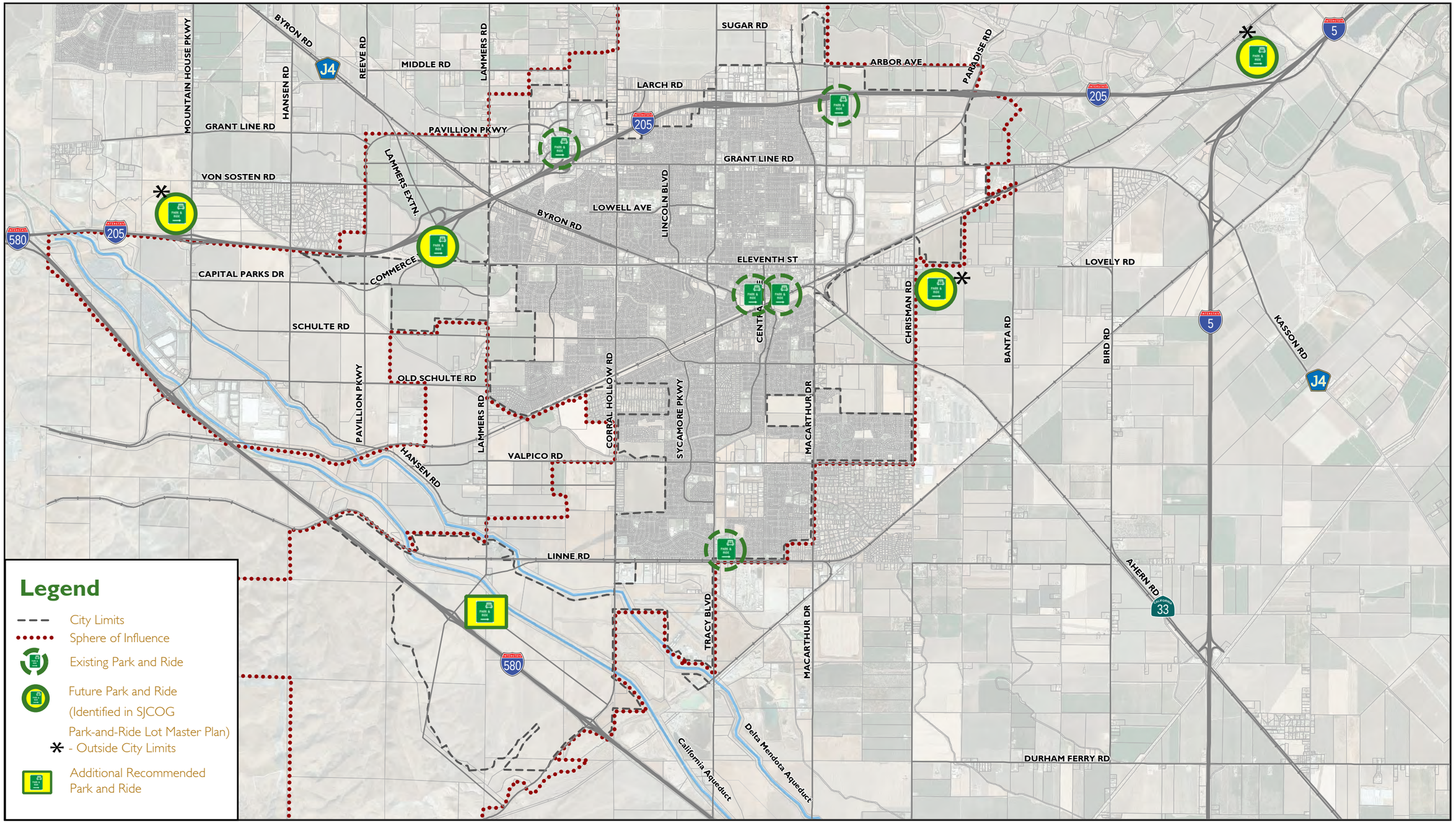
During design of Park and Ride facilities consider environmental concepts to illustrate the City's dedication to sustainability and minimizing resource use. Design measures with co-benefits for consideration include canopy structures with photovoltaics to provide shade and generate energy on-site, native and drought tolerant landscaping to reduce water demand, bioswales to provide landscaping while reducing pollutant discharge. Utilization of decomposed granite (DG), or recycled asphalt cement concrete (ACC) are examples of recycling materials to exemplify a reduced environmental burden at the facility.



Provide incentives for vehicles with reduced pollution or non-polluting engines consistent with Best Management Practices (BMPs) to address Senate Bill 375 and Assembly Bill 32 requirements to reduce greenhouse gas (GHG) emissions. Examples of incentives for non-GHG emitting vehicles may include electric charging stations, sheltered parking, premium location parking, provision of wider parking spaces than typical, and bicycle amenities such as lockers and parking racks.

Consider the quality of services at each Park and Ride facility to determine how to increase comfort for users by provision of amenities such as enclosed and safe shelters, information panels, carpooling networking, restrooms, showers, seating, park like landscaping, etc.

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Figure 4.17: Existing and Future Park and Ride Facilities

4.8.5 SMART GROWTH DESIGN ELEMENTS

The following Smart Growth design elements are relevant to Park and Ride planning:

- Continue to consider opportunities to share parking facilities for Park and Ride use where parking operations provide complimentary peak demands. Examples of opportunities to utilize parking facilities for dual purpose includes theater or shopping center uses that have peak parking demands during the evening or weekend when a Park and Ride facility would otherwise be in low demand.
- Provide high level of connectivity, beyond typical design expectations for land use to connect to alternative transportation systems such as transit, bicycle, and park and ride facilities. With enhanced efforts to strengthen connectivity, a higher quality of life is provided through provision of multiple transportation options.



4.9 INTELLIGENT TRANSPORTATION SYSTEM

4.9.1 INTRODUCTION

This section documents the infrastructure related to the Intelligent Transportation System (ITS) planning for the Tracy Transportation Master Plan (TMP). This section was integrated into the TMP to develop a comprehensive overview of the development and deployment of the City of Tracy's proposed ITS infrastructure and includes the City of Tracy's ITS vision, existing system inventory and evaluation, ITS strategies, assessment of intelligent transportation systems, and recommendations for City of Tracy's ITS infrastructure.

4.9.2 CITY OF TRACY INTELLIGENT TRANSPORTATION VISION

The City of Tracy Intelligent Transportation System (ITS) vision is to bring the benefits of an enhanced multi-modal transportation system that collect and disseminate traffic information from various modes of transportation in order to provide operational effectiveness along the signalized intersections and project corridors and thereby increasing mobility and reducing travel times to the motorists.

It is envisioned that the City of Tracy will have a citywide state-of the-art reliable and consistent ITS infrastructure that uses the latest technology that will assist them in managing the traffic at intersections and roadway segments; enhance staff efficiency through remote monitoring; provide troubleshooting capabilities, and system adjustments; compliment the City's existing traffic signal surveillance, control and monitoring program; and provide traveling information to the public.

It is also envisioned that the City of Tracy will participate in regional transportation management and share travel information with adjacent local agencies including Caltrans, and San Joaquin County in order to enhance mobility throughout the region.

4.9.3 CITY OF TRACY INTELLIGENT TRANSPORTATION (ITS) STRATEGIES

ITS provides numerous strategies that can be incorporated to the City of Tracy future ITS infrastructure. The City of Tracy shall adopt some of the ITS strategies based on their current and future needs. It should be noted that as technology continues to change rapidly, the City should evaluate these ITS strategies on an annual basis.

ITS strategies are included in the following categories:

- Communication network
- Advanced Transportation Management Systems (ATMS)
- Advanced Traveler Information Systems (ATIS)
- System integration

4.9.3.1 COMMUNICATION NETWORK

The communication network provides communication support from ITS field elements including traffic signal systems, Closed Circuit Television (CCTV) systems, and Dynamic Message Signs (DMS) to a centralized system such as the City's Traffic Management Center (TMC).

The communication network shall be a robust system that provides real-time data and video communications between the ITS field elements and the centralized system. Different communication methods are available including fiber optic cable, twisted pair copper wire signal interconnect cable (SIC), wireless communications, and leased communication lines.

The City of Tracy's traffic signal systems are primarily communicating to the City's TMC via twisted pair copper wire signal interconnect cable. This communication method has been the most common system deployed by many agencies in the past. It provides low-speed, low-data transmission over short distances. This system is subject to electromagnetic and radio frequency interference and it has bandwidth limitations.

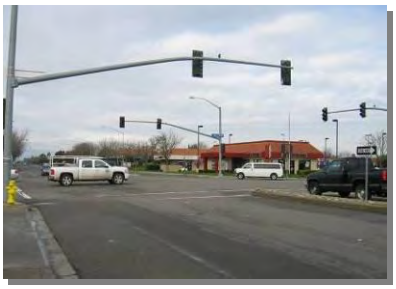
Part of the City's future ITS infrastructure is to provide a solid communication network that will provide real-time information to City staff and other stakeholders with minimum disruptions to the system. Currently, the most reliable communication network is a network that's primarily built using fiber optic cable. It can accommodate very large amounts of data and/or video at very high speeds with lower error rates.

Therefore, the City of Tracy's ITS infrastructure communication network shall be built using a fiber optic communication system.

4.9.3.2 ADVANCED TRANSPORTATION MANAGEMENT SYSTEMS (ATMS)

Advanced Transportation Management Systems (ATMSs) can be as basic as the upgrade or deployment of a new traffic control system or it can be expanded to include an integrated system where data and/or video can be shared among agencies. Some of the key ATMS strategies for the City of Tracy are described below.

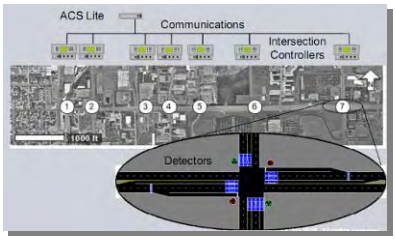
TRAFFIC SIGNAL SYSTEM



The traffic signal system consists of the traffic signal controllers and the traffic signal central software called the traffic control system where it can provide remote control of the traffic signal controllers from a centralized location to manage, monitor, and control traffic operations. The City of Tracy currently operates a QuicNet traffic control system and type 170 controllers at the signalized intersections.

In the future, more advanced commercial-of-the-shelf (COT) traffic control systems and signal controllers will be available in the market with more advanced features and tools to integrate other ITS field elements.

Some agencies are testing or deploying new generation of a traffic control system, known as adaptive signal control systems. The systems coordinate control of traffic signals across a signal network, adjusting the lengths of signal phases based on prevailing traffic conditions.



Adaptive Control Software Lite (ACS–Lite) is an example of adaptive signal control technology. ACS–Lite was specifically designed to be deployed using conventional control equipment, communications, and traffic sensors on arterial streets, making it a cost– effective alternative to other signal timing adjustment technologies.

As the City continues to implement their future ITS infrastructure, the City should look for opportunities to implement new and more advanced COT traffic control system and signal controllers where both systems can co-exist as new signalized intersections are deployed. As funds are available, the existing signalized intersections can be upgraded to interface with the new traffic control system.

VEHICLE DETECTION SYSTEM

Vehicle detection system provides vehicle data from the city's roadway network including vehicle volume, speeds, and occupancy. Most vehicle detection systems consist of loop detectors and video detection system. Recent deployments on arterials and freeways include wireless vehicle detection systems.

CLOSED CIRCUIT TELEVISION (CCTV) SURVEILLANCE SYSTEM



Closed circuit television (CCTV) surveillance cameras provide video images to City staff so they can monitor traffic conditions at intersections and roadway segments, troubleshoot, and fine-tune intersection operations in real-time. The surveillance images can be shared with other stakeholders including other City departments (e.g., police department, fire department, community centers, etc.), other agencies, and the public via the City's website.

TRAFFIC MANAGEMENT CENTER (TMC)

The traffic management center (TMC) integrates traffic operations, maintenance, and communication in a centralized command and communication center. The TMC provides the infrastructure for communications and surveillance necessary to manage in real-time the transportation system throughout the City.



The TMC serves as the major communication hub of the ATMS/ATIS system that collects and manages all the data and surveillance from the field elements. The TMC has the ability to share selected information with other internal departments, local agencies, and the public.

The TMC has the ability to control signalized intersections, CCTV surveillance cameras, DMS, and other field devices via a communication network. Critical functions of the TMC will include:

- Monitoring traffic signal operations
- Monitoring traffic conditions via CCTV cameras
- Monitoring and programming data for the DMS
- Provide incident management and disseminate information to the media and public
- Provide incident verification and response
- Collect and process traffic data generated by detection systems

The ATMS will provide the City of Tracy with the following benefits:

- Increase safety
- Reduced fuel consumption
- Improved air quality
- Reduced delays
- Improved mass transit operations
- Improved incident response and management
- Improved transportation system capacity
- Improved regional transportation integration and information sharing

4.9.3.3 ADVANCED TRAVELER INFORMATION SYSTEMS (ATIS)

Advanced Traveler Information Systems (ATIS) disseminate transportation related information to the traveling public. ATIS automates the integration of incident data, traffic and roadway conditions, and multimodal bus, rail, and airport conditions. It can also provide video feeds to the media or commercial entities, who can distribute it via broadcast television and radio, internet, satellite radio, fleet subscription services, in-dash navigation systems, and others to the traveling public. Public agencies use 511 telephone/internet (phone and web source for up-to-the-minute transportation information), other internet resources/websites, dynamic message signs (DMS), and other means to reach the traveling public.

An ATIS can be integrated in the City's ATMS as a means of improving safety and relieving congestion on City streets. It can provide travelers real-time access to information on which to base their decisions of mode, route, and travel time. It provides travelers information to avoid congested routes and change modes or time of travel if necessary. Key ATIS strategies for the City of Tracy are described below.



DYNAMIC MESSAGE SIGNS (DMS)

Dynamic message signs (DMS) provide real-time traffic information to the traveling public including travel time to nearest destination or major routes, roadway conditions, roadway incidents, roadway construction, traffic management for special events, and provides alternate route selection to facilitate motorist decisions and minimize traffic impacts on freeways and local roads. This TMP includes the use of DMS signs on trailers on an "as needed" basis. Future updates may reassess the use of standard DMS signs.



HIGHWAY ADVISORY RADIO (HAR)

Highway Advisory Radio (HAR) is another mode of communications between the TMC and the motorists. The HAR systems are typical installed with roadside signs alerting motorists to tune to an appropriate radio station, typically an AM station. The HAR broadcast information related to weather conditions, roadway conditions, incident conditions, and traffic congestion.



WEBPAGE

Another form of disseminating traveling/traffic information to the public is over the internet. Travel data (occupancy and speeds) and selected video feeds can be provided to the public via the City's internet web page or other private transportation/media web pages. The public is able to download traffic conditions via their computer or cellular phones.

4.9.3.4 SYSTEM INTEGRATION

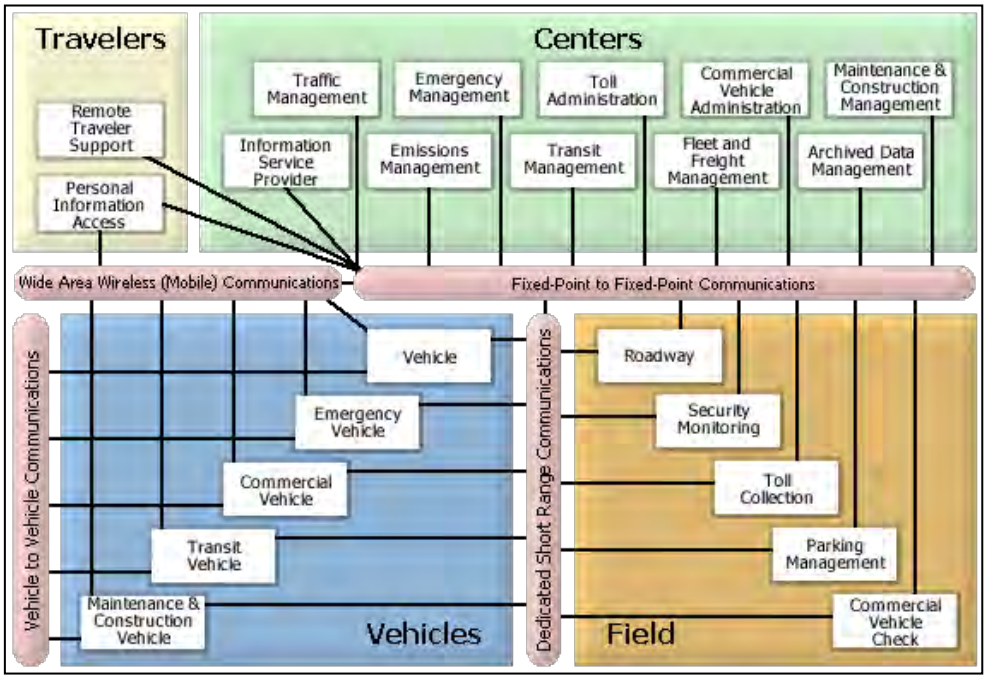
System integration is an important key component that allows the integration of all the field elements in order to facilitate data transmission and data sharing with other city's departments and other public agencies.

4.9.4 ASSESSMENT OF INTELLIGENT TRANSPORTATION SYSTEMS

The City of Tracy assessment of ITS needs and opportunities shall be based on Na*tional and Regional ITS Architecture* and shall be based primarily on current and future ITS needs.
The assessment of ITS needs and opportunities process includes the following key elements.

- Review of High Level Architectural Diagram
- Select Applicable/Priority System, Sub-System, and Communication
- Understanding of Regional Architecture

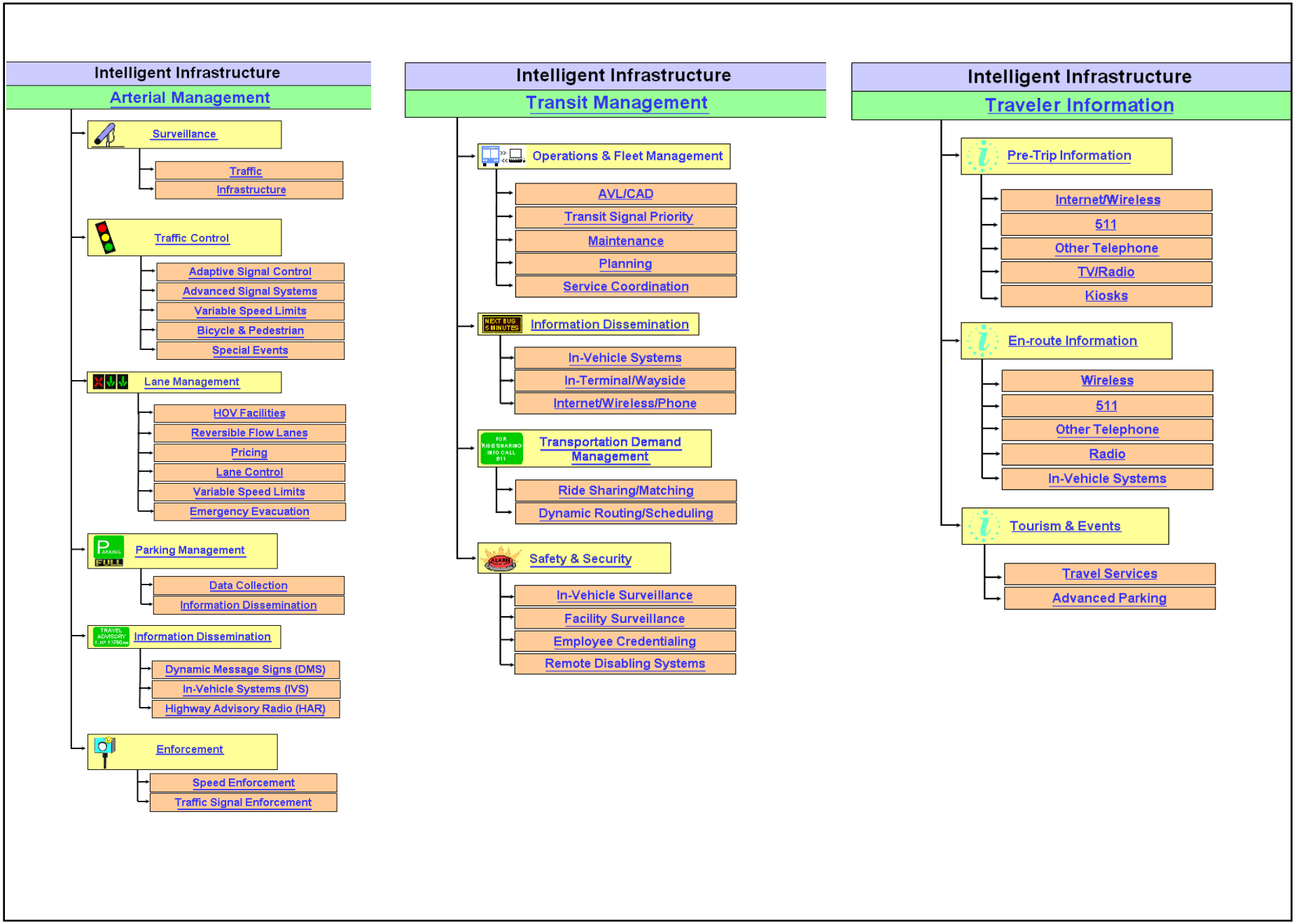
The National ITS Architecture provides a common structure for the design of ITS. It defines the functions that must be performed by components or subsystems, where these functions reside (e.g., field, traffic management center, or in-vehicle), the interfaces and information flows between subsystems, and the communications requirements for the information flows in order to address the underlying user service requirements. Since the National ITS Architecture is also the foundation for much of the ongoing ITS standards work, consideration of the interface and information exchange requirements established by the Architecture today will likely facilitate or ease the transition to incorporating standards-compliant interfaces in the future.



The City of Tracy shall evaluate the high level architecture and based on the City's and region's future needs, the City of Tracy shall select other applicable/priority system, sub-systems and communication requirements. The selection of some of the applicable/priority systems and sub-systems shall be based on the region's goals and objective to improve mobility and provide an enhanced transportation management system in the region.

Potential strategies that will improve transportation system efficiencies and mobility in the region shall be identified as an initial step of the ITS strategic deployment planning process. In the strategy identification process, some of the key program areas shall be initially identified including arterial management, transit management, and traveler information as identified in **Figure 4.18.**

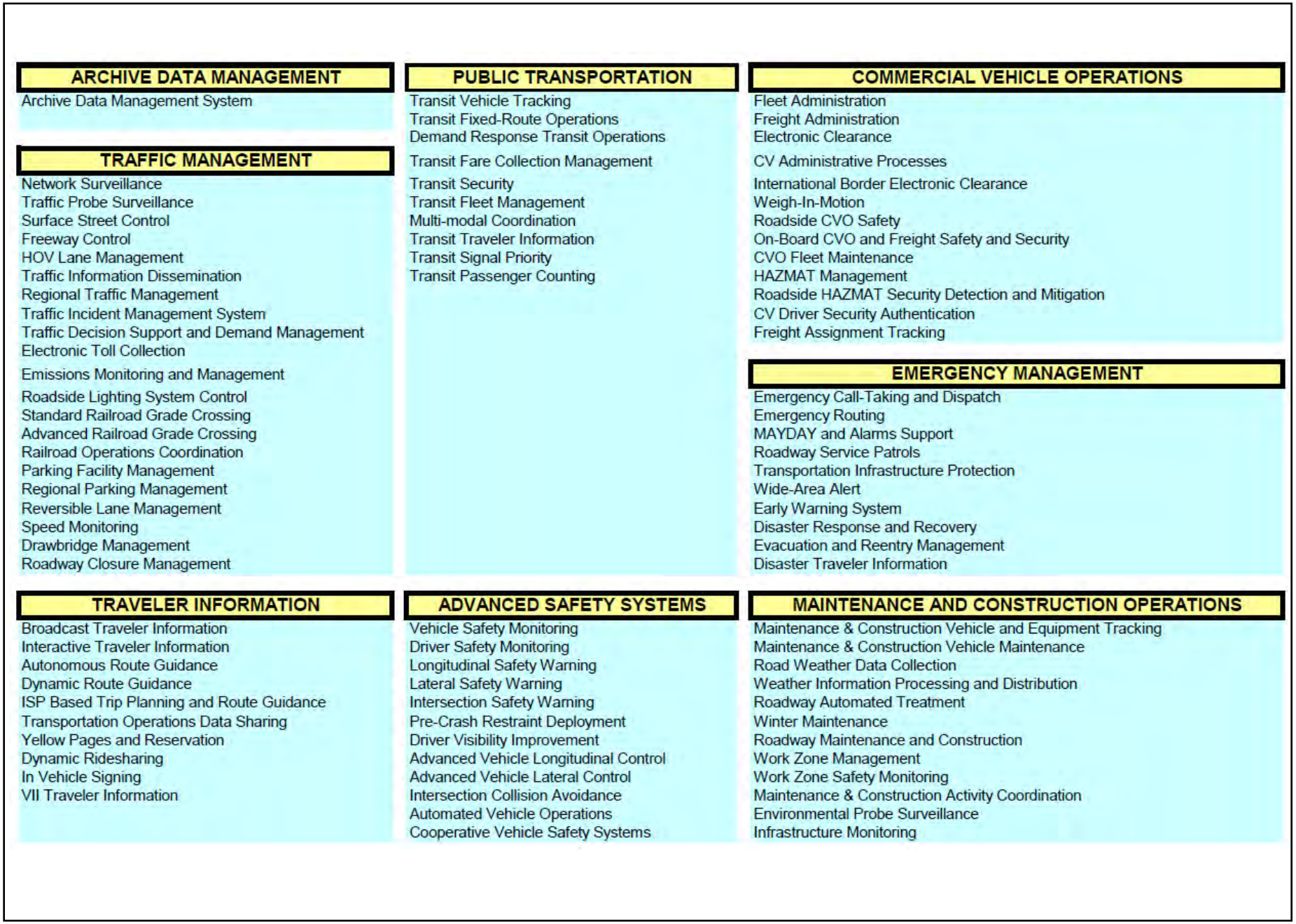
In addition to these focus areas, the strategy identification process can also be extended to cover strategies in other ITS areas, including: Emergency Management, Commercial Vehicle Operations, Maintenance and Construction Operations and Advanced Safety Systems. The summary listing of potential strategies for recommendation as part of this strategic planning process are indicated in **Figure 4.19.** It contains eight ITS functional areas as provided by the National ITS Architecture.



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Figure 4.18: Key Program Areas of ITS Strategies



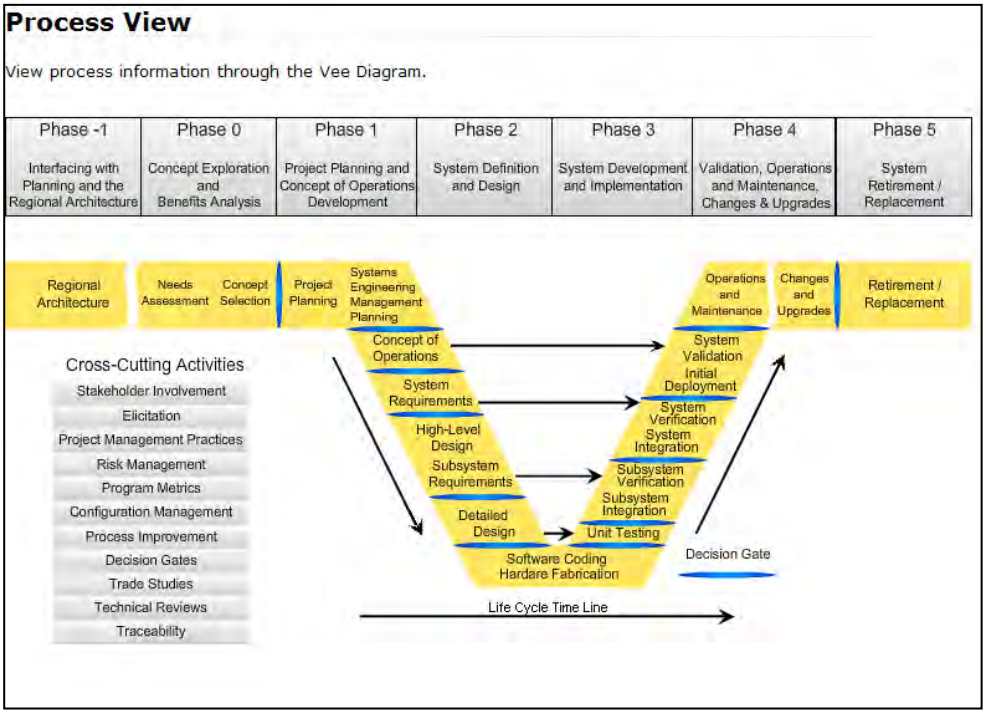
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Figure 4.19: Areas of ITS Strategies

The City of Tracy ITS Infrastructure planning, design, deployment, maintenance, and operations shall follow latest guidelines provided in the National Intelligent Transportation System (ITS) Architecture using the System Engineering Process approach as indicated in the System Engineering "V" diagram.

The City of Tracy ITS Infrastructure system shall be based on COT hardware and software components and it shall be a scalable and expandable system.



4.9.5 RECOMMENDATION OF INTELLIGENT TRANSPORTATION SYSTEM INFRASTRUCTURE

The recommended Intelligent Transportation System (ITS) infrastructure is based on the assessment of ITS opportunities that will best suit City of Tracy's needs including, but not limited to the following conditions:

- Existing and future traffic signal systems
- Existing and future communication infrastructure
- Existing and future roadway networks
- Future land uses
- Future closed circuit television (CCTV) system locations
- Future dynamic message sign (DMS) system locations
- Future communications to public facilities that will help the system operator(s) to facilitate and manage the influx/outflow of traffic data and

video feeds from a centralized location via the City's Traffic Management Center (TMC)

This section will discuss the following topics related to the recommended Intelligent Transportation System (ITS) Infrastructure planning including:

- Communication architecture
- Communication network
- Communication hubs
- Closed Circuit Television (CCTV) Systems
- Dynamic Message Sign (DMS) Systems
- Traffic Management Center (TMC)
- Other ITS components
- Development of City's ITS Master Plan

In addition, the following topics shall also be considered during the Intelligent Transportation System (ITS) infrastructure planning stages:

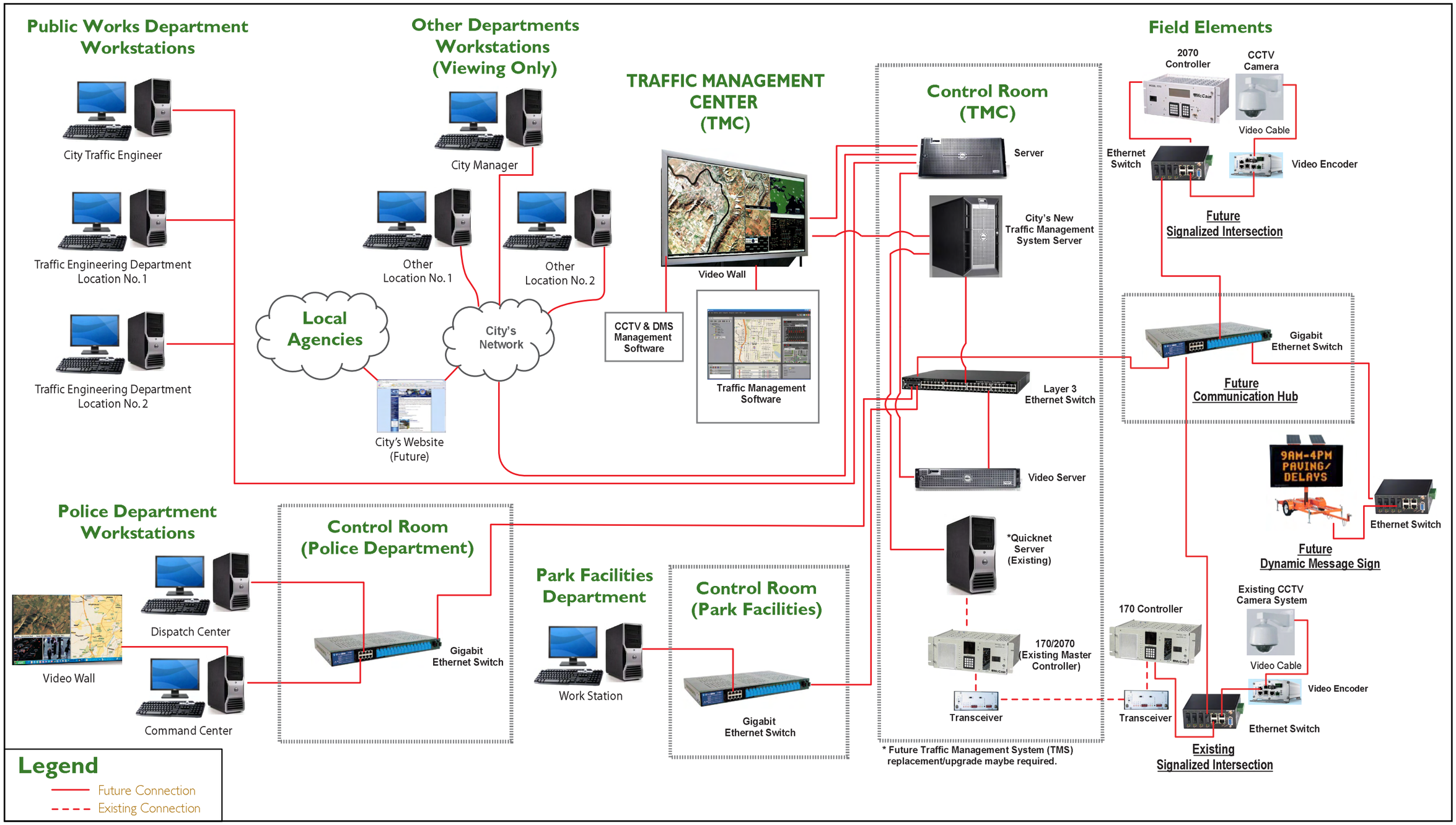
- Inter-agency coordination/integration
- Other agency coordination/integration
- Public's Website
- Signal Coordination
- Current Technology
- Future Technology
- Operations and Maintenance

4.9.5.1 COMMUNICATION ARCHITECTURE

The proposed City of Tracy's system communication architecture plan shall be used as a high level tool in order to map the citywide communication network. This includes internal and external links between the City's TMC, TMC control room, existing/future field elements, City's website, and connectivity to workstations and/or control rooms within the Public Works Department/Other departments, Police Department, and Park Facilities. The proposed system communication architecture plan shall be used as a working document and shall be expanded as other elements, technologies, and connectivity to other departments/facilities and/or other agencies are introduced to the network.

Figure 4.20 shows the proposed ITS System Communication Architecture Plan.

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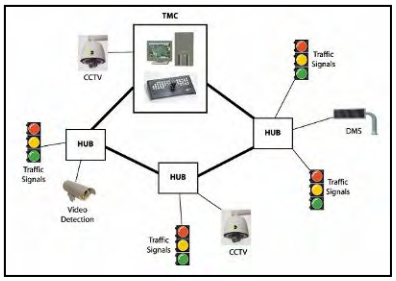
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Figure 4.20: Intelligent Transportation System (ITS) - Proposed System Architecture

4.9.5.2 COMMUNICATION NETWORK

The recommended City of Tracy's system communication network consists of providing fiber optic cable/conduit along designated existing and future corridors in order to facilitate communications from the City's TMC to the field elements (i.e. traffic signal controllers, CCTV camera systems, DMS, and communication hubs) and other departments/facilities/agencies. Where ever possible, it is recommended that the fiber optic communication alignments shall be routed to provide "closed loops" in order to provide dual path redundant communications. The benefit of having dual path redundant communications is to maintain communication to the field elements in the event that a communication line is severed or disconnected along the closed loop. The communication equipment will recognize the break in primary link and will redirect communications to the secondary link; therefore, it minimizes disruption to the system, maintains communications, and allows time for repairs and maintenance.

4.9.5.3 COMMUNICATION HUBS



Communication hubs shall be placed at strategic locations throughout the City of Tracy, typically at major signalized intersections. The communication hubs act as a major data and video collection point. The communication hubs provide communication linkage between the field elements to the City's TMC. In addition, communications from the field hubs shall be bidirectional (two-way); therefore, they can be linked to other field communications hubs as well as the TMC, which facilitates and supports the proposed dual path redundant communication topology. The placement of the communication hubs shall be determined by analyzing the roadway network and defining "groups" of ITS elements (i.e. signalized intersections, CCTV, DMS and other ITS components) that will be linked together as well as to the proposed communication hub. *For example: A communication hub will be provided for field elements located in the southeast quadrant of the City*. Field communication hubs consist of Type 332 cabinet assemblies and typically house Ethernet switches and fiber distribution units. Also, the City's TMC is considered as the primary communication hub in the network.



4.9.5.4 CLOSED CIRCUIT TELEVISION SYSTEMS

Closed Circuit Television (CCTV) systems shall be placed at strategic locations in the field, typically at freeway interchanges, at signalized intersections that intersect major roadways/crossing arterials, at major trip generating land uses and/or to monitor DMS displays. Along major roadway segments or freeway segments, CCTV cameras are installed at ¼ of a mile or ½ mile apart. If the line-of-sight is obstructed by horizontal and/or vertical roadway curvature, buildings,

landscaping/trees, monuments, etc. alternative CCTV camera locations shall be considered, as necessary. In addition, the type of future development or developments with major traffic generators may require additional CCTV camera at minor and major project intersections. These locations shall be evaluated on a case by case basis.



To determine the placement of CCTV cameras it is recommended to conduct a line-of-sight and path analysis using a bucket truck in order to select a location where the coverage area can be optimized. The line-of-sight and path analysis shall be conducted prior to construction to reduce or eliminate complications that may arise during construction. In addition, CCTV cameras are typically mounted to traffic signal poles under the luminaire mast arm or on stand alone poles.

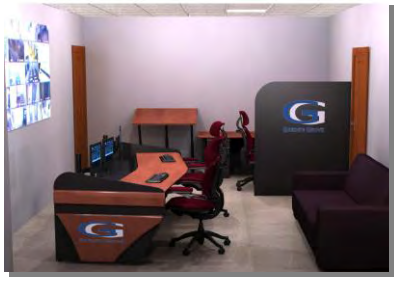
4.9.5.5 DYNAMIC MESSAGE SIGN SYSTEMS

Dynamic message sign (DMS) systems on mobile trailers shall be placed at strategic locations, typically along major corridors entering the City of Tracy and/or at locations within the City directing motoring travelers to major events and/or land uses. Future heavy traveled corridors may require additional DMS to enhance the capacity along the roadways segments. These locations shall be evaluated on a case by case basis.



To determine the placement of the trailer-based DMS, a sign visibility study and site analysis shall be prepared showing potential line-of-sight impacts to the public and right-of-way due to the installation of the DMS and cabinets. The analysis shall include showing the proposed location of each DMS and controller/service cabinets, sidewalks, right-of-way, curb, gutter, roadway, travel lanes, driveways, adjacent buildings boundary and other above ground obstructions that may have an impact to the visibility of the sign.

TRAFFIC MANAGEMENT CENTER



The City of Tracy's Traffic Management Center (TMC) shall be the primary hub of the transportation management system communications, where information from the transportation communication network is collected and combined with other operational, video, and control data to manage the transportation network and produce traveler information. It is the focal point for communicating transportation-related information to the City's website, the media, the motoring public, and a place where agencies can coordinate their responses to traffic situations and conditions. The TMC links various ITS elements within the City such as traffic signals, CCTV systems, DMS systems, field communication hubs, and other ITS elements enabling decision makers to identify and react to an incident in a timely manner based on real time data.



The City of Tracy's proposed Traffic Management Center (TMC) shall consist of state-of-the-art technology and shall be designed as a scalable and expandable system for integration of future ITS components, future signalized intersections, and inter-agency coordination. Planning for a new TMC shall include determining the TMC room location, the TMC environment-controlled equipment control room, and an evaluation of the latest TMC equipment and technology. It shall include the preparation of conceptual plans illustrating the potential video wall/location, TMC operator workstations and furniture, equipment rack, and TMC equipment control hardware and software.

City's existing TMC equipment/technology/traffic management system shall be evaluated and a transition plan shall be developed in order to migrate from the current traffic management system to the selected centralized traffic management system that can be integrated with minimum disruption to the existing signalized intersections and can be maintained concurrently with the City's signalized intersections.

4.9.5.6 OTHER ITS ELEMENTS

As the part of the planning for the City's ITS system infrastructure, other ITS elements should be considered and the City's ITS system infrastructure shall have the capacity to operate and manage these systems, including, but not limited to:

- Transit Signal Priority (TSP) Systems
- Emergency Vehicle Pre-Emption Systems
- Construction Work Zone ITS Management Systems
- Parking Management ITS Systems
- Advanced Traveler Information Systems
- Transit Traveler information Systems
- Incident Response Systems
- Incident Detection Systems
- Additional System Detection

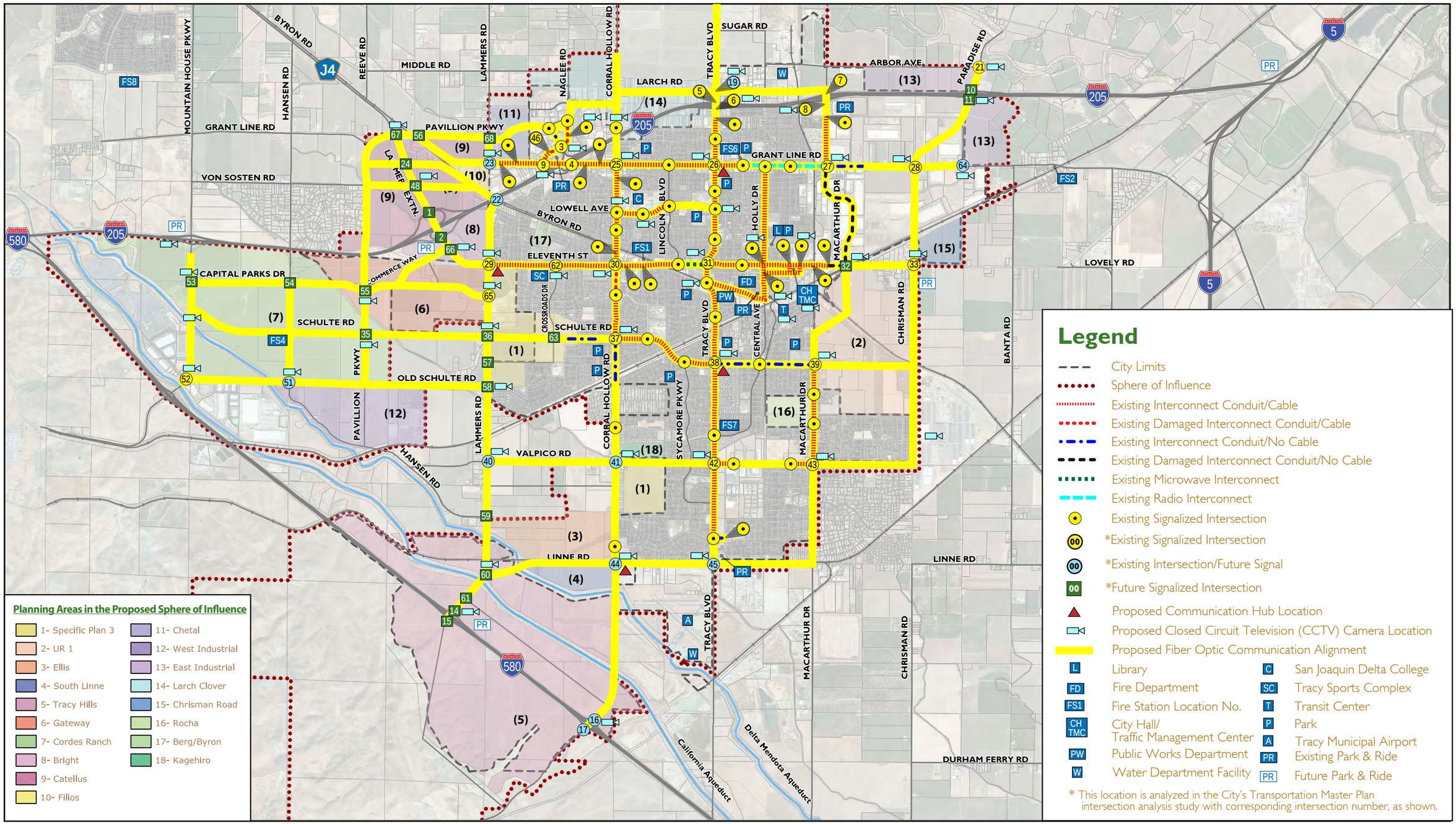
These aforementioned systems shall be evaluated, prioritized, and deployed based on the City's needs and funding resources.

4.9.5.7 DEVELOPMENT OF CITY'S ITS MASTER PLAN – ROADMAP FOR DEPLOYMENT OF ITS INFRASTRUCTURE

Based on analyzing and applying the principles from the aforementioned topics, the City of Tracy's proposed future ITS infrastructure plan has been developed. **Figure 4.21** shows the proposed Horizon Year Intelligent Transportation System Infrastructure Plan. It provides an overview of the City's recommended ITS infrastructure under Horizon Year build-out conditions and shall be considered as a high level planning tool in order to develop the City's ITS Master Plan, which shall be utilized to provide the City with a roadmap for the deployment of proposed ITS infrastructure.

The City of Tracy's ITS Master Plan should be prepared as a separate document, which consists of analyzing and applying in more detail the principles from the aforementioned topics to determine the following:

- Communication architecture
- Communication network
- Communication hubs
- Closed Circuit Television (CCTV) Systems
- Dynamic Message Sign (DMS) Systems
- Other ITS components



Legend

- City Limits
- Sphere of Influence
- Existing Interconnect Conduit/Cable
- Existing Damaged Interconnect Conduit/Cable
- Existing Interconnect Conduit/No Cable
- Existing Damaged Interconnect Conduit/No Cable
- Existing Microwave Interconnect
- Existing Radio Interconnect
- Existing Signalized Intersection
- *Existing Signalized Intersection
- *Existing Intersection/Future Signal
- *Future Signalized Intersection
- Proposed Communication Hub Location
- Proposed Closed Circuit Television (CCTV) Camera Location
- Proposed Fiber Optic Communication Alignment
- L — Library
- FD — Fire Department
- FS1 — Fire Station Location No.
- CH TMC — City Hall/ Traffic Management Center
- PW — Public Works Department
- W — Water Department Facility
- C — San Joaquin Delta College
- SC — Tracy Sports Complex
- T — Transit Center
- P — Park
- A — Tracy Municipal Airport
- PR — Existing Park & Ride
- PR — Future Park & Ride

* This location is analyzed in the City's Transportation Master Plan intersection analysis study with corresponding intersection number, as shown.

Planning Areas in the Proposed Sphere of Influence

1- Specific Plan 3
2- UR 1
3- Ellis
4- South Linne
5- Tracy Hills
6- Gateway
7- Cordes Ranch
8- Bright
9- Catellus
10- Filios
11- Chetal
12- West Industrial
13- East Industrial
14- Larch Clover
15- Chrisman Road
16- Rocha
17- Berg/Byron
18- Kagehiro

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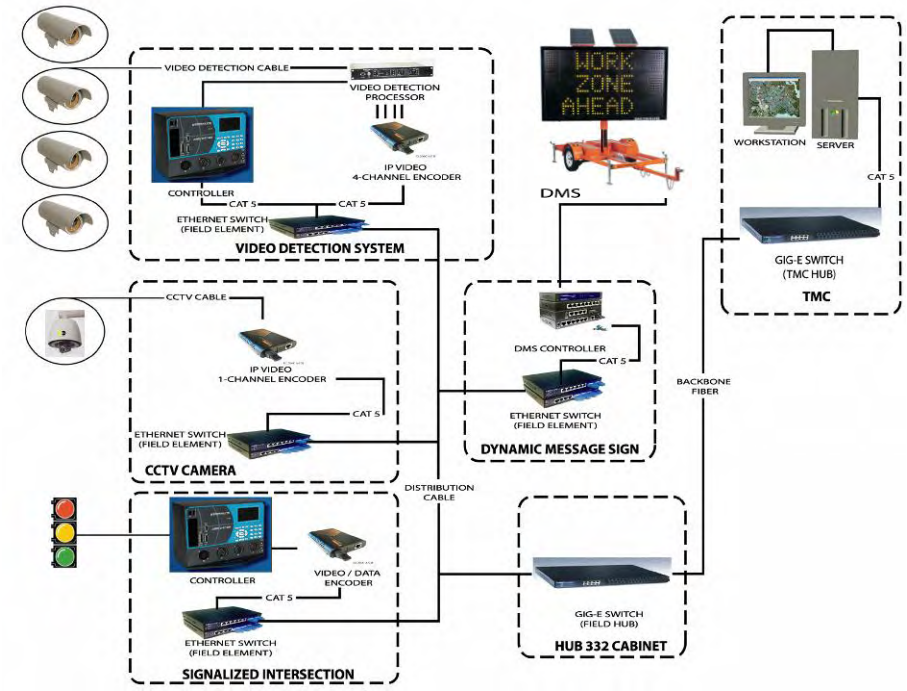
0 0.5 1 2 Miles (Approximate)

Figure 4.21: Horizon Year Intelligent Transportation System Infrastructure

In addition, the ITS Master Plan shall include the following sections.

MASTER PLAN DEPLOYMENT

This section should provide the system level communications design for the City of Tracy. It should provide detailed communication requirements for the field devices, hub locations, and TMC. It should include the City's recommended ITS architecture. This section will identify the recommended technology at each intersection, hub and TMC based on recommendations developed. This section shall provide the deployment strategies, deployment priorities, deployment schedule, implementation phasing plan, and integrating new systems and technologies.



OPERATIONS AND MAINTENANCE

This section provides the needs for the operations and maintenance of the ITS elements including funds that should be allocated annually for operations and maintenance.

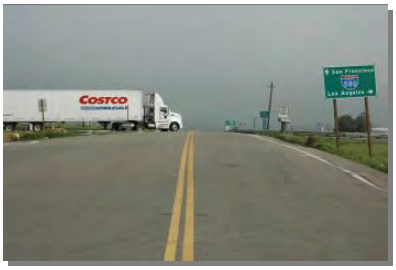
FUNDING

The requirements for many federal funding opportunities require that ITS be planned consistent with the guidelines provided in the National ITS Architecture. This section should identify funding sources for future ITS deployment.

4.10 TRUCK ROUTES

4.10.1 INTRODUCTION

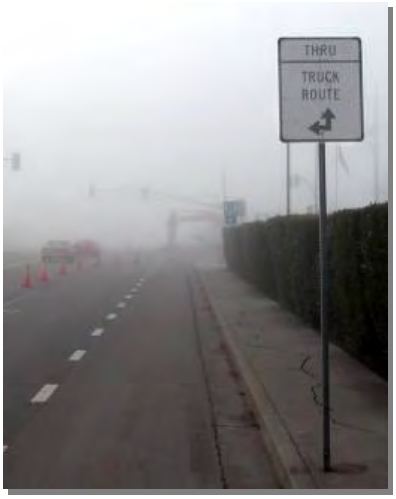
This section documents the truck routes for designation on the circulation system for the Tracy Transportation Master Plan (TMP). The existing truck routes are indicted in **Chapter 2**, Existing Conditions. The City of Tracy Truck Routes Map was integrated into the TMP to identify roadways for enhanced pavement structure, accommodate design, and consider sound and noise impacts relative to land use development. Graphics are provided to illustrate existing and future truck routes. Planning for truck routes is based on the planned circulation system at buildout conditions, long-range traffic forecasts, the need to designate roadways for enhanced design elements, and consideration of land use development and sensitive land uses. Discussion is provided regarding existing and future truck routes, design elements, and resource documents.



4.10.2 PLANNING TRUCK ROUTES

As indicated in **Chapter 2**, three distinct truck routes are identified

- STAA Route
- Through Truck Route
- Local Truck Route



Identification of truck routes within the City of Tracy is based on the following criteria:

- Accounting for high volume routes utilized extensively by large vehicles currently or in the future;
- Routes with limited or no restrictions precluding use by trucks and combination vehicles;
- Routes with adequate geometrics for safe operation;
- Size of roadway lane widths;
- Routes already part of Interstate System (or National Network);
- Consideration of roadways with potentially unusual design characteristics or clearance limitations;
- Parallel roadway opportunities and access to freeway system.

Some local agency designated truck routes provide truck weight restrictions between routes, differentiate for example between 3 or 7 ton trucks.

4.10.3 FUTURE TRUCK ROUTES

Figure 4.22 shows the City of Tracy Truck Routes, which includes existing and future routes. As shown in **Figure 4.22**, truck route planning in the western portion of the City is planned to accommodate future development of heavy industrial, logistics, distribution center, and warehousing land uses. Truck routes are minimized through the existing developed areas to reduce impacts upon sensitive land uses and reduce trucking activity mixed with other modes of transportation.



4.10.4 TRUCK ROUTES DESIGN PLANNING

Design standards and guidance for roadway designs to accommodate trucks is provided through the following documents:

- *Code of Federal Regulations* Title 23 Part 658 (Federal Highway Administration)
- *A Policy on Geometric Design of Highway and Streets* (American Association of State Highway and Transportation Officials (AASHTO), 2004)
- *Highway Design Manual* (Caltrans, September 2010)

The Federal Highway Administration (FHWA) regulations identified above provides standards for STAA trucks, which includes the minimum truck sizes that all states must allow on the National Network

4.10.5 SMART GROWTH DESIGN ELEMENTS

The following Smart Growth design elements are relevant to truck route facilities planning:

- Maximum lane widths are 11 feet for all new roadway cross sections.
- Minimize truck route designation in areas where high levels of pedestrian, bicycle, and transit usage are desired since truck routes require increased curb returns at intersections increasing crossing distances for pedestrians and bicyclists.
- Where heavy trucking activity is proposed, consider provision of parallel Class I bicycle routes over the designation in the road hierarchy and consider the accommodation of pedestrians and bicyclists concurrent with truck turn analysis during design review.

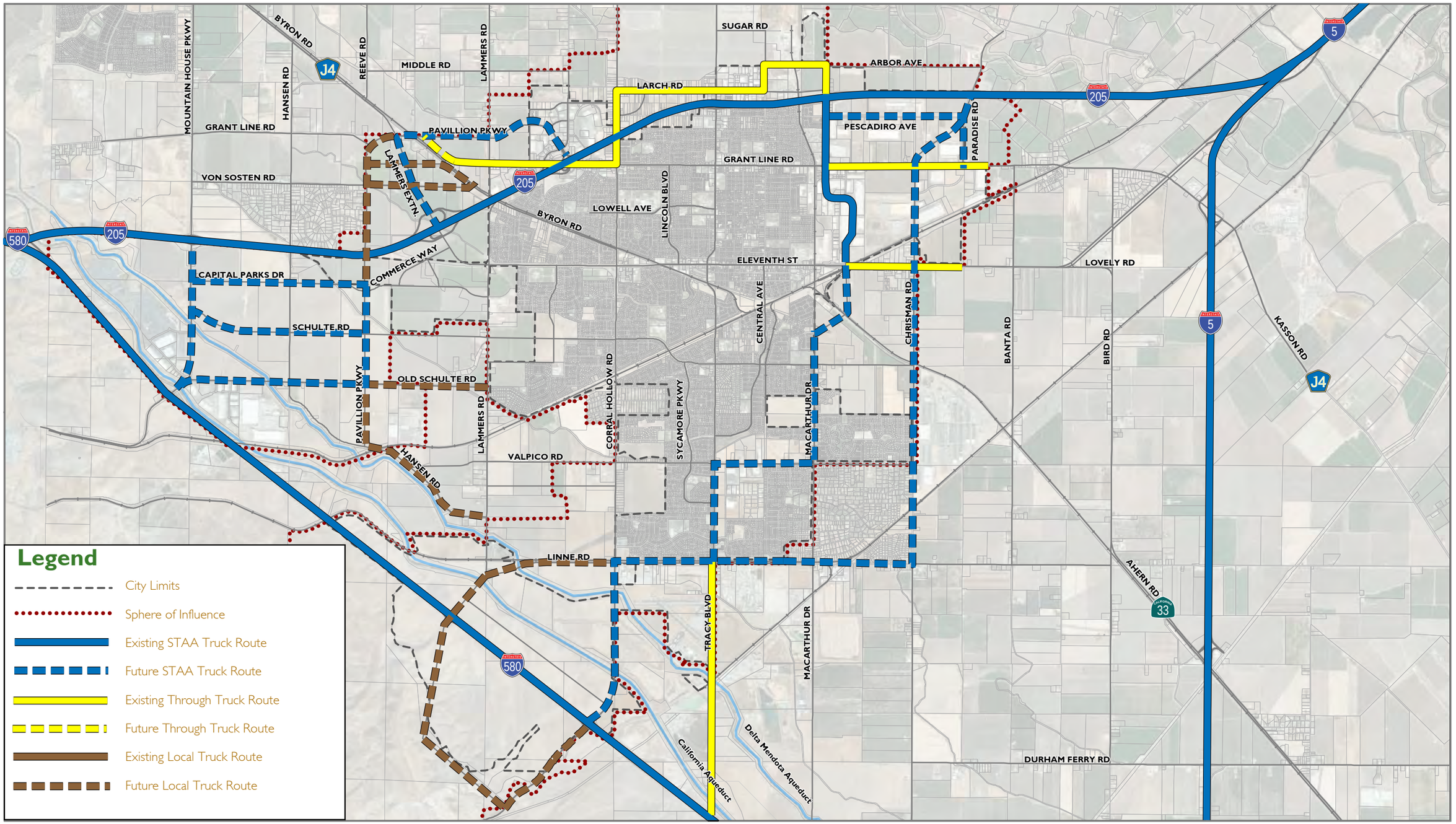


Figure 4.22: Future Truck Routes

City of Tracy Transportation Master Plan

4.11 Air Quality and Smart Growth Design Elements

4.11.1 INTRODUCTION

San Joaquin County is required to monitor air pollutants in accordance with federal and state standards. Per the California Clean Air Act, air quality plans to work towards attainment of meeting of these standards must be submitted to the California Air Resources Board if regional standards are not satisfied. State legislation, SB 375, seeks to control urban sprawl by setting emission reduction goals for Years 2020 and Horizon Year and provides incentives for local agencies and developers to plan smart growth communities that encourage alternative modes of transportation.

Table 4.15-3 of the City of Tracy's *Draft Recirculated Supplement EIR* (July 2010) indicates that region is not projected to meet state and federal standards for various pollutants. The proposed General Plan is anticipated to increase the population in Tracy which will lead to an increase in vehicle trips and vehicle miles traveled (VMT). The General Plan includes a Sustainability Action Plan (SAP) that included feasible measures to achieve sustainability in multiple sectors and to reduce greenhouse gas (GHG) emissions. These measures include policies and measures to increase transit usage and opportunities, to improving traffic flow in the city, to support development of new bicycle and pedestrian facilities, and other land use policies. Even with the measures outlined in the SAP, the proposed General Plan is anticipated have a cumulative and significant impact to air quality and to greenhouse gas (GHG) emissions.

The City of Tracy's Transportation Master Plan seeks to build upon the foundation and strategies identified in the General Plan and in the SAP. This section discusses strategies, principles, and design elements in the area of transportation to work towards meeting sustainability and GHG emission reduction goals. Smart Growth design elements as it relates to various types of facilities are also discussed..

4.11.2 ROADWAY NETWORK

Measure T-5 of the SAP lists several smart growth, urban design and planning measures including amendments to the zoning ordinance to require adequate pedestrian access, closure of sidewalk gaps, establishment of walkability standards, and amendment or creation of subdivision design standards to address spacing and connectivity.

The Roadway Classification and Cross Section section discusses context-sensitive and smart growth principles that were used to develop the roadway cross sections. The use of narrow lanes improves mobility for all users thus promoting alternative modes of transportation other than single occupant vehicles. The primary benefit

would be reduction in GHG emissions and increased mobility for non-motorists. The reduction in right-of-way requirements allows for additional landscaping to be provided which improves air quality.

The TMP includes policies to address spacing of access points and roadways and includes policies to maintain traffic flow and to reduce congestion which will improve air quality and to reduce GHG.

The TMP also allows for implementation of roundabouts which provide superior benefits to all-way stop and signalized intersections in terms of reducing delay, noise sustainability, and greenhouse gas emissions. Based upon a cursory evaluation of Horizon Year PM peak-hour volumes, approximately ¼ of the study intersections could be converted into a one-lane or two-lane roundabout as opposed to stop sign or traffic signal control (additional detailed operations and design will be required prior to implementation of a roundabout). The candidate locations for a roundabout are:

- Lammers Road & I-580 WB Off*
- Lammers Road & I-580 EB Off*
- Corral Hollow Road & I-580 WB Off
- Corral Hollow Road & I-580 EB Off
- Naglee Road & Middle Road
- Tracy Boulevard & Larch Road*
- MacArthur Drive & Arbor Avenue
- Chrisman Road & Arbor Avenue*
- Mountain House Parkway & Schulte Road
- Pavillion Parkway & Schulte Road*
- MacArthur Drive & Schulte Road*
- Hansen Road & Old Schulte Road*
- Mountain House Parkway & Capital Parks Drive
- Crossroads Drive & Shulte Road*

*Potential two-lane roundabout

A review of literature research (*Environmental Impact of Kansas Roundabouts*, Kansas State University, September 2003; *Use of Roundabouts in the City of Hamilton*, Hamilton Public Works Department, June 2008; *Modern Roundabouts, Global Warming, and Emissions Reductions*, Tony Redington) indicates that emission reductions of 20 to 60 percent were achieved based on case studies across the US.

4.11.3 BICYCLE AND PEDESTRIAN FACILITIES

Consistent with the policies in the General Plan and the Sustainability Action Plan, the TMP seeks to increase bicycle and pedestrian facilities. Bicycle and pedestrian facilities are provided on nearly all roadway classification types (except for industrial

streets, one way streets, and alleys).

The policies and measures in the TMP will also be integrated with the Bike Master Plan. The following bicycle and pedestrian Smart Growth design elements are specified in the TMP:

- Since bridges, culverts, and over/underpasses often are spanning major obstacles within the community, when planning right-of-way, planning and design of facilities, consider opportunities to incorporate trails and bikeways within crossings.

- Width of on-street bike lanes is recommended at 5 feet with a desired width of 6 feet. However, wider bike lanes also encourage vehicular speeding when cyclists are not present. The TMP recommends 5 feet bicycle lanes where the lane is adjacent to a curb and 4 feet where the travel lane is adjacent to on-street parking. Off-street bicycle paths can be 8 feet for bicycle only facilities and 10 feet for shared (multi-use) facilities accommodating both cyclists and pedestrians.

- Limit bicycle use on sidewalk to avoid conflicts with streetscape and pedestrians.

- Provide bicycle detection traffic control devices consistent with the California MUTCD for Class II facilities.

4.11.4 PARK AND RIDE FACILITIES

As indicated in the Park and Ride Facilities section, future park and ride lots have been identified in the TMP. This strategy is consistent with Measure T-7 of the SAP: Implement San Joaquin's County's Park and Ride Lot Master Plan. Also, the TMP includes the two following Smart Growth design strategies as it relates to Park and Ride facilities:

- Consider opportunities to share parking facilities for Park and Ride use where parking operations provide complimentary peak demands. Examples of opportunities to utilize parking facilities for dual purpose includes theater or shopping center uses that have peak parking demands during the evening or weekend when a Park and Ride facility would otherwise be in low demand.

- Provide high level of connectivity, beyond typical design expectations for land use to connect to alternative transportation systems such as transit, bicycle, and park and ride facilities. With enhanced efforts to strengthen connectivity, a higher quality of life is provided through provision of

multiple transportation options.

4.11.5 RAILROAD CROSSINGS

The following Smart Growth design elements are relevant to railroad crossing planning:

- Provide safe and efficient crossings for all modes across railroads to enhance connectivity between land uses and amenities.

4.11.6 TRUCK FACILITIES

The following Smart Growth design elements are relevant to truck route facilities planning:

- Maximum lane widths are 11 feet for all new roadway cross sections.
- Minimize truck route designation in areas where high levels of pedestrian, bicycle, and transit usage are desired since truck routes require increased curb returns at intersections increasing crossing distances for pedestrians and bicyclists.
- Where heavy trucking activity is proposed, consider provision of parallel Class I bicycle routes over the designation in the road hierarchy and consider the accommodation of pedestrians and bicyclists concurrent with truck turn analysis during design review.

4.11.7 SUSTAINABILITY POLICIES, STANDARDS, AND PERFORMANCE MEASURES

The sustainability policies and list of transportation elements in the Goals, Objectives, Policies, and Action section will further compliment the General Plan and the SAP. As indicated in the **Tables 4.1** and **4.2**, transportation elements are listed in these four categories to reduce GHG emissions and vehicle miles traveled:

- Transportation System Operations
- Land Use Integration
- Performance Measures
- Transportation Infrastructure

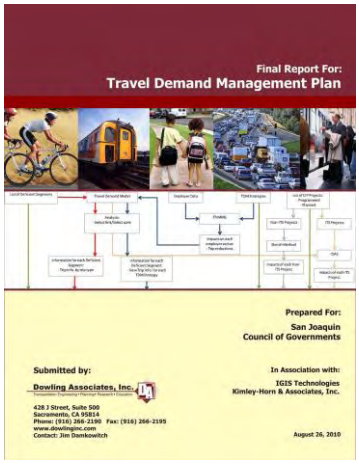
4.12 Transportation Demand Management

4.12.1 INTRODUCTION

A Transportation Demand Management (TDM) Plan is a set of strategies, measures and incentives to encourage residents and employees to walk, bicycle, use public transportation, carpool, or use other alternatives to driving alone. TDM measures encourage a shift to other modes of travel, boost economic efficiency of the transportation infrastructure, improve air quality, save energy, and reduce traffic congestion. The TDM measures discussed below will help the City of Tracy achieve the trip reduction and greenhouse gas emission targets outlined in the city's Sustainability Action Plan. A City TDM program will tier off the San Joaquin Council of Governments (SJCOG) TDM Plan.

4.12.2 TDM TOOLKIT

An effective TDM toolkit will contain measures that can be tailored and customized for various land uses. For example, measures that work effectively for office land uses may not generate a meaningful reduction in vehicle trips for retail or residential land uses.



San Joaquin Council of Governments (SJCOG) recently released a Travel Demand Management Plan (August 26, 2010) which identified a list of potential TDM strategies that may be used in the development of a TDM plan. The strategies are bundled into three incentive categories (financial, system, and demand) and are listed below:

Financial Incentives:

- Roadway pricing – charging motorists tolls for use of a roadway
- Area-wide pricing – charging motorists a toll to enter an area
- Parking pricing – charging motorists for parking
- Parking cash-out – providing a financial incentive for employees or residents in exchange for the parking space
- Employee travel allowance – providing a financial incentive for employees to carpool/vanpool or to use alternative modes of travel
- Transit pass – providing free or discounted transit passes to employees and residents

System Incentives:

- Provision of HOV lanes – providing high occupancy vehicle lanes to encourage carpooling
- Park and Ride lots – providing park and ride lots near transit hubs or central areas
- Transit service – expanding transit services
- Bicycle facilities – expanding bicycle facilities

Demand Incentives:

- Rideshare programs – services that matches riders interested in carpools and vanpools





- Carpool preferential parking – designated parking spaces for carpools
- Vanpool programs – vanpools or shuttles that transport employees to work and to transit centers
- Flexible work schedule – flexible work schedules that allow employees to travel during non-commute times
- Telecommuting – allowing employees to work remotely (e.g. home)
- Car sharing – providing car sharing service for residents and employees
- Bike sharing – providing use of bikes for short term use
- Guaranteed ride home – program that enables commuting employees to utilize taxi services in case of an emergency
- Information and guidance – resource information on TDM programs and measures
- TDM manager – designated person that assists in the management or implementation of a TDM program

SJCOG also operates a program, called Commute Connection that provides commute assistance. This program assists commuters with carpooling, vanpooling, and other rideshare options (bicycling, walking, and public transit). Commute Connection also offers ride matching services, Guaranteed Ride Home, and educational materials to employers.

4.12.3 TDM MEASURES

To relieve congestion and achieve the trip reduction and greenhouse gas emission targets outlined in the city's Sustainability Action Plan, the City of Tracy will require residential, commercial, and industrial developments to incorporate and implement the TDM measures in **Table 4.9**. The TDM measures are separated into two categories: base and additional. The base TDM measures are to be implemented by all developers. Additional TDM measures are measures that could be implemented by developers or required by City staff to mitigate or reduce impacts.

Table 4.9: City of Tracy TDM Measures

TDM Measure/Program	Developer Implements	Developer as Tenant or Employer Implements
Base TDM Measures		
Preferential carpool/vanpool parking spaces	X	X
Electrical/hybrid parking spaces	X	X
Sidewalk/trail improvements (consistent with recommendations in **Section 4.5**) along project frontage	X	

TDM Measure/Program	Developer Implements	Developer as Tenant or Employer Implements
Bicycle improvements (consistent with recommendations in **Section 4.5**) along project frontage	X	
Bicycle parking	X	X
Transit improvements (consistent with recommendations in **Section 4.13**) along project frontage		
Educational/Promotional materials		X
Additional TDM Measures		
Employee travel allowance		X
Transit passes		X
Carpool/vanpool programs		X
Flexible work schedule/tele-commuting		X
Car or bicycle sharing		X
Guaranteed ride home		X
TDM coordinator	X	X
Annual or Bi-annual monitoring/report	X	X

These measure will reduce traffic on the roadways system and is also required for obtaining future funding grants. It is a very important element to the success of ensuring mobility for Tracy residents.

4.13 Transit Facilities

4.13.1 INTRODUCTION

Future roadway capacity for private vehicle travel will be severely constrained as is evident in this Master Plan. A focus to shift trips from the private to the public system will have to occur to ensure mobility of the future generations. Tracy will be a hub for local and regional transit connections through the BART extension, the California Hi-Speed Rail system, and expansion of bus services internal and external to the City. This section documents infrastructure related to transit facility planning for the Tracy Transportation Master Plan (TMP). The existing transit facilities are described in **Chapter 2**, Existing Conditions.

As indicated on **Figure 3.1**, substantial growth is anticipated in the western, southern, and eastern portions of the city. This growth will add new residents and employees and result in new and increased demand for transit services.

4.13.2 PLANNED TRANSIT IMPROVEMENTS

This section describes new or planned transit service anticipated to be implemented over the next 20 years within the City of Tracy onm a Master Plan Level. A detailed service plan will have to be developed based on future travel demand. This Master Plan obliges the City and developers to provide transit infrastructure as part of the street system to promote transit usage. The provision of infrastructure cannot be pinned down until Spefici Plans and tentative maps for the individual developers are submitted, at which stage driveway access, walkability, connection to sidewalks and bicycle facilities will be detailed.

4.13.2.1 LOCAL FIXED-ROUTE BUS SERVICE (TRACER)

According to the City of Tracy's *Short Range Transit Plan* (SRTP) (December 2009), Tracer existing routes A, B, and C will be restructured to Routes 1 and 2 in FY 2012-13. Tracer service will be expanded to the Sycamore Parkway Area and east of Tracy Boulevard to new residential developments in southeast Tracy.

By FY 2017/2018, the new Route 3 will serve continue community growth anticipated in South Tracy along Valpico Road and south Tracy Boulevard and along Corral Hollow Road. **Figure 4.23** illustrates the new Tracer routes.

4.13.2.2 REGIONAL INTERCITY FIXED-ROUTE BUS SERVICE

According to the SRTP, a bus rapid transit (BRT) master plan was completed in 2006 by the San Joaquin Council of Governments and the San Joaquin Regional Transit District. This study identified and discussed potential rural and intercity bus rapid transit among several corridors. **Figure 4.23** identifies the one of the adopted corridors for possible future BRT service along the I-5/I-205/I-580 corridor.

4.13.2.3 BART EXTENSION

Bay Area Rapid Transit (BART) is currently constructing an extension to East Contra Costa County called eBART. eBART will allow riders to board a train in Antioch and connect to the Pittsburg/Bay Point BART station. A 50-year vision for transit improvements were presented in the SRTP and this vision included an eBART connection to the Tracy Transit Station as shown in **Figure 4.23**.

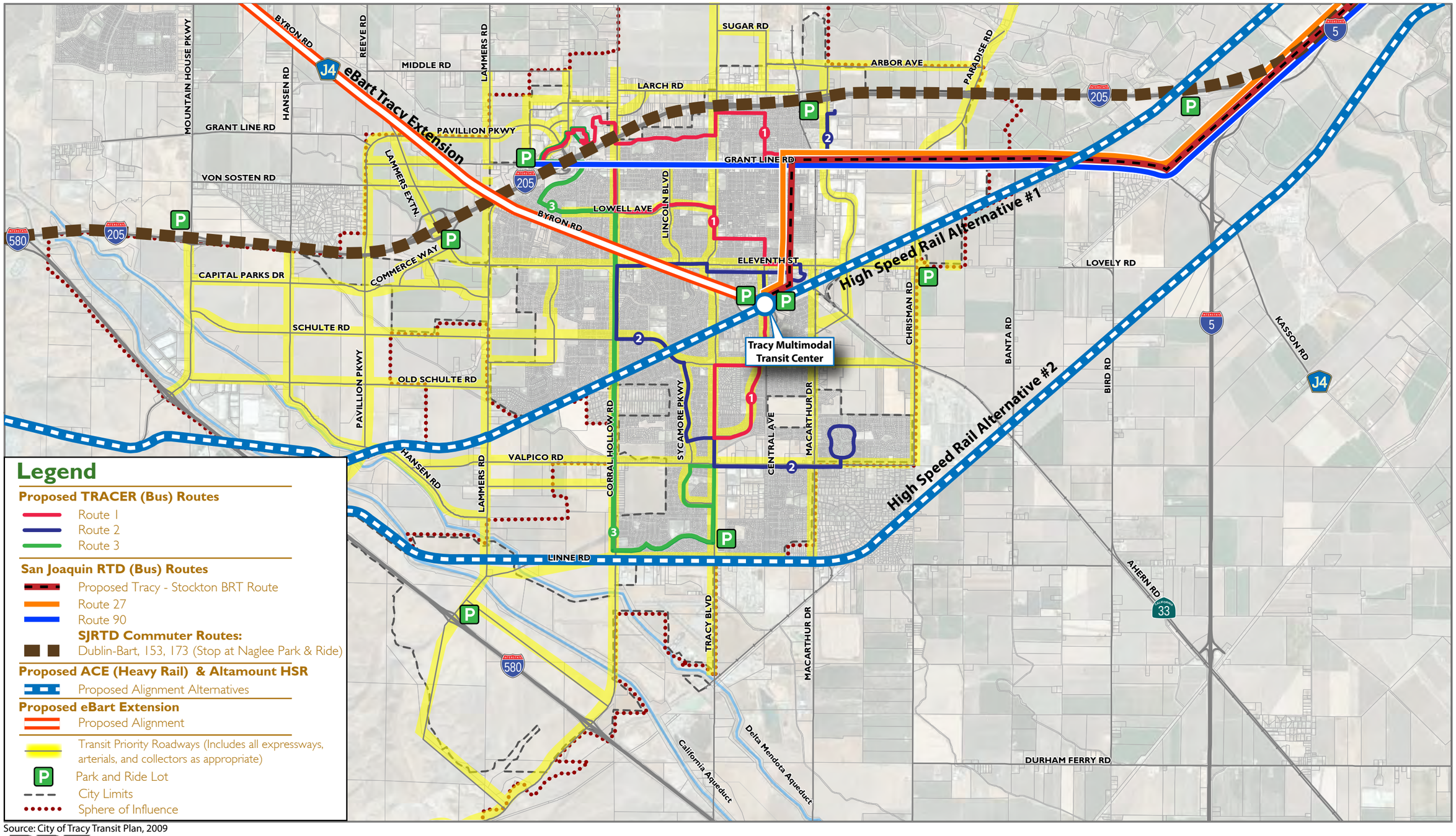
4.13.2.4 ALTAMONT COMMUTER EXPRESS/HIGH SPEED RAIL

The California High Speed Rail Authority is proposing high speed rail service between Sacramento and San Diego. The Altamont Corridor Rail project would provide a connection between San Joaquin Valley and the San Francisco Bay Area via the Altamont Pass and utilize the Altamont Commuter Express as a feeder to the California High Speed train system. The project is currently in the alternatives evaluation stage and the one of the two proposed alignment alternatives follows the Union Pacific railroad tracks through downtown Tracy as indicated in **Figure 4.23**. The 2nd alignment alternative follows the existing ACE alignment.

4.13.3 FUTURE TRANSIT FACILITIES ON TRACY ROADWAYS

Goal 4 of the City's Circulation Element is "A balanced transportation system that encourages the use of public transit and high occupancy vehicles." To strive towards meeting this goal, all existing and future roadways must consider transit improvements, as appropriate. Thus, all parkways/expressways, arterials, and collectors within the City's limits, as indicated in **Figure 4.23**, are to be designated "transit priority roadways." This would require property owners along these roadways to provide improvements to the transit infrastructure system when new or redevelopment is proposed. Improvements will consist of providing right-of-way at the far side of intersections and at development driveways to accommodate sheltered bus turnouts. In addition, coordination with the city and appropriate transit agency may be required to determine if improvements are warranted. Transit services will be closely linked the City ITS system for obtaining bus system information. Transit services will be better integrated and parallel services provided between the various operators. Standard Plans for bus shelters and turnouts are provided in the City of Tracy Standard Plans and will also be available from the City transit operator, TRACER.. The provision of bus pull-outs/shelters/stops shall be such to minimize walking distance to destinations, be provided on the far side of intersections. More design practices for on-street transit stops are provided in the APTA's Draft " Design on ON-Street Transit Stops and Access from Surrounding Areas".

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Source: City of Tracy Transit Plan, 2009

RBF CONSULTING

North

0 0.5 1 2 Miles (Approximate)

Figure 4.23: Long Term Transit Service Plan

City of Tracy Transportation Master Plan

5. HORIZON YEAR TRANSPORTATION MASTER PLAN-COST ESTIMATES

5.1 INTRODUCTION

This chapter of the TMP presents an opinion of probable cost estimates for the proposed Horizon Year roadway network improvements as recommended in the previous sections. These cost estimates are based upon initial planning and should be further refined at a later date when additional studies and design of the improvements commence. Cost estimates were provided for the following facilities:

- Overpasses/Underpasses/Bridges/Culverts
- Intersections
- Roadway Segments
- Intelligent Transportation System
- Railroad Crossings

The total cost for all of these improvements is estimated at approximately $910 million as indicated in **Table 5.1**. The assumptions and methodology used to prepare these costs estimates for each individual category are discussed below.

Table 5.1: Total Preliminary Cost Estimates for Horizon Year TMP Infrastructure

Description	Preliminary Cost Estimate
Overpasses/Underpasses/Bridges/Culverts	$188,536,000
Intersections	$216,815,397
Roadway Segments (Program Costs)	$323,627,344
Intelligent Transportation System	$19,226,275
Total[2]	**$748,205,017**

[1]Program costs refer to the portion of roadway segment improvements that will be funded by the city.

[2]Total includes funding from Capital Improvement Program (CIP) or other funding sources.

5.2 OVERPASS/UNDERPASS/BRIDGE/CULVERT

Section 4.6 identified the overpasses, underpasses, bridges, and culverts that needed to be widened to accommodate Horizon Year growth. These locations

are identified in **Tables 4.4 through 4.6**.

The cost estimates in **Table 5.2** assume that either the existing facility will be widened or a new replacement facility will be provided. The estimate takes into account the following factors:

- Length of structure including tapers and transitions
- Future width of facility based upon:
  - Horizon Year roadway classification
  - Future roadway cross sections
- Provision of pedestrian and bicycle facilities
- Other required design elements (K-rail and separation barriers)
- Right-of-way acquisition cost of $150,000 per acre
- Construction easement cost of $50,000 per acre
- Fees (20% contingency, 10% engineering and design, 15% construction management and administration)

A unit cost was applied to the area of the proposed widening or entire bridge replacement to determine the projected cost.

The average unit cost for constructing a new bridge ranges between $250 to 400 per square foot (s.f.) which includes both the superstructure and substructure. The lower end of the price range is for low structure height, no environmental constraints or aesthetic issues, dry conditions, no bridge skews, spread footings, and no stage construction. The higher end of price range is for long spans, high structure height, environmental constraints, aesthetic issues, wet conditions, skewed bridges, pile footings, and stage construction. For this analysis, an average unit cost of $300 per s.f. was used for a new bridge and a unit cost of $350 was used for widening of an existing bridge.

As indicated in **Table 5.2**, the resulting grand total to improve the overpasses, underpasses, bridges, and culverts is estimated at approximately $188.5 million which includes costs for contingencies, design and engineering, construction management, and right-of-way acquisition (see **Appendix I** for additional information regarding the cost estimates). This total includes CIP funding (funds from existing fee programs) for two projects at approximately $20 million.

Table 5.2: Preliminary Cost Estimates for Overpass/Underpass/Bridge/Culvert

Type/Location	Replace or Widen	Length (ft)	Existing Width (ft)	Water Channel/ Freeway Length (ft)	Future (BUILDOUT) Travel Width	# Lanes	Sidewalks	Bike Facility	Bike Width	K rail & Sep	50/Horizon Year Total Width	Future Area (ft^2)	Structure and Earthwork Cost	ROW Area (ft^2)	ROW/Easement Cost	CIP Funding Project #	CIP Funding Amount (c)	Total Cost	CIP Funding Project #	CIP Funding Amount (c)
Overpass/Underpass																				
I-580/Corral Hollow Road	Replace Bridge	350	34	135	52	4	5	lanes	10	4	80	28,000	$ 12,600,000	8,970	$ 31,000			$ 12,631,000		
I-580/Lammers Road	New Overcrossing	350	0	0	86	6	5	path	10	6	107	37,450	$ 16,853,000	37,450	$ 129,000			$ 16,982,000		
I-205 Pavilion Parkway overcrossing	New Overcrossing	350	0	155	52	4	5	path	10	6	80	28,000	$ 12,600,000	15,600	$ 54,000			$ 12,654,000		
I-580/Mountain House overcrossing	New Overcrossing	350	0	155	52	4	5	path	10	6	80	28,000	$ 12,600,000	15,600	$ 54,000			$ 12,654,000		
I-205/Paradise Road	Replace Bridge	290	34	155	52	4	5	path	10	6	80	23,200	$ 10,440,000	6,210	$ 21,000			$ 10,461,000		
Railroad Crossings																				
Lammers Road Railroad Crossing #2	New Bridge	100	0	100	86	6	5	path	10	6	107	10,700	$ 6,420,000	10,700	$ 37,000			$ 6,457,000		
11th Street/MacArthur Drive #9	New Bridge																	$ 29,000,000		$ 20,000,000
Chrisman Road Railroad Crossing at #22	New Bridge	100	0	100	86	6	5	path	10	6	107	10,700	$ 6,420,000	10,700	$ 37,000			$ 6,457,000		
Hansen Road Railroad Crossing #23	New Bridge	100	0	100	86	6	5	path	10	6	107	10,700	$ 6,420,000	10,700	$ 37,000			$ 6,457,000		
Lammers Road at Valpico Road #1	Widen from 2-4 lanes																	$ 300,000		
Corral Hollow Road north of Linne Road # 5	Widen from 2-4 lanes																	$ 300,000		
Tracy Boulevard north of Linne Road #8	Widen from 2-4 lanes																	$ 300,000		
MacArthur Drive south of 6th Street #15	Close, keep bike, ped																	$ 150,000		
Chrisman Road at Schulte Road #16	Widen from 2-4 lanes																	$ 300,000		
MacArthur Drive Extension #21	New 4 lane crossing																	$ 500,000		
Lammers Road at Byron Road #26 relocate, Grant L	Relocate 2 Lane Crossing																	$ 300,000		
Bridges																				
Delta Mendota Canal/Mountain House Parkway	Widen	335	36	115	64	4	0	path	10	4	78	14,070	$ 4,925,000	14,070	$ 16,000			$ 4,941,000		
California Aqueduct/Mountain House Parkway	Widen	350	72	115	86	6	0	path	10	4	100	9,800	$ 2,940,000	6,580	$ 23,000			$ 2,963,000		
Delta Mendota Canal/Old Schulte Road	Widen	325	49	110	71	4	0	path	10	4	85	11,700	$ 4,095,000	11,700	$ 13,000			$ 4,108,000		
Delta Mendota Aqueduct/Lammers Road	Replace	130	26	105	86	6	0	path	10	4	100	13,000	$ 3,900,000	9,620	$ 11,000			$ 3,911,000		
California Aqueduct/Lammers Road	Replace	170	24	130	86	6	0	path	10	4	100	17,000	$ 5,100,000	12,920	$ 15,000			$ 5,115,000		
Delta Mendota Canal/Corral Hollow Road	Replace	130	29	105	52	4	0	path	10	4	66	8,580	$ 2,574,000	4,810	$ 6,000			$ 2,580,000	73PP-054	$ 446,000
California Aqueduct/Corral Hollow Road	Replace	220	35	150	52	4	0	path	10	4	66	14,520	$ 4,356,000	6,820	$ 8,000			$ 4,364,000		
Culvert																				
Upper Main Canal/Lammers Road	Widen	65	93	30	86	4	0	path	10	4	100	455	$ 239,000	455	$ 1,000			$ 240,000		
Upper Main Canal/Corral Hollow Road	none	60	0	0	0	4	0	path	0	0	0	-	$	0	$			$		
Subtotal													**$ 112,482,000**		**$ 493,000**			**$ 144,125,000**		**$ 20,446,000**
Contingencies (20%)																		$ 28,825,000		
Engineering Design and Planing (10%)																		$ 14,413,000		
Construction Management (10%)																		$ 14,413,000		
Program Administration (3%)																		$ 7,206,000		
Grand Total																		**$ 208,982,000**		
Grand Total (With CIP Funding)																		**$ 188,536,000**		

Notes:
RR Bridge crossing : include 100% of bridge cost for earthwork estimate.
RR Crossing #24: Pavilion Parkway east of Lammers cost included in intersection improvements.
RR Crossing #9 : MacArthur Drive at 11th RR crossing included in Overpass.
Freeway overpasses and Lammer canal widening include 50% cost for earthwork/approaches
Length includes tapers/transition to main roadway
ROW cost of $150,000/acre assumed for overpass/underpass. Construction easement cost of $30,000/acre assumed for bridges and culverts.
New structure cost of $300/s.f. includes includes both the superstructure and substructure and assumes low structure height, no environmental constraints or aesthetic issues, dry conditions, no bridge skews, spread footings, and no stage construction.
Widening structure cost of $350/s.f.

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5.3 INTERSECTIONS

Figures 4.4a and **4.4b** identify the recommended Horizon Year lane geometry at the 65 study intersections plus intersections not analyzed that are required to accommodate the future demand and to maintain the level of service threshold per the City of Tracy and Caltrans level of service standards.

A per lane unit cost was derived to estimate the cost of widening an intersection leg to accommodate a through, left- or right-turn lane assuming a 250-foot lane or pocket. The unit cost included the following cost factors:

- Right-of-way (ROW) acquisition of 12 feet at $150,000 per acre
- Construction easement
- Structural section (concrete pavement, asphalt base, curb)
- Signing and striping
- Traffic signal installation or modification
- Fees (20% contingency, 10% engineering and design, 15% construction management and administration)

The per lane unit cost was multiplied by the number of additional lanes required under Horizon Year conditions. A more detailed cost estimate was prepared for the following key intersections due to unusual site constraints or because substantial earthwork/construction is required:

- #24 Byron Extension/Lammers Extension
- #44 Corral Hollow Road/Linne Road
- #45 Tracy Boulevard/Linne Road
- #56 Pavillion Parkway Extension/Grant Line Road Extension
- #67 Pavillion Parkway/Lammers Road

Appendix H contains concept plans for the above five intersections.

Unit costs were also developed for the following improvements:

- Traffic signal installation
- Roundabout
- Right-turn islands

The cost estimate for the I-205/Lammers Extension ramp intersections were obtained from the *I-205/Lammers Road Project Study Report* (Rajappan & Meyer Consulting Engineers, Inc., January 2006).

Table 5.3 summaries the proposed intersection cost estimates. The grand total for the intersection improvements is estimated at approximately $216 million (see **Appendix I** for additional information regarding the cost estimates). This total includes CIP funding in the total amount of approximately $19 million.

Table 5.3: Preliminary Cost Estimates for Intersections

Number	Intersection	Preliminary Cost Estimate	CIP #	CIP Funding	Amount Funded by TIF
1	I-205 WB Ramps/Lammers Extension	See Int #2			
2	I-205 EB Ramps/Lammers Extension	$ 58,340,000			$ 58,340,000
3	I-205 WB Ramps/Naglee Road	$ 45,000			$ 45,000
4	I-205 EB Ramps/Grant Line Road	$ 20,000,000			$ 20,000,000
5	I-205 WB Ramps/Tracy Boulevard	$ 369,000	72PP-064	$ 303,171	$ 65,499
6	I-205 EB Ramps/Tracy Boulevard	$ 327,000			$ 326,802
7	I-205 WB Ramps/MacArthur Drive	$ 14,441,000		$ 14,441,311	$ -
8	I-205 EB Ramps/MacArthur Drive	See Int #7			
9	Naglee Road (I-205 WB Ramps) /Grant Line Road	$ 426,000			$ 425,799
10	I-205 WB Ramps/Chrisman	$ 24,000,000			$ 24,000,000
11	I-205 EB Ramps/Chrisman	See Int #10			
12	I-580 WB Ramps/Mountain House Parkway	$ 515,000			$ 515,000
13	I-580 EB Ramps/Patterson Pass Road	$ 595,000			$ 595,000
14	I-580 WB Ramps/Lammers Road	$ 2,977,000			$ 2,977,004
15	I-580 EB Ramps/Lammers Road	$ 2,734,000			$ 2,733,603
16	I-580 WB Ramps/Corral Hollow Road	$ 327,000	72PP-030	$ 479,862	$ (153,060)
17	I-580 EB Ramps/Corral Hollow Road	$ 490,000			$ 490,203
18	Naglee Road/Middle Road	N/A			$ -
19	Larch Road/Tracy Boulevard	$ 792,000			$ 792,203
20	MacArthur Drive/Arbor Avenue	N/A			$ -
21	Paradise Road / Arbor Avenue	$ 1,119,000			$ 1,119,207
22	Lammers Road/Byron Road	$ 786,000			$ 785,603
23	Lammers Road/Grant Line Road	$ 900,000			$ 900,405
24	Byron Extension/Lammers Extension	$ 5,451,000			$ 5,451,000
25	Corral Hollow Road/Grant Line Road	$ 45,000	72PP-017	$ 319,200	$ (274,200)
26	Tracy Boulevard/Grant Line Road	$ 327,000	72018		$ 326,802
27	MacArthur Drive/Grant Line Road	N/A			$ -
28	Chrisman Avenue/Grant Line Road	$ 1,317,000	72PP-040	$ 385,400	$ 932,010
29	Lammers Road/Eleventh Street	$ 253,000	72024/7205	$ 200,000	$ 53,401
30	Corral Hollow Road/Eleventh Street	$ 45,000		$ 122,750	$ (77,750)
31	Tracy Boulevard/Eleventh Street	N/A			$ -
32	MacArthur Drive/Eleventh Street (North)	See Table 5.2			$ -
33	Chrisman Avenue/Eleventh Street (South)	$ 577,000			$ 577,004
34	Mountain House Parkway/ Schulte Road	$ 334,000			$ 333,603
35	Pavillion Extension/Schulte Road	$ 1,401,000			$ 1,400,810
36	Lammers Road/Schulte Road	$ 2,548,000	72068	$ 361,800	$ 2,186,217
37	Corral Hollow Road/Schulte Road	$ 417,000	72016	$ 167,053	$ 249,749
38	Tracy Boulevard/Schulte Road	$ 163,000			$ 163,401
39	MacArthur Drive/Schulte Road	$ 817,000			$ 817,004
40	Lammers Road/Valpico Road	$ 1,818,000			$ 1,817,815
41	Corral Hollow Road//Valpico Road	$ 1,234,000	72PP-053	$ 1,230,721	$ 3,288
42	Tracy Boulevard/Valpico Road	N/A	72038		$ -
43	MacArthur Drive/Valpico Road	$ 163,000	72037		$ 163,401
44	Corral Hollow Road/Linne Road	$ 8,945,000		$ 422,132	$ 8,522,868
45	Tracy Boulevard/Linne Road	$ 3,544,000		$ 178,291	$ 3,365,709
46	Naglee Road/Park and Ride	N/A			$ -
48	Lammers Extension/Van Sosten	$ 2,485,000			$ 2,485,022

Table 5.3 (Cont.): Preliminary Cost Estimates for Intersections

Number	Intersection	Preliminary Cost Estimate	CIP #	CIP Funding	Amount Funded by TIF
51	Hansen Road/Old Schulte Road	$ 900,000			$ 900,405
52	Mountain House Parkway/Schulte Road	N/A			$ -
53	Mountain House Parkway/Capital Parks Drive	$ 786,000			$ 785,603
54	Hansen Road/Capital Parks Drive	$ 1,421,000			$ 1,421,410
55	Pavillion Extension/Capital Parks Drive	$ 2,370,000			$ 2,370,220
56	Pavillion Extension/Grant Line Extension	$ 19,865,000			$ 19,865,000
57	Lammers Road/Crossroads Drive	$ 1,317,000			$ 1,317,410
58	Lammers Road/Schulte Road	$ 1,536,000			$ 1,536,211
59	Lammers Road/Ellis Drive	$ 1,818,000			$ 1,817,815
60	Lammers Road/Linne Road	$ 2,151,000			$ 2,151,418
61	Lammers Road/South Aqueduct Road	$ 2,151,000			$ 2,151,418
62	Crossroads Drive/Eleventh Street	N/A			$ -
63	Crossroads Drive/Schulte Road	$ 1,818,000			$ 1,817,815
64	Paradise Road/Grant Line Road	$ 1,151,000			$ 1,150,608
65	Lammers Road/Capital Parks Drive	$ 1,755,000			$ 1,755,013
66	Lammers Road/Commerce Way	$ 3,308,000			$ 3,308,229
67	Pavillion Parkway/Lammers Extension	$ 18,172,000			$ 18,172,000
68	Pavillion Parkway/Lammers Road	$ 1,568,000			$ 1,567,612
a	Hansen Road/Schulte Road	$ 483,000			$ 483,401
b	Pavillion Parkway/Grant Line Road	$ 567,000			$ 566,802
c	Pavillion Parkway/Von Sosten Road	$ 734,000			$ 733,603
d	Pavillion Parkway/Old Schulte Road	$ 650,000			$ 650,203
e	Pavillion Parkway/Hansen Road	$ 650,000			$ 650,203
f	Commerce Way (West)/Capital Parks Drive	$ 817,000			$ 817,004
g	Commerce Way (East)/Capital Parks Drive	$ 734,000			$ 733,603
h	Hansen Road/Valpico Road	$ 734,000			$ 733,603
i	Lammers Road/Connector Road(South Valpico)	$ 984,000			$ 983,806
j	Linne Road/Delta Mendota Link Road	$ 984,000			$ 983,806
k	Corral Hollow Road/Delta Mendota Link Road	$ 817,000			$ 817,004
l	MacArthur Drive/MacArthur Drive (North)	$ 734,000			$ 733,603
m	Chrisman Road/Valpico Road	$ 167,000		$ 241,071	$ (74,269)
n	Chrisman Road/Shulte Road	$ 900,000			$ 900,405
o	Chrisman Road/Paradise Road	$ 584,000			$ 583,806
p	Corral Hollow Road/Larch Road	$ 734,000			$ 733,603
q	Corral Hollow Road/Auto Plaza Drive	$ 984,000			$ 983,806
r	Naglee Road/Auto Plaza Drive	$ 567,000		$ 309,008	$ 257,794
	Total	**$ 235,978,000**		**$ 19,161,770**	**$ 216,815,397**

Notes: Ints 1 & 2 costs obtained for Alternative 6 from I-205/Lammers Road PSR (January 2006)

5.4 ROADWAY SEGMENTS

Similar to the process undertaken to estimate the intersection costs, a unit cost was developed for the various roadway types. The cost factors used for the intersections were also used in the roadway segments. In addition, costs to provide streetlights and to coordinate with utility companies were included.

Table 5.4 presents the list of new roadways that will be constructed or existing roadways that will be widened under Horizon Year and for certain roadways, SOI Buildout Conditions. Program costs were calculated based upon right-of-way acquisition and roadway improvements costs. Right-of-way acquisition costs were based upon SOI buildout conditions. ROW and Improvement costs were based upon SOI Buildout conditions for Mountain House Parkway and Lammers Road. Horizon year costs were calculated based on the frontage policy described below.

Included in the roadway segment cost estimates are costs to construct temporary sidewalks or bike paths. Temporary sidewalks or paths would be constructed to provide a continuous connection between adjacent developed and undeveloped parcels. The cost of temporary sidewalks and paths were estimated at 1/3 of the total cost to construct all sidewalks and bike paths in the TMP.

5.4.1 FRONTAGE POLICY

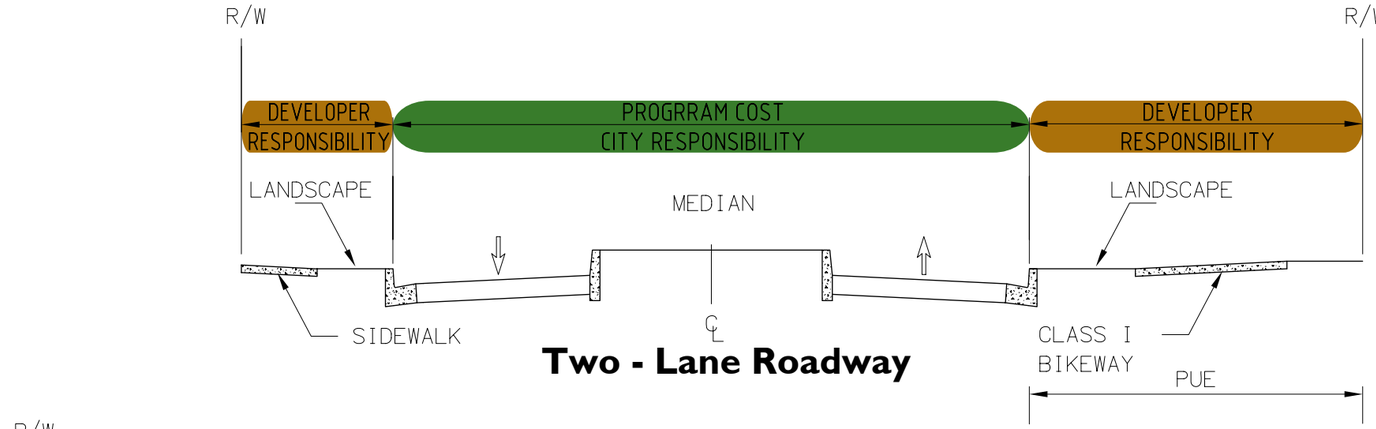
A frontage policy was developed as part of this TMP to identify the basic roles and responsibilities of the City and the Developers with respect to future roadway cross-sections within the City of Tracy.

Figure 5.1 illustrates responsibility of the City and the Developer based on roadway type, 2-lane, 4-lane and 6-lane facilities. The interim roadway section may include a 2-lane design segment or a 4-lane design segment depending on the type of roadway. In general, the City shall be responsible for construction of inside lanes including median and streetlights (roadway with four or more lanes). The developer shall be responsible for completing the remaining improvements for the cross-section, including outside lanes (roadway with four or more lanes), shoulders, landscaping, sidewalks, bike lanes /bikeways, and streetlights (roadway with two lanes). The City's responsibility is referred to as "Program Costs." It is recognized that construction of these roadways may occur in phases based upon available funding and development demands. Under the scenario where a roadway would be constructed prior to development in the area, responsibilities of the City and the Developer are illustrated in **Figure 5.1**. However, the roadway corridor should be preserved to accommodate the ultimate cross-section, including shoulders, sidewalks, landscaped, curb and gutter, a raised median, and storm

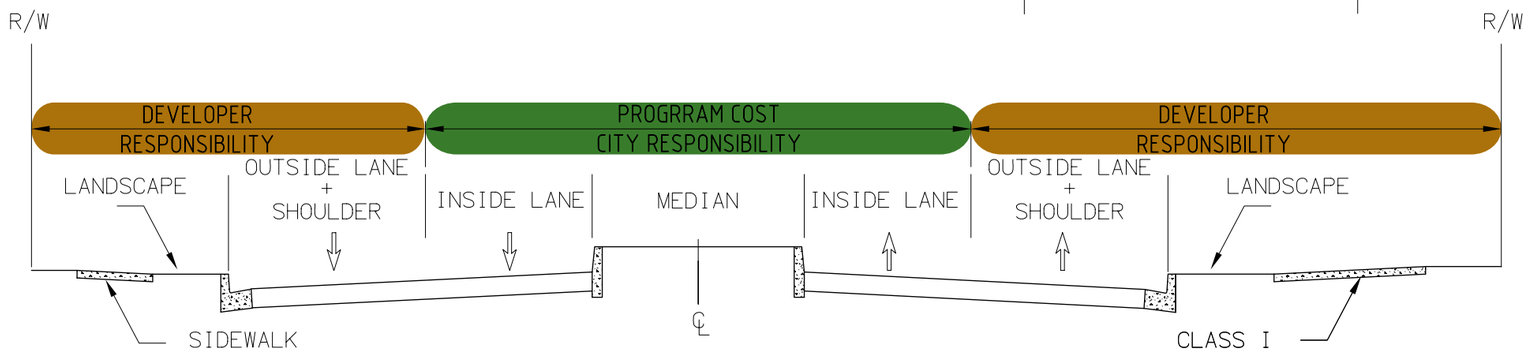
sewer per the Horizon Year Roadway Network. Paved trails /bike lanes may be included on one or both sides.

The TMP indicates ROW requirements for Horizon Year and SOI Buildout.. However, due to the uncertainty of long term future development, these ROW requirements may change. To accommodate a change in potential future ROW, the following requirements are established for all future development.

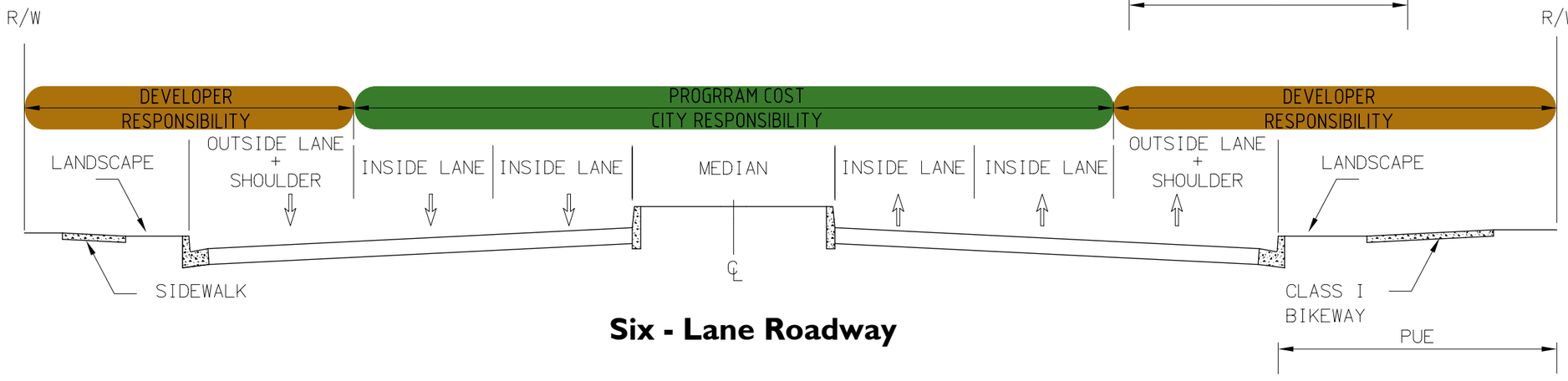
1. If a Specific Plan or Development Project requires additional roadway travel lanes than indicated in this TMP for SOI Buildout conditions, the project shall mitigate its impact through implementation sustainable development policies by: (1) improving transit usage by employees, and (2) implementing TDM measures, as prescribed by the City and the SJCOG. If the project cannot demonstrate adequate mitigation, additional ROW and roadway improvements would be provided and funded solely by the applicant.
2. If a Specific Plan and Development Project require less ROW than indicated in the Traffic Analysis Study for the project for SOI Buildout conditions, the applicant shall provide an Irrevocable Offer of Dedication (IOD) to the City for the future ROW needs beyond the project ROW requirements. This ROW will remain under ownership and be maintained by the project applicant and only relinquished at the City request. The applicant will then be reimbursed for the subject property. The applicant shall not develop any improvements on the subject property described in the IOD, without prior approval from the City. Any improvements by the applicant will be constructed at the applicant's risk without reimbursement. The City may also relinquish the IOD, in which case ROW costs may be reimbursed to the applicant..



Two - Lane Roadway



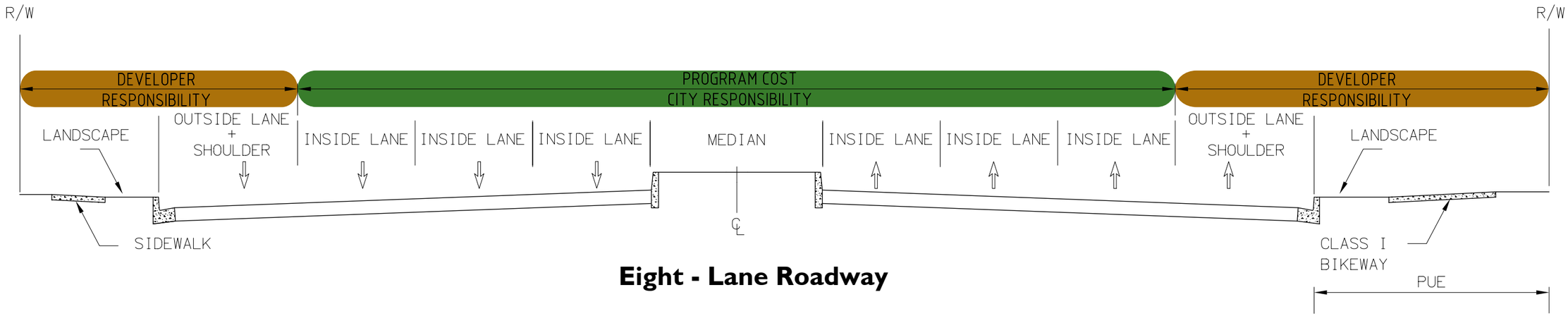
Four - Lane Roadway



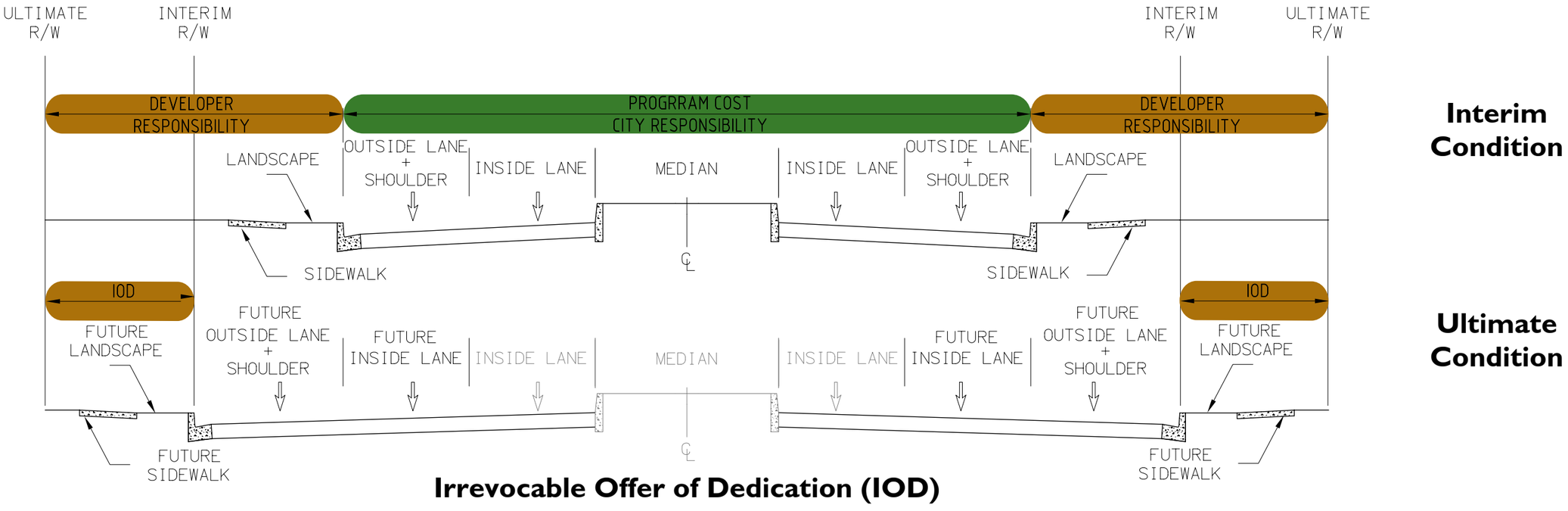
Six - Lane Roadway

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Figure 5.1: Roadway Improvement Cross Section Responsibility Per Frontage Policy



Eight - Lane Roadway



Irrevocable Offer of Dedication (IOD)

5.4.2 PROGRAM COSTS

The cost estimates in **Table 5.4** were based upon the City's responsibility as outlined in the Frontage policy section discussed above. As indicated in **Table 5.4**, the Program Costs for the roadway segments costs is estimated at approximately $340 million (see **Appendix I** for additional information regarding the cost estimates). This total includes CIP funding in the total amount of approximately $35 million.

Table 5.4: Preliminary Cost Estimates for Roadway Segments

Segment	From	To	Roadway Type	Program Cost	CIP	
					Project #	Funding
Construction of New Roadways						
Capital Parks Dr	Mountain House Pkwy	New Street	new 4L undiv Arterial	$ 2,710,000		
Capital Parks Dr	New Street	Hansen Rd	new 4L undiv Arterial	$ 2,650,000		
Capital Parks Dr	Hansen Rd	Pavillion Ext	new 4L undiv Arterial	$ 4,040,000		
Capital Parks Dr	Pavillion Ext	New Street	new 4L undiv Arterial	$ 1,900,000		
Capital Parks Dr	New Street	New Street	new 4L undiv Arterial	$ 2,370,000		
Capital Parks Dr	New Street	New Street	new 4L undiv Arterial	$ 1,920,000		
Capital Parks Dr	New Street	Lammers Rd	new 6L Arterial	$ 1,750,000		
Schulte Rd	Mountain House Pkwy	New Street	new 2L Arterial	$ 6,340,000		
Schulte Rd	New Street	Hansen Rd	new 2L Arterial	$ 2,850,000		
Schulte Rd	Hansen Rd	Pavillion Ext	new 4L undiv Arterial	$ 4,770,000		
Schulte Rd	Pavillion Ext	New Street	new 4L undiv Arterial	$ 2,820,000		
Schulte Rd	New Street	New Street	new 4L undiv Arterial	$ 1,330,000		
Schulte Rd	Lammers Rd	Crossroads Dr	new 4L undiv Arterial	$ 3,440,000	73PP-049	$ 283,427
Schulte Rd	Crossroads Dr	Edge of Development	new 4L undiv Arterial	$ 1,190,000		
New E-W Street (south of Valpico)	Wilkinson Wy	Corral Hallow Rd	new 2L Collector	$ 1,370,000		
Linne Rd	Lammers Rd	Light Industrial Rd	new 4L Parkway	$ 1,110,000		
Linne Rd	Light Industrial Rd	Corral Hallow Rd	new 4L Parkway	$ 10,750,000		
Light Industrial Rd	Linne Rd	Corral Hallow Rd	new 4L undiv Arterial	$ 7,240,000		
Pavillion Pkwy	Grant Line Rd	Byron Rd/11th St	new 4L Arterial	$ 620,000		
Pavillion Pkwy	Grant Line Rd/RR	Lammers Rd	new 6L Arterial	$ 7,320,000		
Pavillion Pkwy	Lammers Rd	Power Rd	new 4L Arterial	$ 5,100,000		
Byron Rd	Pavillion Ext	Byron Rd/11th St	new 2L Arterial	$ 1,130,000		
Byron Rd	Byron Rd/11th St	Byron Rd	new 2L Arterial	$ 3,130,000		
New Street	Property Line	Larch Rd	new 4L undiv Arterial	$ 1,080,000		
Power Rd	Pavillion Pkwy	Grant Line Rd	new 6L Arterial	$ 4,550,000		
Chrisman Rd	Grant Line Rd	Paradise Rd	new 6L Parkway	$ 5,520,000		
Auto Plaza Ext	Power Rd	Naglee Rd	new 4L undiv Arterial	$ 2,350,000		
Auto Plaza Ext	Naglee Rd	Corral Hallow Rd	new 4L undiv Arterial	$ 3,000,000		
Lammers Ext	Byron Rd	Pavillion Pkwy		$ -		
Lammers Ext	Pavillion Pkwy	Byron Rd	new 6L Parkway	$ 2,590,000		
Lammers Ext	Byron Rd	Von Sosten Rd	new 6L Parkway	$ 1,890,000		
Lammers Ext	Von Sosten Rd	I-205 On/Off Ramps	new 6L Parkway	$ 2,580,000		
Lammers Ext	I-205 On/Off Ramps	I-205 On/Off Ramps		$ -		
Lammers Ext	I-205 On/Off Ramps	Commerce Wy	new 6L Parkway	$ 490,000	Ellis	$ 506,190
Lammers Ext	Commerce Wy	11th St	new 6L Parkway	$ 2,810,000		
Pavillion Ext	Grant Line Rd	Byron Rd	new 4L Arterial	$ 2,270,000		
Pavillion Ext	Byron Rd	Von Sosten Rd	new 4L Arterial	$ 2,450,000		
Pavillion Ext	Rancho Ramon Dr	I-205	new 4L Arterial	$ 2,850,000		
Pavillion Ext	I-205	Capital Parks Dr	new 4L Arterial	$ 3,640,000		
Pavillion Ext	Capital Parks Dr	Schulte Rd	new 4L Arterial	$ 3,860,000		
Pavillion Ext	Schulte Rd	Old Schulte Rd	new 4L Arterial	$ 5,250,000		
Pavillion Ext	Property Line	Hansen Rd	new 4L Arterial	$ 2,790,000		
Commerce Wy	Byron Rd/11th St	New Street	new 6L Parkway	$ 3,120,000		
Commerce Wy	New Street	Capital Parks Dr	new 4L undiv Arterial	$ 590,000		
New Street	Commerce Wy	Capital Parks Dr	new 4L undiv Arterial	$ 1,800,000		
Crossroads Dr	Lammers Rd	Curve	new 2L Arterial	$ 5,610,000		
Crossroads Dr	Curve	Schulte Rd	new 2L Arterial	$ 1,630,000		
Crossroads Dr	Schulte Rd	Property Line	new 4L Arterial	$ 2,000,000		
MacArthur Dr	11th St	Curve	new 4L undiv Arterial	$ 2,530,000		
MacArthur Dr	Curve	MacArthur Dr	new 4L undiv Arterial	$ 2,380,000		
Lammers Rd	I-580 EB Ramp	Old Schulte Road	new 4L Parkway	$ 23,110,000		$ 3,632,177
Larch Rd	Corral Hollow Rd	Tracy Blvd	new 4L undiv Arterial	$ 5,730,000		
Larch Rd	Tracy Blvd	east terminus	new 4L undiv Arterial	$ 4,660,000		
Mountain House Parkway	I-205	Capital Parks Dr	new 8L Parkway	$ 2,940,000		
Mountain House Parkway	Capital Parks Dr	Schulte Rd	new 6L Parkway	$ 2,560,000		
Mountain House Parkway	Schulte Rd	Old Shulte Rd	widen to 4L Parkway	$ 2,970,000		

Table 5.4 (Cont.): Preliminary Cost Estimates for Roadway Segments

Segment	From	To	Roadway Type	Program Cost	CIP Project #	CIP Funding
Widening of Existing Roadways						
Hansen Rd	I-205 Overpass	Old Schulte Road	widen 2L to 4L undiv Arterial	$ 7,010,000		
Lammers Rd	s/o Middle	Grant Line Rd	widen 2L to 4L undiv Arterial	$ 3,300,000		
Lammers Rd	school	Old Schulte Rd	widen 2L to 6L Parkway	$ 6,590,000	73PP-047	$ 1,641,613
Corral Hollow Rd	I-205	Grant Line Rd	widen 2L to 6L Arterial	$ 1,950,000		
Corral Hollow Rd	Grant Line Rd	11th St	widen 4L to 6L Arterial	$ 9,510,000		
Corral Hollow Rd	11th St	Schulte Rd	widen 4L to 6L Arterial	$ 6,440,000	73103	$ 2,323,100
Corral Hollow Rd	Schulte Rd	RR	widen 2L to 6L Parkway	$ 2,560,000		
Corral Hollow Rd	RR	Valpico Rd	widen 2L to 4L Arterial	$ 5,970,000		
Corral Hollow Rd	Valpico Rd	Linne	widen 2L to 4L Arterial	$ 7,020,000	73PP-046	$ 4,652,275
Corral Hollow Rd	Linne Rd	I-580 WB Ramp	widen 2L to 4L Arterial	$ 10,910,000		
Corral Hollow Rd	I-580 EB Ramp	Southern City Limit	widen 2L to 4L Arterial	$ 2,900,000		
Holly Dr	11th St	First St	restripe only	$ 640,000		
Chrisman	Grant Line Rd	11th St	widen 2L to 6L Parkway	$ 5,990,000		
Chrisman	11th St	Schulte Rd	widen 2L to 4L Parkway	$ 7,860,000		
Chrisman	Schulte Rd	Valpico	widen 2L to 4L Parkway	$ 7,860,000		
Grant Line	Byron Rd	Lammers Rd	widen 2L to 4L Arterial	$ 2,810,000		
Grant Line	Lammers Rd	Naglee Rd	widen 4L to 6L Arterial	$ 3,440,000		$ 633,620
Grant Line	Parker Dr	Holly St	widen 2L to 4L undiv Arterial	$ -	73052	
Grant Line	w/o Chrisman Rd	Chrisman Rd	widen 2L to 4L undiv Arterial	$ 2,910,000		
Grant Line	Chrisman Rd	Paradise Rd	widen 2L to 4L undiv Arterial	$ 2,150,000	73048	$ 14,995,020
Grant Line	Paradise Rd	Banta Rd	widen 2L to 6L Arterial	$ 4,340,000		
Lowell Dr	w/o Orchard	Corral Hollow Rd	widen 2L to 4L undiv Arterial	$ 2,550,000		
Schulte Rd	MacArthur Dr	Chrisman Rd	widen 2L to 4L undiv Arterial	$ 4,570,000		
Valpico Rd	east of Wilkinson Wy	Corral Hollow Rd	widen 2L to 4L Arterial	$ 3,760,000	73PP-051	$ 545,175
Valpico Rd	Corral Hollow Rd	w/o Sycamore Parkway	widen 2L to 4L Arterial	$ 4,640,000		$ 81,211
Valpico Rd	Tracy Blvd	Glenbriar Dr	widen 2L to 4L Arterial	$ 4,580,000	73061 & 73095	$ 4,709,785
MacArthur Dr	New Street	Schulte Rd	widen 2L to 4L Arterial	$ 2,130,000		
Linne Rd	Corral Hollow Rd	Tracy Blvd	widen 2L to 6L Parkway	$ 7,940,000	73PP-097	
Linne Rd	Tracy Blvd	w/o MacArthur Dr	widen 2L to 4L Parkway	$ 5,450,000		$ 744,671
Old Schulte Rd	Mountain House Pkwy	Hansen Rd	construct new 2L parkway	$ 1,420,000		
Old Schulte Rd	Hansen Rd	Pavillion Ext	Reconstruct 2L Parkway	$ 7,810,000		
Segments Outside SOI Limits						
Schulte Rd	New Street	Lammers Rd	new 4L undiv Arterial	$ 2,650,000		
Valpico Rd	New Street	Lammers Rd	new 2L Arterial	$ 6,770,000		
Valpico Rd	Lammers	east of Wilkinson Wy	widen 2L to 4L Arterial	$ 7,380,000		
New East-West Street (south of Valpico)	Lammers Rd	Wilkinson Wy	new 2L Collector	$ 390,000		
Hansen Rd	Pavillion Ext	Valpico Rd	new 2L Arterial	$ 4,530,000		
Hansen Rd	Valpico Rd	Lammers Rd	new 2L Arterial	$ 7,950,000		
New North-South Rd	Schulte	Old Schulte	new 2L Collector	$ 20,000		
New North-South Rd	north of Schulte	Old Schulte	new 4L undiv Arterial	$ 590,000		
Commerce Wy	north of Valpico Rd	Valpico Rd	new 2L Collector	$ 400,000		
			Subtotal New and Widening (Including Segments Outside SOI)	**$ 367,140,000**		**$ 34,748,264**
			Temporary Sidewalks/Bike Paths	**$ 9,891,680**		
			Other Funding Contribution (Gateway development)	**$ (2,373,197)**		
			CIP Funding	**$ (34,748,264)**		
			Total To Be Funded by TIF	**$ 339,910,219**		

Note: Structural costs (e.g. retaining walls) are not included. Traffic control systems and traffic signals are included in intersection or ITS costs.
Costs include streetlight costs ($16,000 per 250 ft) and utility coordination costs ($20,000 for segments less than 2,500' or $40,000 for segments > 2,500').

5.5 Intelligent Transportation System

Section 4.9 identified the future Horizon Year Intelligent Transportation System (ITS) infrastructure improvements. **Table 5.5** presents an estimate of the costs to implement these improvements. The projected ITS costs are estimated at approximately $19 million.

Table 5.5: Preliminary Cost Estimates for Intelligent Transportation System Infrastructure

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	FIBER OPTIC COMMUNICATION SYSTEM INSTALLATION (TRAFFIC MANAGEMENT IMPROVEMENTS ONLY)				
1	Furnish and Install 3" Conduit (Including Pull Boxes)	LF	212,500	$35	$7,437,500
2	Furnish and Install 144 Strand Singlemode Fiber Optic Cable	LF	413,000	$4	$1,652,000
3	Signalized Intersection Upgrades (Includes Splice Vault/Enclosure/Communication Equipment/Controller & Cabinet Modifications)	EA	109	$20,000	$2,180,000
4	Furnish and Install CCTV Camera System (includes CCTV Camera, Cables, Mounting and Video Encoder)	EA	53	$15,000	$795,000
5	Furnish and Install DMS System (Including Display/Sign Structure/Pole/Foundation/Splice Vault/Cabinet/Communication Equipment). This TMP includes the use of DMS signs on trailers on an "as needed" basis. Future updates may reassess the use of standard DMS signs.	EA	0	$130,000	$0
6	Furnish and Install Field Communication Hub (Including Splice Vault/Enclosure/Communication Equipment/Cabinet)	EA	4	$30,000	$120,000
	SUBTOTAL				**$12,184,500**
	FIBER OPTIC COMMUNICATION SYSTEM INSTALLATION (PUBLIC WORKS DEPARTMENT)				
7	PUBLIC WORKS DEPARTMENT Furnish and Install Two (2) Workstations (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$50,000	$50,000
	SUBTOTAL				**$50,000**
	FIBER OPTIC COMMUNICATION SYSTEM INSTALLATION (WATER DEPARTMENT)				
8	WATER TREATMENT PLANT Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$45,000	$45,000
	SUBTOTAL				**$45,000**
	FIBER OPTIC COMMUNICATION SYSTEM INSTALLATION (PARKS/LIBRARY)				
8	TRACY SPORTS COMPLEX Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$50,000	$50,000
9	EL PESCADERO PARK Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$50,000	$50,000
10	TRACY BALL PARK Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$50,000	$50,000
11	POWERS PARK Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$50,000	$50,000

Table 5.5 (Cont.): Preliminary Cost Estimates for Intelligent Transportation System Infrastructure

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
12	LINCOLN PARK Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$50,000	$50,000
13	TRACY PUBLIC LIBRARY Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$50,000	$50,000
	SUBTOTAL				**$300,000**
	FIBER OPTIC COMMUNICATION SYSTEM INSTALLATION (FIRE DEPARTMENT/STATIONS)				
14	TRACY FIRE DEPARTMENT BUILDING Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$40,000	$40,000
15	TRACY FIRE STATION NO. 1 Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$40,000	$40,000
16	TRACY FIRE STATION NO. 6 Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$40,000	$40,000
17	TRACY FIRE STATION NO. 7 Furnish and Install One (1) Workstation (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Communication Equipment/Equipment Rack/Ethernet Switch/Fiber Distribution Unit/Miscellaneous)	LS	1	$40,000	$40,000
	SUBTOTAL				**$160,000**
	CITY HALL - TRAFFIC MANAGEMENT CENTER				
18	TRAFFIC MANAGEMENT CENTER (TMC) Furnish and Install TMC (Including Fiber Optic Cable/Conduit/Spice Vault-Enclosure and Video Wall/Communication Equipment & Sofware/Furniture)	LS	1	$400,000	$400,000
	SUBTOTAL				**$400,000**
	OTHER COSTS ASSOCIATED WITH INTELLIGENT TRANSPORATION SYSTEM				
19	Testing	LS	1	$50,000	**$50,000**
20	Training	LS	1	$20,000	**$20,000**
21	System Integration	LS	1	$50,000	**$50,000**
	SUBTOTAL				**$120,000**
	TOTAL - (ALL SUBTOTALS)				**$13,259,500**
	45% CONTINGENCIES				**$5,966,775**
	TOTAL - (ALL SUBTOTALS WITH CONTINGENCIES)				**$19,226,275**

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APPENDIX A

2007 REGIONAL TRANSPORTATION PLAN
PLANNED IMPROVEMENTS

Table 6-1: 2007 Regional Transportation Plan Project List - Mainline Highway Improvements Category

Identifiers					Project Information				Cost to Deliver			Milestone Years		
2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier		Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Open to Traffic
SJ07-1001	212-0000-0395		Tier I		Caltrans	I-205	Construct east and westbound auxiliary lanes	Tracy Blvd to Mountain House Parkway	$51,560,000	$51,560,000	$0	2009	2009	2013
SJ07-1002	212-0000-0336	0001	Tier I		Caltrans	I-205	Tree planting	Alameda County Line to I-5 (P.M. 0.0/12.6)	$2,455,000	$2,455,000	$0	various	done	2010
SJ07-1003			Tier I		Caltrans	I-205	Widen from 6 to 8 lanes (inside/outside)	I-580 to I-5	$396,640,000	$396,640,000	$0		2015	2020
SJ07-1004	212-0000-0346	7861	Tier I		Caltrans	I-205/I-580	Construct new westbound truck lanes	East of Mountain House Parkway to Alameda County Line (Note: Project continues in Alameda Co. to North Flynn Rd)	$50,000,000	$50,000,000	$0	2009	2011	2015
SJ07-1005			Tier I		Caltrans	I-5	Widen 6 to 8 lanes (inside)	French Camp Road to Charter Way	$42,100,000	$42,100,000	$0		2015	2020
SJ07-1006			Tier I		Caltrans	I-5	Widen 6 to 8 lanes (inside)	SR 120 to French Camp Road	$108,600,000	$108,600,000	$0		2015	2020
SJ07-1007	212-0000-0393		Tier I		Caltrans	I-5	North Stockton Widening - widen 6 to 8 lanes including auxiliary lanes	Country Club Blvd to north of Eight Mile Road	$350,000,000	$350,000,000	$0	2008	2009	2017
SJ07-1008	212-0000-0123		Tier I		Caltrans	I-5 Mossdale	Widen 9 to 12 through lanes	SR-120 to I-205 (P.M. R13.9/R15.6)	$122,300,000	$122,300,000	$0		2016	2020
SJ07-1009	112-0000-0036	7350	Tier I		Caltrans	Route 12	Provide safety and operational improvements	I-5 to Bouldin Island (P.M. 18.1/27.6)	$20,000,000	$20,000,000	$0	2011	2011	2017
SJ07-1010			Tier I		Caltrans	Route 12	Widen from 4 to 6 lanes	Lower Sacramento Road to Route 99	$31,045,000	$31,045,000	$0		2017	2020
SJ07-1011			Tier I		Caltrans	Route 12	Widen from 2 to 4 lanes	Lower Sacramento Road to I-5	$71,040,000	$71,040,000	$0		2015	2019
SJ07-1012	212-0000-0399	7239	Tier I		Caltrans	Route 12/Route 88	Widen from 2 to 4 lanes	Within the joint Route 88/Route 12 corridor	$67,086,000	$67,086,000	$0	2008	2011	2016
SJ07-1013			Tier I		Caltrans	SR 132	Widen 2 to 4 lanes	Gap Closure, I-580 to I-5	$20,000,000	$20,000,000	$0		2010	2016
SJ07-1014			Tier I		Caltrans	SR-120	Widen 4 to 6 lanes (inside)	I-5 to SR99	$78,000,000	$78,000,000	$0		2012	2016
SJ07-1015			Tier I		Caltrans	SR-4	Extension - New alignment from Fresno Ave. to east of Daggett Road	Fresno Avenue to east of Daggett Road	$217,600,000	$217,600,000	$0		2012	2016
SJ07-1016			Tier I		Caltrans	SR-4	Operational and Intersection Improvements	Daggett Road to I-5 (PM 12.6/15.9)	$3,800,000	$3,800,000	$0		2010	2014
SJ07-1017	212-0000-0394		Tier I		Caltrans	SR-99	99 Manteca - widen 4 to 6 lanes with interchange modifications	SR-120 to Arch Rd (PM 5.3/15.0)	$250,000,000	$250,000,000	$0	2012	2010	2015
SJ07-1018	212-0000-0344	7668	Tier I		Caltrans	SR-99	99 South Stockton - widen from 4 to 6 lanes with interchange modifications and realignment of the Highway 4 east approach and connection to Highway 99	Rt 4-Crosstown Freeway to South of Arch Road (PM 14.6/18.4)	$250,500,000	$250,500,000	$0	2008	2009	2013
SJ07-1019	212-0000-0313		Tier I		Caltrans	Various locations	SHOPP - Collision Reduction Grouped Projects	Various	$473,020,000	$473,020,000	$0	various	various	2030
SJ07-1020	212-0000-0314		Tier I		Caltrans	Various locations	SHOPP - Mobility Grouped Projects	Various	$98,840,000	$98,840,000	$0	various	various	2030
SJ07-1021	212-0000-0315		Tier I		Caltrans	Various locations	SHOPP Roadway Preservation Grouped Projects	Various	$134,140,000	$134,140,000	$0	various	various	2030
SJ07-1022	212-0000-0392		Tier I		Caltrans	Various locations	SHOPP-Other (Emergency Response, Mandates, Bridge Preservation, Roadside Preservation Etc.)	Various	$60,844,000	$60,844,000	$0	various	various	2030
SJ07-1023			Tier II		Caltrans	I-5	Widen 4 to 6 lanes (inside)	SR-12 to County Line	$91,000,000	$0	$91,000,000			
SJ07-1024			Tier II		Caltrans	I-5	Widen 6 to 8 lanes (inside)	Eight Mile Road to New Road A	$25,000,000	$0	$25,000,000		2013	2016
SJ07-1025			Tier II		Caltrans	I-5 Widening	Widen 8 to 10 lanes	Roth Road to Otto Drive	$400,000,000	$0	$400,000,000			
SJ07-1026			Tier II		Caltrans	I-5/SR-120	New branch connections (2 lane structures)	SR 120 West to I-5 North, and I-5 South to SR 120 East	$35,500,000	$0	$35,500,000			
SJ07-1027			Tier II		Caltrans	I-580	Widen 6 to 8 lanes	Mountain House Parkway to Alameda County line	$1,500,000	$0	$1,500,000			
SJ07-1028			Tier II		Caltrans	SR-12	Widen 2 to 4 lanes (outside), add turn lanes	SR 99 to SR 88	$50,500,000	$0	$50,500,000			
SJ07-1029			Tier II		Caltrans	SR-120	East of Escalon, widen to 5 lane conventional to county line	McHenry to existing 120 at Harrold	$25,000,000	$0	$25,000,000			
SJ07-1030			Tier II		Caltrans	SR-120	West of Escalon, widen from Jack Tone 5 lane conventional to Sexton, new south alignment to McHenry	Jack Tone to Sexton and McHenry	$75,000,000	$0	$75,000,000			
SJ07-1031			Tier II		Caltrans	SR-132	Improve roadway	I-580 to Stanislaus County line (PM 0.0/7.1)	$2,000,000	$0	$2,000,000			
SJ07-1032			Tier II		Caltrans	SR-26	New Capacity~ Widen 2 to 4 lanes (outside)	Cardinal (diverting canal) to Jack Tone Road	$48,000,000	$0	$48,000,000			
SJ07-1033			Tier II		Caltrans	SR-26	Widen 6 to 8 lanes	SR 99 to Austin Road Extension	$30,000,000	$0	$30,000,000			
SJ07-1034			Tier II		Caltrans	SR-4	Corridor Improvement Project Provide safety and operational improvement. Replace roads overburdened with more traffic than designed to handle.	I-5 to the city of Brentwood in Contra Costa County (Study Only)	$5,000,000	$0	$5,000,000			
SJ07-1035			Tier II		Caltrans	SR-4	Widen 6 to 8 lanes	I-5 to SR 99 (Crosstown)	$75,000,000	$0	$75,000,000			
SJ07-1036			Tier II		Caltrans	SR-4	Widen 6 to 8 lanes	SR 99 to Austin Road Extension	$30,000,000	$0	$30,000,000			
SJ07-1037			Tier II		Caltrans	SR-88	Passing lanes	SR-12 to County Line	$24,000,000	$0	$24,000,000			
SJ07-1038			Tier II		Caltrans	SR-99	New Capacity~ Widen 4 to 6 lanes (inside)	Jct. 12 East to County line.	$86,000,000	$0	$86,000,000			
SJ07-1039			Tier II		Caltrans	SR-99	New Capacity~ Widen 4 to 6 lanes (inside)	North of Harmony to SR-12 East	$11,250,000	$0	$11,250,000			

Table 6-1: 2007 Regional Transportation Plan Project List - Mainline Highway Improvements Category

Identifiers				Project Information				Cost to Deliver			Milestone Years			
2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Open to Traffic	
SJ07-1040			Tier II	Caltrans	SR-99	Widen 6 to 8 lanes (outside)	City of Manteca Yosemite Avenue to City of Ripon (West Ripon Road)	$203,000,000	$0	$203,000,000				
SJ07-1041			Tier II	Caltrans	SR-99	Widen 6 to 8 lanes (outside)	Crosstown to Cherokee Road	$194,000,000	$0	$194,000,000				
SJ07-1042			Tier II	Caltrans	SR-99	Widen 6 to 8 lanes (outside)	Arch Road to Crosstown	$86,000,000	$0	$86,000,000				
SJ07-1043			Tier II	Caltrans	SR-99	Widen 6 to 8 lanes (outside)	Cherokee Road to Armstrong Road	$100,000,000	$0	$100,000,000				
SJ07-1044			Tier II	Caltrans	SR-99	Widen 6 to 8 lanes (outside)	French Camp Road to Mariposa Road	$100,000,000	$0	$100,000,000				
SJ07-1045			Tier II	Caltrans	SR-99	Widen 8 to 10 lanes (outside)	Mariposa Road to Cherokee Road	$150,000,000	$0	$150,000,000				
								$4,747,320,000	**$2,899,570,000**	**$1,847,750,000**				

Table 6-2: 2007 Regional Transportation Plan Project List - Interchange Projects Category

Identifiers							Project Information				Cost to Deliver			Milestone Years			
MPO I.D.	2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	RTP Category		Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	Tier I	Tier II		FTIP Programming	NEPA Approval	Open to Traffic
1010	SJ07-2001			Tier I	Interchanges		Caltrans	I-5 at SR-4 (Crosstown Freeway)	Reconstruct Freeway to Freeway Interchange	I-5 at SR-4 (Crosstown Freeway)	$59,000,000	$59,000,000	$0		2017	2020	
1009	SJ07-2002			Tier I	Interchanges		Caltrans	SR-99 at SR-4 (Crosstown Freeway)	Reconstruct Freeway to Freeway Interchange	SR-99 at SR-4 (Crosstown Freeway)	$30,000,000	$30,000,000	$0		2021	2024	
A4	SJ07-2003			Tier I	Interchanges		Caltrans	SR-99 at Charter Way	Interchange improvements	SR-99 at Charter Way	See SJ07-1018	See SJ07-1018	$0				
91	SJ07-2004			Tier I	Interchanges		Lathrop	I-5 at Lathrop Road	Reconstruct interchange (P.M. 17.3/17.8)	I-5 at Lathrop Road	$33,000,000	$33,000,000	$0		2010	2015	
92	SJ07-2005			Tier I	Interchanges		Lathrop	I-5 at Louise Avenue	Reconstruct interchange (PM 16.4-16.8)	I-5 at Louise Avenue	$33,000,000	$33,000,000	$0		2010	2015	
139	SJ07-2006	212-0000-0397		Tier I	Interchanges		Lodi	SR-99 at Harney Lane	Reconstruct interchange to provide 6 through lanes on SR 99, 4 lanes on Harney and modify on-ramps and off-ramps	SR-99 at Harney Lane	$37,603,000	$37,603,000	$0	2008	2009	2011	
138	SJ07-2007	212-0000-0398		Tier I	Interchanges		Lodi	SR-99 at SR-12 West (Kettleman Lane)	Reconstruct interchange and widen to free flowing interchange	SR-99 at SR-12 West (Kettleman Lane)	$60,121,000	$60,121,000	$0	2008	2009	2011	
137	SJ07-2008			Tier I	Interchanges		Lodi	SR-99 at SR-12 East (Victor Road)	Complete reconstruction of SR 99/SR-12 interchange to provide 6 through lanes on SR 99 and modify on-ramps and off-ramps	SR-99 at SR-12 East (Victor Road)	$30,801,000	$30,801,000	$0	2011	2012	2016	
204	SJ07-2009	212-0000-0231		Tier I	Interchanges		Manteca	SR-120 at McKinley Avenue	Reconstruct/improve interchange including necessary auxillary lanes (P.M. 2.2/2.2)	SR-120 at McKinley Avenue	$32,093,000	$32,093,000	$0	2009	2009	2012	
A5	SJ07-2010			Tier I	Interchanges		Manteca	SR-120 at Airport Way	Reconstruct interchange	SR-120 at Airport Way	$18,010,000	$18,010,000	$0		2008	2010	
A6	SJ07-2011			Tier I	Interchanges		Manteca	SR-120 at Main Street (Manteca)	Reconstruct interchange	SR-120 at Main Street (Manteca)	$15,888,000	$15,888,000	$0		2015	2018	
A7	SJ07-2012			Tier I	Interchanges		Manteca	SR-120 at Union Road	Reconstruct interchange (P.M. 4.1/4.1)	SR-120 at Union Road	$15,888,000	$15,888,000	$0		2007	2009	
205	SJ07-2013			Tier I	Interchanges		Manteca	SR-99 at Austin Road	Reconstruct/improve interchange with new grade separation	SR-99 at Austin Road	$100,979,000	$100,979,000	$0		2009	2012	
203	SJ07-2014			Tier I	Interchanges		Manteca	SR-99 at North Main (Manteca)	Reconstruct overcrossing	SR-99 at North Main (Manteca)	See SJ07-1017	See SJ07-1017	$0				
A8	SJ07-2015			Tier I	Interchanges		Ripon	SR-99 at Main Street/UPRR Interchange (Ripon)	Reconstruct interchange of SR-99 and Main Street including reconstruction of Main Street overcrossing of UPRR and intersection improvements at Stockton Avenue and East Main Street	SR-99 at Main Street/UPRR Interchange (Ripon)	$5,000,000	$5,000,000	$0		2011	2015	
A9	SJ07-2016			Tier I	Interchanges		Ripon	SR-99 at Wilma Avenue Overcrossing/UPRR Interchange	Reconstruct interchange including reconstruction of existing overcrossing structure	SR-99 at Wilma Avenue Overcrossing/UPRR Interchange	$5,000,000	$5,000,000	$0		2011	2015	
352	SJ07-2017			Tier I	Interchanges		San Joaquin County	SR-132 at Bird Road	Upgrade interchange, lengthen ramps, widen approaches, install signal controls with necessary auxiliary lanes(P.M. 2.2/2.2)	SR-132 at Bird Road	$21,700,000	$21,700,000	$0	2007	CEQA 2006	2009	
827	SJ07-2018			Tier I	Interchanges		Stockton	I-5 at Charter Way	I-5/Charter Way interchange improvements (P.M. 25.3)	I-5 at Charter Way between Navy Drive and about 200 ft east of the IC	$21,389,000	$21,389,000	$0		2017	2015	
828	SJ07-2019			Tier I	Interchanges		Stockton	I-5 at Downing Ave	Modification of interchange to a higher capacity design (P.M. 23.4-24.4)	I-5 at Downing Ave	$66,000,000	$66,000,000	$0		2010	2015	
34	SJ07-2020	212-0000-0309		Tier I	Interchanges		Stockton	I-5 at Eight Mile Road	Modification of interchange (P.M. 34.7/35.9)	I-5 at Eight Mile Road	$37,000,000	$37,000,000	$0	2007	2009	2014	
673	SJ07-2021	212-0000-0230	7239	Tier I	Interchanges		Stockton	I-5 at French Camp/Arch-Sperry Road (HR 3-193 #2067)	Reconstruct existing French Camp Road interchange, construct auxiliary lanes on I-5, and realign Manthey Road (P.M. 20.8-21.2)	I-5 from PM 22.1/23.6 on French Camp Road from approx 2000 feet west of the IC and approx. 1700 feet east of the IC on Sperry Road. Improvements on nearby streets.	$61,170,000	$61,170,000	$0	2010	2007	2012	
682	SJ07-2022	212-0000-0309		Tier I	Interchanges		Stockton	I-5 at Hammer Lane	Interchange Modification and auxiliary lanes (PM 32.6)	I-5 at Hammer Lane	$50,000,000	$50,000,000	$0	2007	2009	2014	
35	SJ07-2023	212-0000-0309		Tier I	Interchanges		Stockton	I-5 at North Gateway (New Road A)	Construction of a new interchange and auxiliary lanes (PM 36.0/36.9)	I-5 at North Gateway (New Road A)	$63,000,000	$63,000,000	$0	2007	2009	2015	
32	SJ07-2024	212-0000-0309		Tier I	Interchanges		Stockton	I-5 at Otto Drive	Construction of a new interchange and auxiliary lanes (PM 33.3/34.2)	I-5 at Otto Drive	$44,024,000	$44,024,000	$0	2007	2009	2014	
671	SJ07-2025			Tier I	Interchanges		Stockton	SR-99 at Eight Mile Road	Reconstruct Interchange (PM 35.1-35.5)	SR-99 at Eight Mile Road	$82,000,000	$82,000,000	$0		2008	2013	
674	SJ07-2026			Tier I	Interchanges		Stockton	SR-99 at French Camp Road	Reconstruct interchange	SR-99 at French Camp Road	See SJ07-1018	See SJ07-1018	$0				
A10	SJ07-2027			Tier I	Interchanges		Stockton	SR-99 at Golden Gate	Construct new interchange	SR-99 at Golden Gate	See SJ07-1017	See SJ07-1017	$0				
672	SJ07-2028			Tier I	Interchanges		Stockton	SR-99 at March Lane and Wilson Way	Construction of the March Lane/SR-99 interchanges with connections to Wilson Way	SR-99 at March Lane and Wilson Way	$158,000,000	$158,000,000	$0		2008	2015	
683	SJ07-2029			Tier I	Interchanges		Stockton	SR-99 at Mariposa Road	Reconstruct interchange	SR-99 at Mariposa Road	See SJ07-1017	See SJ07-1017	$0				

Table 6-2: 2007 Regional Transportation Plan Project List - Interchange Projects Category

Identifiers							Project Information					Cost to Deliver			Milestone Years		
MPO I.D.	2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	RTP Category		Jurisdiction	Facility Name/Route	Project Description	Project Limits		Total	Tier I	Tier II	FTIP Programming	NEPA Approval	Open to Traffic
670	SJ07-2030			Tier I	Interchanges		Stockton	SR-99 at Morada	Reconstruct interchange (PM 23.5-24.5)	SR-99 at Morada		$55,000,000	$55,000,000	$0		2008	2011
884	SJ07-2031			Tier I	Interchanges		Tracy	I-205 at MacArthur	Improve interchange, enhance circulation, and reduce congestion on I-205 (P.M.R8.1/R8.1)	I-205 at MacArthur		$5,422,000	$5,422,000	$0	2010	2013	2015
937	SJ07-2032	212-0000-0227		Tier I	Interchanges		Tracy	I-205 at Lammers Rd	Construct interchange (P.M. 2.4/5.3) HR 3-193 #2055 and HR 3-366 #460	I-205 at Lammers Rd		$63,000,000	$63,000,000	$0	2006	2009	2015
888	SJ07-2033			Tier I	Interchanges		Tracy	I-205 at Grant Line Road	Modification of existing interchange	I-205 at Grant Line Road		$27,040,000	$27,040,000	$0		2014	2017
960	SJ07-2034	212-0000-0228		Tier I	Interchanges		Tracy & Lathrop	I-205 at Paradise Road/Chrisman	Construct New Interchange (Goldrush City) (P.M. 13.1/13.1)	I-205 at Paradise Road/Chrisman		$54,015,000	$54,015,000	$0	2009	2009	2015
1018	SJ07-2035			Tier II	Interchanges		Caltrans	SR-12 at I-5	Loop Ramps	SR-12 at I-5		$11,250,000	$0	$11,250,000			
1020	SJ07-2036			Tier II	Interchanges		Caltrans	SR-99 at SR-26	Reconstruct interchange	SR-99 at SR-26		$19,500,000	$0	$19,500,000			
1019	SJ07-2037			Tier II	Interchanges		Caltrans	SR-99 at SR-88	Reconstruct interchange	SR-99 at SR-88		$19,500,000	$0	$19,500,000			
118	SJ07-2038			Tier II	Interchange		Lathrop	SR-120 at Yosemite/Guthmiller	Reconstruct interchange	Yosemite/Guthmiller		$2,200,000	$0	$2,200,000			
A11	SJ07-2039			Tier II	Interchanges		Ripon	SR-99 at Olive Road Interchange	Construct new full access Highway Overhead Interchange at Olive Road	SR-99 at Olive Road		$100,000,000	$0	$100,000,000		2011	2015
685	SJ07-2040			Tier II	Interchanges		Stockton	I-5 at Matthews Road	Reconstruct interchange	I-5 at Matthews Road		$35,000,000	$0	$35,000,000			
686	SJ07-2041			Tier II	Interchanges		Stockton	I-5 at Roth Road	Reconstruct interchange	I-5 at Roth Road		$35,000,000	$0	$35,000,000			
675	SJ07-2042			Tier II	Interchanges		Stockton	SR-99 at Arch Sperry Road	Phase 2 interchange improvements	SR-99 at Arch Sperry Road		$15,000,000	$0	$15,000,000			
676	SJ07-2043			Tier II	Interchanges		Stockton	SR-99 at Armstrong Road	Reconstruct interchange	SR-99 at Armstrong Road		$35,000,000	$0	$35,000,000			
678	SJ07-2044			Tier II	Interchanges		Stockton	SR-99 at New Road A (N. Gateway)	Construction of new interchange	SR-99 at New Road A (N. Gateway)		$35,000,000	$0	$35,000,000			
886	SJ07-2045			Tier II	Interchanges		Tracy	I-580 at Corral Hollow Road	Modification of existing interchange	I-580 at Coral Hollow Road		$20,000,000	$0	$20,000,000	2009	n/a	2013
885	SJ07-2046			Tier II	Interchanges		Tracy	I-580 at Lammers Road	Construction of new interchange	I-580 at Lammers Road		$55,000,000	$0	$55,000,000	2015	2018	2025
												$1,667,593,000	**$1,285,143,000**	**$382,450,000**			

Table 6-3: 2007 Regional Transportation Plan Project List - Regional Roadway Improvements Category

Identifiers					Project Information					Cost to Deliver			Milestone Years		
2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	RTP Category	Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Open to Traffic
SJ07-3001	212-0000-0311		Tier I	Regional Roads-Bridge	Caltrans	Various locations	Caltrans Highway Bridge Preventative Maintenance Program - Plng	Various	$0	$0	$0	various		2030
SJ07-3002	212-0000-0272		Tier I	Regional Roads-Bridge	Caltrans	Various locations	Caltrans Highway Bridge Program Lump Sum projects (Safety)	Various	$209,400,000	$209,400,000	$0	various		2030
SJ07-3003	various		Tier I	Regional Roads-Bridge	Caltrans	Various locations	Caltrans Highway Bridge Program Line Item projects (Safety)	Various	$74,581,000	$74,581,000	$0	various		2030
SJ07-3004	212-0000-0307		Tier I	Regional Roads-Rehab	Caltrans	Various locations	Lump sum for Emergency Repair Program (Safety)	Various	$1,745,000	$1,745,000	$0	various		2030
SJ07-3005	212-0000-0353		Tier I	Regional Roads-Rehab	Caltrans	Various locations	Caltrans Minor Program (Safety)	Various	$10,470,000	$10,470,000	$0	various		2030
SJ07-3006			Tier I	Regional Roads	Caltrans	Yosemite (SR 120)	Widen from 2 to 4 lanes	Van Allen to Brennan. 1.95 miles.	$3,689,000	$3,689,000	$0		2013	2015
SJ07-3007			Tier I	Regional Roads	Caltrans	Yosemite (SR 120)	Widen from 2 to 4 lanes	From Manteca City limit to North Ripon Road. 3.05 miles.	$5,358,000	$5,358,000	$0		2013	2015
SJ07-3008			Tier I	Regional Roads	Caltrans	Yosemite (SR 120)	Widen from 2 to 4 lanes	From French Camp to Van Allen. 2.1 miles.	$3,427,000	$3,427,000	$0		2013	2015
SJ07-3009			Tier I	Regional Roads	Escalon	McHenry Avenue	Widen from 2 to 4 lanes	Between First Street and Catherine Way	$3,096,000	$3,096,000	$0		2009	2010
SJ07-3010			Tier I	Regional Roads	Escalon	McHenry Avenue	So. McHenry Ave. Improvements and Rehab; reconstruct with center turn lane, bike lane, and graded shoulders.	Catherine Avenue to Jones Road	$3,389,000	$3,389,000	$0	link to SJ07-3062	2010	2012
SJ07-3011			Tier I	Regional Roads	Escalon	SR 120/Brennan Ave Intersection	Intersection improvements	SR-120 at Brennan Avenue	$873,000	$873,000	$0		2008	2009
SJ07-3012	212-0000-0146	K655	Tier I	Regional Roads-Beautification	Escalon	SR-120 (Escalon Gateway)	Scenic landmarks and landscaping	Several locations off SR-120 leading into downtown	$256,000	$256,000	$0	2006	2006	2007
SJ07-3013			Tier I	Regional Roads	Escalon	Ullrey Avenue/McHenry Avenue Intersection	Reconstruct intersection, including addition of turn pockets, improvement of traffic signal and installation of train pre-emption system for UPRR railroad crossing.	Intersection of Ullrey Avenue and McHenry Avenue including UPRR railroad crossing.	$986,000	$986,000	$0		2009	2010
SJ07-3014			Tier I	Regional Roads	Lathrop	Golden Valley Parkway	Construct parallel facility Six Lanes (from Lathrop Rd to Borkhurst Blvd) Four lanes (from Burkhurst to Paradise)	Along Northwest side of I-5 from Lathrop to Paradise	$59,290,000	$59,290,000	$0			2020
SJ07-3015			Tier I	Regional Roads	Lathrop	Lathrop Rd.	Widen from 2 to 4 lanes	From I-5 to east of UPRR	$2,771,000	$2,771,000	$0		2010	2013
SJ07-3016	112-0000-0158	3K44	Tier I	Regional Roads	Lathrop	Louise Avenue	Widen 2 lane to 4 lane	5th St to east of city limits	$2,075,000	$2,075,000	$0	2008	2008	2010
SJ07-3017			Tier I	Regional Roads	Lodi	Ham Lane	Widen 2/3 lanes to 4 lanes	From Lodi Avenue to Elm Street	$2,343,000	$2,343,000	$0	2010	2010	2015
SJ07-3018			Tier I	Regional Roads	Lodi	Harney Lane	Widen from 2/3 lane collector to 4 lane divided arterial	SR-99 to Lower Sacramento Road (2.6 Miles)	$19,808,000	$19,808,000	$0	2009	2010	2013
SJ07-3019			Tier I	Regional Roads	Lodi	Lockeford Street	Widen 2 to 4 lanes	Stockton Street to Cherokee Lane	$5,525,000	$5,525,000	$0	2009	2009	2011
SJ07-3020			Tier I	Regional Roads	Lodi	Pine Street	Widen from 2 to 3 lanes (adding turn lane)	Between Cherokee Lane and Beckman Road	$2,519,000	$2,519,000	$0	2008	2008	2009
SJ07-3021			Tier I	Regional Roads-Rehab	Lodi	Turner Road	Reconstruct and overlay Turner and Lower Sacramento Roads. Modify the Turner/Lower Sacramento intersection.	Lower Sacramento Road on the west, Loma Drive on the east and UPRR tracks on the north	$967,000	$967,000	$0	2007		2007
SJ07-3022			Tier I	Regional Roads	Lodi	Victor Road (SR-12)	Widen from 2 to 4 lanes. Add center dual left turn lane, turn pockets at intersections and median seperation with landscape	Between SR 99 to Central California Traction railroad tracks.	$9,278,000	$9,278,000	$0	2013	2014	2017
SJ07-3023			Tier I	Regional Roads	Manteca	Airport Way	Widen from 4 to 6 lanes	SR-120 - Lathrop Road (Manteca)	$18,189,000	$18,189,000	$0		2010	2013
SJ07-3024			Tier I	Regional Roads	Manteca	Lathrop Road	Widen from 2 to 4 lanes	From East of UPRR to SR-99	$10,390,000	$10,390,000	$0		2029	2030
SJ07-3025			Tier I	Regional Roads	Manteca	Louise Avenue	Improve roadway	From Main Street to SR-99	$1,516,000	$1,516,000	$0		2029	2030
SJ07-3026			Tier I	Regional Roads	Manteca	Louise Avenue	Widen 2 to 4 lanes	Manteca SPRR to SR-99	$840,000	$840,000	$0		2009	2011
SJ07-3027			Tier I	Regional Roads	Manteca	Louise Avenue	Widen 2 to 4 lanes	East of UPRR to Manteca SPRR	$2,400,000	$2,400,000	$0		2008	2009
SJ07-3028			Tier I	Regional Roads	Manteca	South Union Road	Widen from 2 to 4 lanes with a continuous left turn lane. Curb, gutter and sidewalk will also be constructed.	Project will connect South Union Rd where it is currently 4 lanes. SR120 off ramps to Wawona Street.	$1,031,000	$1,031,000	$0			2008
SJ07-3029			Tier I	Regional Roads	Manteca	Union Road	Widen from 4 to 6 lanes	From SR-120 to Woodward Road 0.45 miles.	$1,828,000	$1,828,000	$0			2008
SJ07-3030			Tier I	Regional Roads	Manteca	Woodward Avenue	Widen from 2 to 4 lanes	McKinley to Manteca Road. 3 miles.	$16,284,000	$16,284,000	$0			2009
SJ07-3031			Tier I	Regional Roads	Mountain House	Mountain House Parkway	Widen from 2 to 8 lanes	I-205 to Grant Line Road 1.15 miles.	$7,388,000	$7,388,000	$0		2021	2025
SJ07-3032			Tier I	Regional Roads	Port of Stockton	Daggett Road	Four-lane access road with an at-grade crossing	SR-4 to bridge across Burns Cut-off that connects Rough and Ready Island to mainland. At grade crossing over Burlington Santa Fe mainline	$4,600,000	$4,600,000	$0		2007	2007
SJ07-3033	212-0000-0229		Tier I	Regional Roads	Port of Stockton	Daggett Road HR 3-223 #2821	2 to 4 lanes, Improve SR-4/Daggett Road intersection	SR-4/Daggett Road intersection to Burns Cutoff Bridge	$11,880,000	$11,880,000	$0	2007	2008	2009
SJ07-3034	212-0000-0281		Tier I	Regional Roads-Bridge	Port of Stockton	Rough and Ready Island Bridge (Navy Dr Bridge)	Replacement of existing bridge (2 to 4 lanes) at Navy Drive to provide secondary access point	Bridge at Navy Drive	$15,606,000	$15,606,000	$0		2007	2011
SJ07-3035	112-0000-0162	3K47	Tier I	Regional Roads	Ripon	Main and Stockton St	Rehabilitate roadways and widen Stockton Street from 2 to 4 lanes between Second Street and Doak Boulevard	On Main Street from Acacia to Jack Tone Road and on Stockton Street from Main to Doak Blvd	$7,294,000	$7,294,000	$0	2007		2009
SJ07-3036			Tier I	Regional Roads	Ripon	River Road Plus Extension	Widen from 2 to 6 lanes	N Ripon Road to Austin interchange. Includes extension of Olive Road south to SJC line.	$37,892,000	$37,892,000	$0		2025	2030
SJ07-3037			Tier I	Regional Roads	Ripon	South Frontage Extension to Austin Road	Extension of South Frontage Road	From Jack Tone Road to Austin Road	$1,529,000	$1,529,000	$0		2018	2020
SJ07-3038			Tier I	Regional Roads	Ripon	South Frontage Road & Wilma Over Crossing	Construct a new South Frontage Road and modify Wilma Over Crossing	Existing Wilma Over Crossing from Stockton Ave to Jack Tone Rd	$2,750,000	$2,750,000	$0		2007	2008

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2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	RTP Category	Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Open to Traffic
SJ07-3039			Tier I	Regional Roads	Ripon	Stanislaus River Crossing	Construction of a new bridge across the Stanislaus River parallel to SR-99 in Ripon	Parallel to SR-99 at the Stanislaus River	$11,066,000	$11,066,000	$0		2027	2030
SJ07-3040			Tier I	Regional Roads	San Joaquin County	Airport Way	Widen from 4 to 6 lanes	French Camp Road to City Limit	$2,645,000	$2,645,000	$0	2020	2019	2022
SJ07-3041	212-0000-0318	K641	Tier I	Regional Roads-Bridge	San Joaquin County	Airport Way Bridge #29C-187	Seismic retrofit	Near SJC line at San Joaquin River	$3,230,000	$3,230,000	$0	2007	2007	2008
SJ07-3042	212-0000-0319	K642	Tier I	Regional Roads-Rehab	San Joaquin County	Alpine Avenue	Rehabilitate roadway and surrounding streets	Kirk Avenue to Ryde Avenue	$500,000	$500,000	$0	2010		2011
SJ07-3043	212-0000-0321	K644	Tier I	Regional Roads-Rehab	San Joaquin County	Beyer Lane	Rehabilitate roadway and surrounding streets	Between SR28 and SR88	$370,000	$370,000	$0	2007		2009
SJ07-3044			Tier I	Regional Roads	San Joaquin County	Bryon Road and Grant Line Road Intersection Signalization Project	Costs associated with the installation of traffic signal with a preempt device to coordinate traffic flow with the railroad crossing	Bryon Road and Grant Line Road (east)	$1,857,000	$1,857,000	$0	2011	2011	2011
SJ07-3045	112-0000-0143	3K60	Tier I	Regional Roads-Rehab	San Joaquin County	Carpenter Road	Rehabilitate roadway and surrounding streets	South of Stockton on Carpenter Rd from South 99 Frontage Rd to east end and nearby streets	$323,000	$323,000	$0	2007		2009
SJ07-3046	212-0000-0322	K645	Tier I	Regional Roads-Rehab	San Joaquin County	Cherokee Rd	Rehabilitate roadway and surrounding streets	Sanguinetti Lane to Newtown Road	$460,000	$460,000	$0	2009		2011
SJ07-3047	112-0000-0144	3K61	Tier I	Regional Roads-Rehab	San Joaquin County	Cherryland Ave, Rt 88-Leonardini	Rehabilitate roadway and surrounding streets	East of Stockton from SR 88 to Leonardini Rd and nearby streets	$353,000	$353,000	$0	2007		2009
SJ07-3048	112-0000-0149	3K66	Tier I	Regional Roads-Rehab	San Joaquin County	Duncan Road	Rehabilitate roadway and surrounding streets	East of Stockton from Copperopolis Rd to SR 26 and nearby streets	$737,000	$737,000	$0	2007		2009
SJ07-3049	212-0000-0323	K646	Tier I	Regional Roads-Bridge	San Joaquin County	El Rancho Rd Bridge #29C-311	Bridge replacement	Near Tracy at Tom Paine Street	$1,927,000	$1,927,000	$0	2008	2007	2009
SJ07-3050			Tier I	Regional Roads	San Joaquin County	Eleventh Street	Improve roadway and intersections	Between Tracy City Limits Drive and I-5 including installation of traffic signal and/or roundabout improvements at intersections, center median, and an eastbound auxiliary lane at selected areas of Eleventh Street corridor	$20,455,000	$20,455,000	$0	2025	2023	2025
SJ07-3051	212-0000-0324	K647	Tier I	Regional Roads-Rehab	San Joaquin County	Escalon-Bellota Road	Rehabilitate roadway and surrounding streets	Near Stanislaus County border between SR4 and Copperopolis Rd	$726,000	$726,000	$0	2007		2008
SJ07-3052			Tier I	Regional Roads	San Joaquin County	Grant Line Road and Seventh Street (El Rancho Road) Traffic Signal/Pedestrian Crossing	Costs associated with the installation of a traffic signal and construction of sidewalk and bike route on Seventh Street/El Rancho Road and portion on Grant Line Road	Intersection of Grant Line Road and Seventh Street/El Rancho Road	$652,000	$652,000	$0	2011	2011	2011
SJ07-3053			Tier I	Regional Roads	San Joaquin County	Howard Road and Tracy Boulevard Intersection Improvements	Cost associated with improvements of the intersection including installation of a traffic signal, construction of left and right hand turn lanes, construction of shoulders	Howard Road and Tracy Boulevard intersection	$580,000	$580,000	$0	2011	2011	2011
SJ07-3054	212-0000-0325	K648	Tier I	Regional Roads-Rehab	San Joaquin County	Jack Tone Rd	Rehabilitate roadway and surrounding streets	French Camp Rd to Wildwood Road	$650,000	$650,000	$0	2007		2008
SJ07-3055			Tier I	Regional Roads	San Joaquin County	Jack Tone Road	Upgrade existing 2 lane highway to a 4 lane roadway facility with 8' paved shoulders, including the replacement of 5 bridges and widen one overpass bridge over the BNSF RR and acquire associated R/W.	Between Ripon City limits and Mariposa Road	$71,085,000	$71,085,000	$0	2020	2020	2022
SJ07-3056	212-0000-0326	K649	Tier I	Regional Roads-Rehab	San Joaquin County	Liberty Rd	Rehabilitate roadway and surrounding streets	Dry Creek Rd to Mackville Rd	$650,000	$650,000	$0	2009		2010
SJ07-3057			Tier I	Regional Roads	San Joaquin County	Linne Road Shoulders and Traffic Signal	Costs associated with the installation of a traffic signal at Linne Road and Chrisman Road, and paved shoulders on Linne Road	paved shoulders on Linne Road (MacArthur Road to Chrisman Road)	$9,293,000	$9,293,000	$0	2020	2020	2022
SJ07-3058			Tier I	Regional Roads	San Joaquin County	Lower Sacramento Road (Phase II) Segment 3A	Widen to include center left turn lane, installing curb, gutter and sidewalk	The City of Lodi Limits to WID Canal	$3,140,000	$3,140,000	$0	2007 (PE)		2008
SJ07-3059			Tier I	Regional Roads	San Joaquin County	Lower Sacramento Road, Segments 2B & 2C	Widen from 2 to 4 lanes; installing concrete median barrier, and installing shoulder wide to accommodate bicyclists	Pixley Slough Bridge to Harney Curve	$19,103,000	$19,103,000	$0	2007 (PE)		2010
SJ07-3060	212-0000-0327	K650	Tier I	Regional Roads-Rehab	San Joaquin County	Mackville Rd	Rehabilitate roadway and surrounding streets	SR-12/88 to Jahant Road	$306,000	$306,000	$0	2007		2008
SJ07-3061	212-0000-0328	K651	Tier I	Regional Roads-Bridge	San Joaquin County	McBride Rd Bridge #29C-331	Bridge replacement	SSJID Canal	$1,632,000	$1,632,000	$0	2008	2007	2009
SJ07-3062	112-0000-0142	3K59	Tier I	Regional Roads	San Joaquin County	McHenry Avenue Improvements & Bridge Replacement	Widening McHenry Avenue to install a two-way left turn lane and replacing two bridge structures	Stanislaus River Bridge to Jones Avenue	$29,446,000	$29,446,000	$0	2010	2010	2012
SJ07-3063			Tier I	Regional Roads	San Joaquin County	Pershing Avenue	Operational Improvements	Meadow Avenue to Thorton Road	$3,800,000	$3,800,000	$0	2008		2010
SJ07-3064	212-0000-0329	K652	Tier I	Regional Roads-Rehab	San Joaquin County	Schulte Road	Rehabilitate roadway and surrounding streets	Hansen Rd to Lammers Rd	$600,000	$600,000	$0	2007		2008
SJ07-3065	212-0000-0330	K653	Tier I	Regional Roads-Bridge	San Joaquin County	Tully Rd Bridge #29C-270	Bridge replacement	Near Lodi at Bear Creek	$2,415,000	$2,415,000	$0	2008	2008	2009
SJ07-3066			Tier I	Regional Roads	San Joaquin County	Turner Road	Widen road from 22' to 32'. Install left turn lanes and traffic signals	From I-5 to Lodi City limits	$22,770,000	$22,770,000	$0	2020	2020	2022
SJ07-3067	212-0000-0331	K654	Tier I	Regional Roads-Bridge	San Joaquin County	Wilson Way Bridge #29C-048	Rehabilitate bridge	At Stockton Canal Near Stockton	$4,310,000	$4,310,000	$0	2007	done	2008

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SJ07-3068	212-0000-0320	K643	Tier I	Regional Roads-Bridge	San Joaquin County	Woodward Island Bridge	Replace existing ferry system with a new bridge	Jones Tract to Woodward Island	$6,934,000	$6,934,000	$0	2010	2009	2012
SJ07-3069	212-0000-0333	K657	Tier I	Regional Roads-Beautification	San Joaquin County-Stockton Metropolitian Airport	Airport Way	Bicycle and pedestrian multi-use trail and landscaping.	Arch Road to CE Dixon Street	$250,000	$250,000	$0	2007	2007	2010
SJ07-3070	112-0000-0026		Tier I	Regional Roads-SJCOG	SJCOG	Plan Program Monitor	Plan Program Monitor	San Joaquin County	$15,000,000	$15,000,000	$0	various		2030
SJ07-3071	212-0000-0001		Tier I	Regional Roads-Rehab	SJCOG	Regional Surface Transportation Program (STP) Lump Sum Projects	Rehabilitation of various streets and roads	San Joaquin County	$172,589,000	$172,589,000	$0	various		2030
SJ07-3072	212-0000-0232		Tier I	Regional Roads-Study	SJCOG	SR-130 Realignment Study	SAFETEA-LU HPP Study	San Joaquin County	$8,777,000	$8,777,000		2007		
SJ07-3073	112-0000-0025		Tier I	Regional Roads-SJCOG	SJCOG	Transportation Demand Mangement	Commute Connection- Rideshare Program	San Joaquin County	$25,000,000	$25,000,000	$0	various		2030
SJ07-3074			Tier I	Regional Roads	Stockton	Airport Way	Widen from 4 to 6 lanes	From Arch Road to French Camp Road	$29,633,000	$29,633,000	$0		2013	2015
SJ07-3075	212-0000-0335	K659	Tier I	Regional Roads	Stockton	Airport Way	Streetscape beautification including medians, frontages and landscaping, bike lanes, crosswalks	Charter Way to Carpenter Rd	$17,430,000	$17,430,000	$0	2007	2006	2011
SJ07-3076			Tier I	Regional Roads	Stockton	Airport Way	Reconstruct intersections, add turn lanes, and install traffic signal improvements	Between Harding Way and Industrial Drive	$7,346,000	$7,346,000	$0		2013	2015
SJ07-3077			Tier I	Regional Roads	Stockton	Alpine Avenue	Widen from 2 to 4 lanes with a middle turn lane. Construct curb, gutter, sidewalks and driveways.	UPRR (SPRR) to Wilson Way	$9,026,000	$9,026,000	$0	2005	2009	2011
SJ07-3078			Tier I	Regional Roads	Stockton	Arch-Sperry Road Extension	Complete the engineering design and acquire the right of way. Relocated a segment of Sperry Road and extend Sperry Road from Performance Drive to French Camp Road. 4 lane extension on an 8 lane roadway project.	Extend Sperry Road approximately one mile from Performance Drive to French Camp Road	$64,937,000	$64,937,000	$0	2007	2007	2011
SJ07-3079			Tier I	Regional Roads-Beautification	Stockton	California Street	Reconstruct Frontages on California Street	Alpine Street to Miner Avenue	$10,713,000	$10,713,000	$0		2011	2015
SJ07-3080			Tier I	Regional Roads-Rehab	Stockton	California Street Rehabilitation	Rehabilitation to include: driveways, wheelchair ramps, median islands, pedestrian improvements, and class II bicycle lanes.	California Street, various Locations	$3,641,000	$3,641,000	$0			2011
SJ07-3081			Tier I	Regional Roads-Beautification	Stockton	Charter Way Beautification Phase III	Beautification improvements	Stanislaus Street to Wilson Way	$1,531,000	$1,531,000	$0		2012	2015
SJ07-3082	212-0000-0260		Tier I	Regional Roads-Bridge	Stockton	Davis Rd over Pixley Creek Bridge	Replace 2 lane bridge with 4 lane bridge	Davis Road Bridge over Pixley Slough between Eight Mile Road and Waterburry Drive. 0.1 miles South of Eight Mile Road	$3,961,000	$3,961,000	$0	2011	2007	2013
SJ07-3083			Tier I	Regional Roads	Stockton	Davis Road	Widen from 2 to 4 lanes	Bear Creek to Eight Mile Road	$11,262,000	$11,262,000	$0			2015
SJ07-3084			Tier I	Regional Roads	Stockton	Eight Mile Road Expressway	Widen to 8 through lanes	Between I-5 and Route 99 including reconstruction of intersections, addition of turn and acceleration/deceleration lanes, and construction of a raised median.	$145,121,000	$145,121,000	$0			2015
SJ07-3085			Tier I	Regional Roads	Stockton	El Dorado Street (Phase 2)	Widen roadway from 2 lanes each direction to 2 lanes SB, 3 lanes NB, and a center dual turn lane	Mariposa Avenue to Bianchi Road	$9,285,000	$9,285,000	$0			2010
SJ07-3086			Tier I	Regional Roads-Bridge	Stockton	Feather River Dr. Extension	Construct 2 lane bridge to cross Calaveras River linking Ryde Avenue with Feather River Drive	Feather River Drive to Ryde Avenue	$3,256,000	$3,256,000	$0			2009
SJ07-3087			Tier I	Regional Roads	Stockton	Hammer Lane (Phase III)	Widen from 4 to 6 lanes	Kelley Drive to Thorton Road, excluding the Pershing Avenue intersection	$14,038,000	$14,038,000	$0			2009
SJ07-3088			Tier I	Regional Roads	Stockton	Hammer Lane west of I-5	Widen from 6 to 8 lanes from I-5 to Mariners Drive and Construct 8 lanes from Mariners Drive to Trinity Parkway	Widen from I-5 to Mariners Drive and Construct 8 lanes from Mariners Drive to Trinity Parkway	$20,162,000	$20,162,000	$0			2015
SJ07-3089			Tier I	Regional Roads	Stockton	Holman Road	Widen from 4 to 6 lanes	Villa Antinori Eight Mile. 1.05 miles.	$5,534,000	$5,534,000	$0			2015
SJ07-3090			Tier I	Regional Roads	Stockton	I-5/Eight Mile Road	New undercrossing (P.M. 35.7/35.8)	I-5 at Eight Mile Road	$9,000,000	$9,000,000	$0		2009	2011
SJ07-3091			Tier I	Regional Roads	Stockton	Lower Sacramento Road	Widen from 4 to 6 lanes	Hammer Lane to Bear Creek	$9,223,000	$9,223,000	$0			2010
SJ07-3092			Tier I	Regional Roads	Stockton	Lower Sacramento Road	Widen Lower Sacramento Road from 2 to 6 lanes including the replacement of Pixley Slough Bridge and Bear Creek Bridge. Reconstruct Eight Mile Road intersection.	Lower Sacramento Road between Bear Creek to Pixley Slough Bridge including the replacement of Pixley Slough Bridge and Bear Creek Bridge	$37,438,000	$37,438,000	$0		2007	2011
SJ07-3093			Tier I	Regional Roads	Stockton	March Lane	Extend an 8 lane March Lane east to the future Rt 99/Wilson Way IC. A 4-lane extension of Marantha Drive will also be built.	March Lane extends from Holman Road to Rt 99/Wilson Way IC; and Marantha Drive extends from Wilson Way to 700 feet north of March Lane	$93,408,000	$93,408,000	$0		done	2011
SJ07-3094			Tier I	Regional Roads	Stockton	March Lane	Widen from 6 to 8 lanes	El Dorado Street to West Lane	$1,416,000	$1,416,000	$0			2009
SJ07-3095			Tier I	Regional Roads	Stockton	Morada Lane	Extension of Morada Lane (4 lane facility) West Lane to Lower Sacramento Road	Between West Lane to Lower Sacramento Road	$69,896,000	$69,896,000	$0			2015

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SJ07-3096			Tier I	Regional Roads	Stockton	Pacific Avenue	Widen from 6 to 8 lanes including reconstruction of intersections, addition of turn and acceleration lanes and construction/extension of a raised landscaped median	Hammer Lane to March Lane-Between the Calaveras River and Hammer Lane	$51,070,000	$51,070,000	$0			2012
SJ07-3097			Tier I	Regional Roads-Bridge	Stockton	Pacific Avenue/ Calaveras Bridge Replacement	Replace dual 2 lane bridges with 6 lane bridge	Pacific Avenue/Calaveras Bridge	$8,160,000	$8,160,000	$0			2010
SJ07-3098			Tier I	Regional Roads	Stockton	Stanislaus Street	Widen from 2 to 4 lanes	Crosstown Freeway to Park Street	$3,548,000	$3,548,000	$0			2011
SJ07-3099			Tier I	Regional Roads	Stockton	Tam O'Shanter Drive and Hammertown Drive Traffic Signal	Costs associated with installation of a traffic signal and Class II bike lane on Tam O' Shanter Drive	Tam O'Shanter and Hammertown Drive intersection	$560,000	$560,000	$0			2012
SJ07-3100			Tier I	Regional Roads	Stockton	Thornton Road	Widen 1.5 mile section of roadway from 2 lanes both directions to 6 lanes with a center dual turn lane	From Pershing Avenue to Bear Creek Bridge	$12,506,000	$12,506,000	$0			2010
SJ07-3101			Tier I	Regional Roads	Stockton	Traffic Signal Controller Upgrades/Retiming	Upgrade traffic signal controllers and modify signal timing along three corridors	March Lane between I-5 and Pacific Avenue, Harding Way between Lincoln Street and California Street and Wilson Way between Bradford Street and Market Street	$635,000	$635,000	$0			2012
SJ07-3102			Tier I	Regional Roads	Stockton	Trinity Parkway Extension	Construct 4 lane extension	From Bear Creek Bridge to Hammer Lane	$43,714,000	$43,714,000	$0			2012
SJ07-3103	212-0000-0229		Tier I	Regional Roads	Stockton & Port of Stockton	Daggett Road	Reconstruct Daggett Road (Rough & Ready Island)	Burns Cutoff Bridge to SR-4	$5,894,000	$5,894,000	$0	2011	2011	2012
SJ07-3104			Tier I	Regional Roads	Stockton & Port of Stockton	Navy Drive	Widen from 2 to 4 lanes, includes bridge improvements on McCloy, widening and intersection	Navy Drive (including bridge on McCloy) McCloy to SR 4	$69,401,000	$69,401,000	$0		2007	2012
SJ07-3105	212-0000-0334	K658	Tier I	Regional Roads-Beautification	Tracy	10th Street	Widen sidewalks and construct bicycle facilities	Central Street to East street	$1,310,000	$1,310,000	$0	2009	2009	2009
SJ07-3106			Tier I	Regional Roads	Tracy	Corral Hollow Road	Widen from 2 to 4 lanes	Parkside Drive to Linne Road	$20,343,000	$20,343,000	$0		2013	2016
SJ07-3107			Tier I	Regional Roads	Tracy	Eleventh Street Improvements and MacArthur Dr. Intersection	Installation of traffic signal and/or roundabout improvements at intersections, center median, and an eastbound auxiliary lane at selected areas of Eleventh Street corridor	11th Street at MacArthur Drive	$9,027,000	$9,027,000	$0		2015	2018
SJ07-3108			Tier I	Regional Roads	Tracy	Grant Line Road	Widen from 2 to 4 lanes	Between Parker Avenue and MacArthur Drive including construction of median and sidewalk	$5,605,000	$5,605,000	$0			2009
SJ07-3109			Tier I	Regional Roads	Tracy	Grant Line Road	Widen from 5 to 6 lanes	From Naglee Road to Lammers Road	$5,583,000	$5,583,000	$0			2012
SJ07-3110			Tier I	Regional Roads	Tracy	Lammers Road	Widen from 2 to 4 lanes	I-205 to I-580	$70,271,000	$70,271,000	$0		2013	2017
SJ07-3111			Tier I	Regional Roads	Tracy	Linne Road	Widen from 2 to 4 lanes	Corral Hollow Road to Chrisman Road	$62,824,000	$62,824,000	$0		2013	2017
SJ07-3112			Tier I	Regional Roads	Tracy	MacArthur Drive	Widen 2 to 4 lanes (Valpico Road to Schulte Road) and extend 4 lane roadway (Mt. Diablo Road to Eleventh Street)	MacArthur Drive from Valpico Road to Schulte Road; MacArthur Drive from Mt. Diablo Road to Eleventh Street	$21,892,000	$21,892,000	$0		2009	2012
SJ07-3113			Tier I	Regional Roads	Tracy	Schulte Road	Extend 4 lane roadway	From back of Faith Lane (San Marco Subdivision limits) to Lammers Road (approx 1.0 mile extension)	$18,682,000	$18,682,000	$0		2010	2012
SJ07-3114			Tier I	Regional Roads	Tracy	Traffic Signal -Byron Road and Lammers Road	Costs associated with installation of a traffic signal	Lammers Road and Byron Road intersection	$1,857,000	$1,857,000	$0		2010	2012
SJ07-3115			Tier I	Regional Roads	Tracy	Traffic Signal-Grant Line Road Coordination	Costs associated with connecting thirteen traffic signals along Grant Line Road	Between West City Limits and MacArthur Drive	$150,000	$150,000	$0		2009	2011
SJ07-3116			Tier I	Regional Roads-Rehab	Various	Misc. Streets and Rds.	Operations and Maintence	Various	$505,350,000	$505,350,000	$0	various		2030
SJ07-3117			Tier II	Regional Roads	Escalon	California Street/McHenry Avenue Intersection	Relocate/reconstruct intersection to include realignment of California Street to a new 4-way intersection of California Street, Weiss Way and McHenry Avenue	Intersection of California Street and McHenry Avenue including intersection of California Street, Weiss Way and McHenry Avenue.	$4,223,000	$0	$4,223,000	2008	2009	2010
SJ07-3118			Tier II	Regional Roads	Escalon	Brennan Road	Widen from 2 to 4 lanes	SR 120 south to Jones Avenue	$7,840,000	$0	$7,840,000			
SJ07-3119			Tier II	Regional Roads	Escalon	Campbell Road	Widen from 2 to 4 lanes	Construct 2 lane extension of Campbell Road between Santa Fe Avenue and Rt 120	$2,500,000	$0	$2,500,000			
SJ07-3120			Tier II	Regional Roads	Escalon	Escalon Truck Route/Campbell Road	Widen from 2 to 4 lanes	Construct 2 lane extension of Campbell Road between Santa Fe Avenue and Rt 120	$5,341,000	$0	$5,341,000			
SJ07-3121			Tier II	Regional Roads	Escalon	Jones Road	Widen from 2 to 4 lanes	Brennan Road to Harrold Avenue	$2,000,000	$0	$2,000,000			
SJ07-3122			Tier II	Regional Roads	Escalon	Miller Road	Widen from 2 to 4 lanes	Escalon-Bellota Avenue to Campbell Avenue	$1,123,000	$0	$1,123,000			
SJ07-3123			Tier II	Regional Roads	Escalon	Miller Road	Widen from 2 to 4 lanes	Escalon-Bellota Avenue to Campbell Avenue	$1,123,000	$0	$1,123,000			
SJ07-3124			Tier II	Regional Roads	Escalon	South Arterial #1	Widen from 2 to 4 lanes	Brennan Avenue to Harrold Avenue	$5,055,000	$0	$5,055,000			
SJ07-3125			Tier II	Regional Roads	Lathrop	Roth Road	Widen to 4 lanes	Airport Way to I-5	$0	$0	$0			
SJ07-3126			Tier II	Regional Roads	Lathrop	Yosemite Avenue	Widen to 6 lanes	McKinley to UPRR	$0	$0	$0			
SJ07-3127			Tier II	Regional Roads	Lathrop	Yosemite Avenue	Widen to 6 lanes	SR 120 to McKinley	$0	$0	$0			
SJ07-3128			Tier II	Regional Roads	Lathrop & Manteca	Lathrop Road	Widen to 4 lanes	I-5 to SR-99	$0	$0	$0			
SJ07-3129			Tier II	Regional Roads	Lodi	Central Avenue	Widen 2 to 3 lanes	From Kettleman Lane to Lodi Avenue	$5,019,000	$0	$5,019,000	2011	2012	2016
SJ07-3130			Tier II	Regional Roads	Lodi	Hutchins Street	Widen 3 to 4 lanes	From Kettleman Lane to Lodi Avenue	$4,001,000	$0	$4,001,000	2015	2016	2020

Table 6-3: 2007 Regional Transportation Plan Project List - Regional Roadway Improvements Category

Identifiers					Project Information				Cost to Deliver			Milestone Years		
2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	RTP Category	Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Open to Traffic
SJ07-3131			Tier II	Regional Roads	Lodi	Tokay Street	Reconstruct and widen Tokay Street (widen the existing 37-43 foot section to 50 feet within the existing right of way)	Church Street to Cherokee Lane	$6,247,000	$0	$6,247,000	2011	2012	2016
SJ07-3132			Tier II	Regional Roads	Lodi	Harney Lane	Widen from 2 to 4 lanes	Lower Sacramento Road to Davis. 1.5 Miles	$858,000	$0	$858,000	2011		
SJ07-3133			Tier II	Regional Roads	Lodi	Lockeford Street	Widen from 2 to 4 lanes with center dual left turn lane and turn pockets at intersections	From Stockton Street easterly to Cherokee Lane	$1,000,000	$0	$1,000,000			
SJ07-3134			Tier II	Regional Roads	Lodi	Tokay Street	Widen Tokay Street by 10 feet for four blocks. Reconstruct roadway. Replace as required curb, gutter, sidewalk and parkways to current standards.	From Church Street to Cherokee Lane	$3,000,000	$0	$3,000,000			
SJ07-3135			Tier II	Regional Roads	Manteca	Airport Way	Widen from 4 to 6 lanes	SR-120 - Lathrop Road (Manteca)	$4,900,000	$0	$4,900,000			
SJ07-3136			Tier II	Regional Roads	Ripon	Doak Boulevard	Construct roundabouts at six major intersections	Stockton Avenue to Mohler Road	$2,200,000	$0	$2,200,000	2010		
SJ07-3137			Tier II	Regional Roads	Ripon	West Ripon Road	Widen existing road from 2 to 4 lanes and extend Ripon Road West to Eleventh Street in Tracy	Ripon Road West to Eleventh Street in Tracy	$50,000,000	$0	$50,000,000			
SJ07-3138			Tier II	Regional Roads	San Joaquin County	Airport Way	Widen from 2 to 4 lanes	Between (Manteca City Limits) Lathrop Road to French Camp Road	$21,948,000	$0	$21,948,000	2020	2019	2022
SJ07-3139			Tier II	Regional Roads	San Joaquin County	Escalon Bellota Road	Widen 2 to 4 lanes with shoulders	Escalon City limits to Mariposa Road	$10,128,000	$0	$10,128,000		2020	2022
SJ07-3140			Tier II	Regional Roads	San Joaquin County	Elliott Road	Widen from 2 to 4 lanes	SR-88 to Peltier Road	$12,900,000	$0	$12,900,000			
SJ07-3141			Tier II	Regional Roads	San Joaquin County	French Camp Road	Widen from 2 to 4 lanes	SR-99 to SR-120	$26,084,000	$0	$26,084,000			
SJ07-3142			Tier II	Regional Roads	San Joaquin County	Howard Road	Passing lanes and channelization	Howard Road	$23,935,000	$0	$23,935,000			
SJ07-3143			Tier II	Regional Roads	San Joaquin County	Jack Tone Road	Widen from 2 to 4 lanes	Entire length (SR-99 to SR88)	$27,000,000	$0	$27,000,000			
SJ07-3144			Tier II	Regional Roads	San Joaquin County	Lathrop Road	Widen from 4 to 6 lanes	SR-99 to Austin Road 2 miles.	$6,240,000	$0	$6,240,000	2011		
SJ07-3145			Tier II	Regional Roads	San Joaquin County	Liberty Road	Widen from 2 to 4 lanes	SR-99 to SR-88	$24,974,000	$0	$24,974,000			
SJ07-3146			Tier II	Regional Roads	San Joaquin County	Louise Avenue	Widen from 2 to 4 lanes	City limit to Austin. 0.4 miles.	$702,000	$0	$702,000	2011		
SJ07-3147			Tier II	Regional Roads	San Joaquin County	Lower Sacramento Road	Widen from 2 to 4 lanes	Peltier to Sacto County line. 3.7 miles.	$5,772,000	$0	$5,772,000	2020		
SJ07-3148			Tier II	Regional Roads	San Joaquin County	Mariposa Road	Widen from 2 to 4 lanes	Austin Road to Jack Tone Road	$32,531,000	$0	$32,531,000	2015		
SJ07-3149			Tier II	Regional Roads	San Joaquin County	Mariposa Road	Widen from 2 to 4 lanes	Jack Tone Road to Escalon-Belota Road	$20,063,000	$0	$20,063,000			
SJ07-3150			Tier II	Regional Roads	San Joaquin County	Peltier Road	Widen from 2 to 4 lanes	SR-99 to I-5	$15,500,000	$0	$15,500,000			
SJ07-3151			Tier II	Regional Roads	San Joaquin County	Peltier Road	Widen from 2 to 4 lanes	SR-99 to Elliot Road	$25,573,000	$0	$25,573,000			
SJ07-3152			Tier II	Regional Roads	San Joaquin County	River Road	Widen from 2 to 4 lanes	McHenry Avenue to N. Ripon Road. 7 miles	$10,921,000	$0	$10,921,000	2015		
SJ07-3153			Tier II	Regional Roads	San Joaquin County	River Road	Widen from 2 to 4 lanes	McHenry to Santa Fe. 2.5 miles.	$3,900,000	$0	$3,900,000	2011		
SJ07-3154			Tier II	Regional Roads	San Joaquin County	Roth Road	Upgrade existing 2 lane roadway to a 4 lane facility to a 64' pavement width (4 lane plus paved shoulders)	UPRR to Airport Way. 0.5 miles.	$4,386,000	$0	$4,386,000	2011		
SJ07-3155			Tier II	Regional Roads	San Joaquin County	Schulte Road	Widen from 2 to 4 lanes	Hanson to Lammers. 2 miles.	$3,120,000	$0	$3,120,000	2015		
SJ07-3156			Tier II	Regional Roads	San Joaquin County	Thornton Road	Widen from 2 to 4 lanes	Eight Mile to SR-12	$1,030,000	$0	$1,030,000	2015		
SJ07-3157			Tier II	Regional Roads	San Joaquin County	Tracy Boulevard	Passing lanes and channelization	Tracy Boulevard	$21,202,000	$0	$21,202,000			
SJ07-3158			Tier II	Regional Roads	Stockton	Airport Way	Widen from 4 to 6 lanes	French Camp Road to Roth Road	$15,000,000	$0	$15,000,000			
SJ07-3159			Tier II	Regional Roads	Stockton	Airport Way	Widen from 6 to 8 lanes	Arch/Sperry Road to French Camp Road	$20,000,000	$0	$20,000,000			
SJ07-3160			Tier II	Regional Roads	Stockton	Arch/Sperry Project	Widen from 2 to 6 lanes	Austin Road to Frontier Way	$0	$0	$0			
SJ07-3161			Tier II	Regional Roads	Stockton	Arch/Sperry Project	Widen from 2 to 6 lanes	Frontier Way to SR-99	$0	$0	$0			
SJ07-3162			Tier II	Regional Roads	Stockton	Arch-Sperry Road	Contruct 4 to 8 lanes	I-5 to Performance Drive	$65,000,000	$0	$65,000,000			
SJ07-3163			Tier II	Regional Roads	Stockton	Arch-Sperry Road	Construct 2 to 8 lanes	Performance Drive to SR-99	$35,000,000	$0	$35,000,000			
SJ07-3164			Tier II	Regional Roads	Stockton	Austin Road	Construct 6 lanes	SR-26 to Main Street	$10,000,000	$0	$10,000,000			
SJ07-3165			Tier II	Regional Roads	Stockton	Austin Road	Construct 8 Lanes	Main Street to Mariposa Road	$60,000,000	$0	$60,000,000			
SJ07-3166			Tier II	Regional Roads	Stockton	Austin Road	Construct 6 lanes	Mariposa Road to Arch Road	$5,000,000	$0	$5,000,000			
SJ07-3167			Tier II	Regional Roads	Stockton	Austin Road	Construct 4 lanes	Arch Road to French Camp Road	$20,000,000	$0	$20,000,000			
SJ07-3168			Tier II	Regional Roads	Stockton	Center/El Dorado	Widen to 4 lanes	Harding to Charter	$0	$0	$0			
SJ07-3169			Tier II	Regional Roads	Stockton	El Dorado Street	Widen to 6 lanes	Yokuts Avenue to Hammer Lane	$6,000,000	$0	$6,000,000	2008		
SJ07-3170			Tier II	Regional Roads	Stockton	Fremont Street	Widen to 4 lanes	Pershing Avenue to Center Street	$4,000,000	$0	$4,000,000	2010		
SJ07-3171			Tier II	Regional Roads	Stockton	French Camp Road	Widen from 2 to 6 lanes	SR-99 to Arch-Sperry Road	$40,000,000	$0	$40,000,000			
SJ07-3172			Tier II	Regional Roads	Stockton	Mariposa Road	Widen from 2 to 4 lanes	Between Route 99 and Austin Road	$89,955,000	$0	$89,955,000			
SJ07-3173			Tier II	Regional Roads	Stockton	New Road A-North Gateway	Construct 4 lanes. Project involves 2 railroad grade separation	I-5 to SR-99	$25,000,000	$0	$25,000,000			
SJ07-3174			Tier II	Regional Roads	Stockton	Pershing Avenue	Widen to 6 lanes	Alpine Avenue to Thornton Road	$13,000,000	$0	$13,000,000	2020		
SJ07-3175			Tier II	Regional Roads	Stockton	West Lane	Widen from 4 to 6 lanes	Armstrong Road to Eight Mile Road	$10,000,000	$0	$10,000,000			

Table 6-3: 2007 Regional Transportation Plan Project List - Regional Roadway Improvements Category

Identifiers					Project Information				Cost to Deliver			Milestone Years		
2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	RTP Category	Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Open to Traffic
SJ07-3176			Tier II	Regional Roads	Stockton	West Lane	Widen from 4 to 6 lanes	UPRR (SPRR) s/o Alpine-Calaveras River	$44,200,000	$0	$44,200,000			
SJ07-3177			Tier II	Regional Roads	Stockton	West Lane	Widen from 6 to 8 lanes	Eight Mile Road to Alpine Avenue	$35,000,000	$0	$35,000,000			
SJ07-3178			Tier II	Regional Roads	Stockton	West Lane	Widen to 8 lanes	Calaveras River to Eight Mile Road	$8,000,000	$0	$8,000,000	2010		
SJ07-3179			Tier II	Regional Roads	Stockton	West Lane/Airport Way	Widen from 4 to 6 lanes	Alpine Avenue to Arch-Sperry Road	$60,000,000	$0	$60,000,000			
SJ07-3180			Tier II	Regional Roads	Stockton	Trinity Parkway Extension	Construct 4 lane extension	Hammer Lane to March Lane	$0	$0	$0			
SJ07-3181			Tier II	Regional Roads	Tracy	Corral Hollow Road Widening	Widen 2 to 4 lanes including ROW and construction of two bridges	Linne Road to I-580	$51,785,000	$0	$51,785,000	2014	2017	2020
SJ07-3182			Tier II	Regional Roads	Tracy	Eleventh Street Bridge	Replacement of existing Tracy East Overhead Bridge		$15,000,000	$0	$15,000,000	2011	2014	2016
SJ07-3183			Tier II	Regional Roads	Tracy	Tracy Blvd.	Widen 2 to 4 lanes	I-205 to Eleventh Street	$15,000,000	$0	$15,000,000	2012	2015	2020
SJ07-3184			Tier II	Regional Roads-Rehab	Tracy	Tracy Blvd.	Reconstruct Tracy Blvd.	South of Linne to Tracy Municipal Airport entrance	$2,231,000	$0	$2,231,000			2017
SJ07-3185			Tier II	Regional Roads	Various	Deferred Maintenance on Bridges, state highways, local streets, and the cost of maintining reconstructed facilities	Undetermined	Undetermined	Undetermined	$0	Undetermined			
SJ07-3186			Tier II	Regional Roads	Various	General Backlog of Deferred Street Maintenance	Assuming the current backlog of $277 million (figure based on survey of local agencies) grows at a rate of 5% annually	Various	$895,000,000	$0	$895,000,000			
SJ07-3187			Tier II	Regional Roads-Bridge	Stockton	Pershing Ave/Calaveras River Bridge (#29CO243)	Replace existing 4 lane bridge with a new 6 lane bridge. New bridge will be an RC slab on RC piles.	Pershing Avenue/Calaveras River Bridge 0.02 miles north of Telegraph Avenue	$10,949,000	$0	$10,949,000	2011		2010
									$3,523,812,000	**$2,502,533,000**	**$1,959,459,000**			

Table 6-4: 2007 Regional Transportation Plan Project List - Railroad Crossing Safety Category

Identifiers: 2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	Project Information: Jurisdiction	Facility Name/Route	Project Description	Project Limits	Cost to Deliver: Total	TIER I	TIER II	Milestone Years: RTP/FTIP Programming	NEPA Approval	Open to Traffic
SJ07-4001			Tier I	Caltrans	Rt 12/UPRR Crossing	Construct new grade separation	Rt 12 at UPRR	See SJ07-1011	See SJ07-1011	$0			
SJ07-4002			Tier I	Caltrans	Section 130 Railroad Grade Crossing Hazard Elimination Projects	Eliminate hazards at railroad grade crossings	Various locations in San Joaquin County	$7,126,000	$7,126,000		various	various	2030
SJ07-4003			Tier I	Escalon	Escalon BNSF Crossing Improvement	Construct grade separation or at-grade improvements of BNSF railway crossings	At location in City of Esalcon to be determined through local arterial circulation analysis	$30,000,000	$30,000,000	$0		2027	2030
SJ07-4004	112-0000-0155	3K41	Tier I	Lathrop	Lathrop Road at UPRR (Westerly)	Preliminary engineering and Environmental Phase and Construction of a 4 lane overpass	Lathrop Road at UPRR	$15,000,000	$15,000,000	$0	2009	2010	2013
SJ07-4005	112-0000-0158	3K44	Tier I	Lathrop	Louise Avenue at UPRR	Construct at grade improvements	Louise Avenue at UPRR	$1,200,000	$1,200,000	$0	2008	2008	2010
SJ07-4006			Tier I	Lodi	Harney Lane at UPRR	Construct grade separation	Harney Lane at UPRR	$13,619,000	$13,619,000	$0	2009	2010	2013
SJ07-4007			Tier I	Lodi	Lodi Avenue/UPRR	Construct safety improvements of railway crossing	Lodi Avenue/UPRR	$14,549,000	$14,549,000	$0		2017	2020
SJ07-4008			Tier I	Manteca	Airport Way/UPRR	Construct five lane grade separation over the UPRR	Airport Way/UPRR between Louise Avenue and Lathrop Road	$20,751,000	$20,751,000	$0		2010	2013
SJ07-4009			Tier I	Manteca	Austin Road Grade Crossing	Construct new grade separation	Austin Road near SR 99	See SJ07-2013	See SJ07-2013	$0			
SJ07-4010			Tier I	Ripon	Main Street at UPRR	Reconstruct Main Street Over Crossing structure	Main Street at UPRR	$10,000,000	$10,000,000	$0		2011	2015
SJ07-4011			Tier I	Ripon	Wilma Avenue at UPRR	Reconstruct existing overcrossing structure	Wilma Avenue at UPRR	$10,000,000	$10,000,000	$0		2011	2015
SJ07-4012			Tier I	Stockton	Airport Way/BNSF	Construct at-grade improvements of railway crossing	Airport Way between Pilgrim Street and Sierra Nevada Street	$2,138,000	$2,138,000	$0			2011
SJ07-4013			Tier I	Stockton	Alpine Road/UPRR (Easterly)	Construct grade separation of roadway and railway	West Lane to Motego Avenue	$26,751,000	$26,751,000	$0			2011
SJ07-4014			Tier I	Stockton	Eight Mile/UPRR (Easterly) Former SPRR	Construct grade separation of roadway and railway	Eight Mile Road between Leach Road and Golf View Road	$50,117,000	$50,117,000	$0			2011
SJ07-4015			Tier I	Stockton	Eight Mile/UPRR (Westerly)	Construct grade separation of roadway and railway	Eight Mile/UPRR (Westerly) between Davis Road and Lower Sacramento Road	$53,552,000	$53,552,000	$0			2010
SJ07-4016			Tier I	Stockton	Eighth Street/UPRR	Construct grade separation of roadway and railway	Eighth Street between California Street and Airport Way	$45,674,000	$45,674,000	$0			2011
SJ07-4017			Tier I	Stockton	Lower Sacramento Road, at UPRR (Bear Creek in Stockton)	Construct a 6 lane divided overpass includes the LSR bridge over Bear Creek	Lower Sacramento Road, at UPRR between Bear Creek and Marlette Road	$59,361,000	$59,361,000	$0			2011
SJ07-4018			Tier I	Stockton	Morada /UPRR (SPRR) at Grade Crossing	Widen from 2 to 6 lanes, Improvements will include additional grade crossing protection	Morada/UPRR at-grade crossing	$2,375,000	$2,375,000	$0		2007	2011
SJ07-4019			Tier I	Stockton & San Joaquin County	West Lane at UPRR	Eliminate the existing at-grade crossing of the UPRR and the associated modal conflicts. To improve both through traffic capacity and vehicular safety. Construct a 6 lane overpass	On West Lane between Alpine Avenue & El Pinal Drive/Klinger Road	$56,030,000	$56,030,000	$0	2009	2010	2014
SJ07-4020			Tier II	Lathrop	Louise Avenue at SPRR	Construct a grade separation	Louise Avenue at SPRR	$4,500,000	$0	$4,500,000			
SJ07-4021			Tier II	Mountain House	Byron Road at Central Parkway	Construct overpass	Byron Road at Central Parkway	$6,540,000	$0	$6,540,000			
SJ07-4022			Tier II	Mountain House	Byron Road at Marina Boulevard	Construct overpass	Byron Road at Marina Boulevard	$3,000,000	$0	$3,000,000			
SJ07-4023			Tier II	Mountain House	Byron Road at Mountain House Parkway	Construct overpass	Byron Road at Mountain House Parkway	$3,000,000	$0	$3,000,000			
SJ07-4024			Tier II	Port of Stockton	Daggett Road at BNSF	Construct grade separation	Daggett Road at BNSF	$10,600,000	$0	$10,600,000			
SJ07-4025			Tier II	Ripon	Olive Road Overcrossing at UPRR/SR-99	Construct new full access Highway Overhead Interchange overcrossing at Olive Road/UPRR	Olive Road Interchange at SR-99	$10,000,000	$0	$10,000,000		2011	2015
SJ07-4026			Tier II	San Joaquin County	Davis Road at UPRR	Construct grade separation	Davis Road at UPRR	$10,000,000	$0	$10,000,000			
SJ07-4027			Tier II	San Joaquin County	French Camp at UPRR	Construct a 2 lane highway overpass	French Camp at UPRR	$2,340,000	$0	$2,340,000			
SJ07-4028			Tier I	San Joaquin County	Lower Sacramento Road/UPRR (near Woodson Road)	Replace grade separation of roadway and railway	Lower Sacramento Road/UPRR (near Woodson Road)	$10,000,000	$10,000,000	$0			
SJ07-4029			Tier II	San Joaquin County	Turner Road at UPRR	Construct grade separartion	Turner Road at UPRR	$10,000,000	$0	$10,000,000			
SJ07-4030			Tier II	Stockton	Airport Way at BNSF (UPRR)	Construct 4 lane grade separation	Airport Way at BNSF	$15,000,000	$0	$15,000,000			
SJ07-4031			Tier II	Stockton	Alpine Road/UPRR (Westerly)	Construct grade separation of roadway and railway	Alpine Road/UPRR (Westerly)	$30,034,000	$0	$30,034,000			
SJ07-4032			Tier II	Stockton	Morada Lane/UPRR (Westerly)	Construct grade separation of roadway and railway	Future Extension of Morado Lane between Lower Sacramento Road and West Lane	$40,382,000	$0	$40,382,000			
SJ07-4033			Tier II	Tracy	Chrisman Road at UPRR at Bates	Construct grade separation	Chrisman Road at UPRR	$40,014,000	$0	$40,014,000	2015	2018	2022
SJ07-4034			Tier II	Tracy	Eleventh Street at SPRR	Construct a 4 lane underpass	Eleventh Street at SPRR	$10,000,000	$0	$10,000,000	2015	2018	2024
SJ07-4035			Tier II	Tracy	Tracy Boulevard at SPRR	Construct a 4 lane underpass	Tracy Boulevard at SPRR	$10,000,000	$0	$10,000,000	2015	2018	2024
								$633,653,000	**$428,243,000**	**$205,410,000**			

Table 6-5: 2007 Regional Transportation Plan Project List - Bus Transit Category

Identifiers					Project Information				Cost to Deliver			Milestone Years		
2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier		Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Completion
SJ07-5001			Tier I		Lodi	Grapeline Capita	Purchase 10 vehicles, 5 are replacement and 5 are increase to flee	Grapeline Capita	$825,000	$825,000	$0	various		2030
SJ07-5002	212-0000-0155		Tier I		Lodi	Grapeline Capita	Costs associated with the installation of bus stop shelters including benches at various locations	Grapeline Capita	$520,000	$520,000	$0	various		2030
SJ07-5003			Tier I		Lodi	Grapeline Capita	Costs associated with expanding the square footage of shop work space to accommodate bus maintenance and repair activities	Grapeline Capita	$4,244,000	$4,244,000	$0			
SJ07-5004	212-0000-0299		Tier I		Lodi	Grapeline Capita	Costs to improve and maintain transportation service facilities at main transit statior	Grapeline Capita	$575,000	$575,000	$0			
SJ07-5005			Tier I		Lodi	Grapeline Operations	Lodi Grapeline transit service facilities, fueling stations, and maintenance shop upgrades/expansions	Lodi Grapeline Transit Service Facilities	$2,534,000	$2,534,000	$0			
SJ07-5006	212-0000-0154		Tier I		Lodi	Grapeline Operations	Costs associated with the delivery of the Grapeline fixed route and comparable Paratransit/General Public Dial-A-Ride services.	Grapeline Operations	$11,648,000	$11,648,000	$0	various		2030
SJ07-5007	212-0000-0292		Tier I		Lodi	Grapeline Operations	Purchase of six (6) Dial-A-Ride Vehicles	Grapeline Operations	$552,000	$552,000	$0			
SJ07-5008	212-0000-0292		Tier I		Lodi	Lodi DAR	Lodi DAR Capital	Purchase 12 buses in years 2001 to 2005, 19 in 2005 to 2010, 19 in 2015 to 2020 and 19 in 2020 to 2015	$6,160,000	$6,160,000	$0	various		2030
SJ07-5009			Tier I		Lodi	Lodi Grapeline (Fixed Route	Lodi Grapline Capita	Purchase 8 buses in years 2010 to 201	$2,760,000	$2,760,000	$0	various		2030
SJ07-5010	212-0000-0351	139	Tier I		Lodi	Municipal Service Center Transit Vehicle Maintenance Facility	Renovation and Expansior	Municipal Service Center (MSC) Fleet Service Shop.	$2,867,000	$2,867,000	$0			
SJ07-5011			Tier I		Lodi	Operations	Operations	Includes 2.5% increase in operations annually as a result of growtl	$25,618,000	$25,618,000	$0	various		2030
SJ07-5012	212-0000-0361		Tier I		Lodi Unified School District	School Bus Replacement Project	Costs associated with the purchase of replacement buses		$1,485,000	$1,485,000	$0	2009		
SJ07-5013	212-0000-0375		Tier I		Lodi Unified School District	Street Sweeper Replacement Project	Costs associated with the purchase of a CNG street sweeper		$160,000	$160,000	$0	2010		
SJ07-5014	212-0000-0234		Tier I		Manteca	City of Manteca Short Range Transit Analysis and Action Plar	Costs to update document and support transit planning efforts	City of Manteca	$60,000	$60,000	$0			
SJ07-5015	212-0000-0358		Tier I		Manteca	Manteca Passenger Amenities	Bus shelters/pedestrian facilities, bike facilities, lighting and multifunctional landscaped area.	Manteca Transit	$100,000	$100,000	$0			
SJ07-5016	212-0000-0300		Tier I		Manteca	Manteca Transit System	Costs associated with Safety/Security/ITS	Manteca Transit	$25,000	$25,000	$0			
SJ07-5017	212-0000-0235		Tier I		Manteca	Manteca Transit System Capita	Purchase of 8 vehicles over the next three years, 4 Vehicles the first year and 2 vehicles per year for two subsequent years	Manteca Transit Sytem Capita	$1,348,000	$1,348,000	$0			
SJ07-5018	212-0000-0282/ 212-0000-0213		Tier I		Manteca	Manteca Transit System Operations	Costs associated with the Operations and administration of DAR and fixed route	Manteca	$3,399,000	$3,399,000	$0	various		2030
SJ07-5019	212-0000-0359		Tier I		Ripon	City of Ripon Fixed Route Transit System Operations	Costs associated with the delivery of a fixed route transit system in the City of Ripon ($300,000 annually	City of Ripon	$7,200,000	$7,200,000	$0	2009		2030
SJ07-5020			Tier I		Ripon	City of Ripon Short Range Transit Plar	Cost associated with transit planning efforts		$50,000	$50,000	$0	2009		2010
SJ07-5021			Tier I		Ripon	Ripon Park N Ride Lot	Construction of a new park n ride lo	Park N Ride Lot at Jack Tone Road and SR-99	$450,000	$450,000	$0			2008
SJ07-5022	212-0000-0359		Tier I		Ripon	Ripon Transit Service Capital	Costs associated with the purchase of two fixed route buses		$600,000	$600,000	$0	2009		2010
SJ07-5023	212-0000-0374		Tier I		San Joaquin County	Replacement of Unleaded Fuel Vehicles (Fleet Services) with Hybrid Vehicles	Costs associated with the purchase of sixty hybrid (gas-electric) vehicle		$2,039,000	$2,039,000	$0	2011		
SJ07-5024	212-0000-0363		Tier I		SJRRC	SJRRC Purchase of Passenger Rail Cars	Cost associated with the purchase of six passenger rail cars		$16,500,000	$16,500,000	$0	2010		
SJ07-5025	212-0000-0362		Tier I		SJRTD	BRT Project Phase II Airport Way Corridor: Hybrid Diesel-Electric Bus Procurement	Costs associated with the purchase of hybrid diesel-electric buses		$5,500,000	$5,500,000	$0	2010		
SJ07-5026			Tier I		SJRTD	Bus Rapid Transit (BRT)	Regional/Inter-Regional BRT systen	Regional/Inter-Regional-Operations	$50,647,000	$50,647,000	$0	various		2030
SJ07-5027	212-0000-0279		Tier I		SJRTD	Bus Rapid Transit (BRT) Vehicles	Purchase of buses for service expansion (Intercity/Interregional	San Joaquin County-Capita	$10,000,000	$10,000,000	$0			
SJ07-5028	212-0000-0304		Tier I		SJRTD	Camera and Security Equipment	Purchase and installation of camera and security equipment for surveillance on buses and bus facilities	SJRTD Capital	$750,000	$750,000	$0			

Table 6-5: 2007 Regional Transportation Plan Project List - Bus Transit Category

Identifiers				Project Information					Cost to Deliver			Milestone Years		
2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Completion
SJ07-5029			Tier I	SJRTD	Coordinated Transportation Vehicles	Includes new replacement buses or vans	San Joaquin County-Capita	$5,200,000	$5,200,000	$0			
SJ07-5030	212-0000-0266		Tier I	SJRTD	County Operations	FTA Section 5311 funding for services to rural areas of San Joaquin County	San Joaquin County-Operations	$7,636,000	$7,636,000	$0			2030
SJ07-5031			Tier I	SJRTD	County Wide DAR	Expansion and replacement buses	San Joaquin County-Capita	$4,200,000	$4,200,000	$0			
SJ07-5032	212-0000-0161/ 212-0000-0246/ 212-0000-0159/ 212-0000-0245/ 212-0000-0167		Tier I	SJRTD	Countywide DAR	Countywide GPDAR	San Joaquin County-Operations	$214,630,000	$214,630,000	$0	various		2030
SJ07-5033	212-0000-360		Tier I	SJRTD	Deviated Fixed Route Service: Replacement and Expansion (Ultra Low Sulfur Diesel) Buses	Cost associated with the purchase of replacement and expansion buses		$2,100,000	$2,100,000	$0	2009		
SJ07-5034	212-0000-0236		Tier I	SJRTD	Downtown Transit Center	Construction, continuing development and improvements to the Downtown Transit Center	SJRTD Capital	$1,814,000	$1,814,000	$0			2030
SJ07-5035	212-0000-0164		Tier I	SJRTD	Intelligent Technologies	Intelligent Technologies	San Joaquin County-Capita	$2,000,000	$2,000,000	$0			
SJ07-5036	212-0000-0304		Tier I	SJRTD	Intercity/Interregiona	Expansion and replacement buses	San Joaquin County-Capita	$50,000,000	$50,000,000	$0			
SJ07-5037	212-0000-0161/ 212-0000-0246/ 212-0000-0159/ 212-0000-0245/ 212-0000-0167		Tier I	SJRTD	Intercity/Interregional/Hoppe	I/C I/R Operations	San Joaquin County-Operations	$441,541,000	$441,541,000	$0	various		2030
SJ07-5038	212-0000-0332		Tier I	SJRTD	Mall Transfer Facilities Projec	Bus shelters/pedestrian facilities, bike facilities, lighting and multifunctional landscaped area.	West Yokuts Avenue	$0					
SJ07-5039	212-0000-0367		Tier I	SJRTD	Non-Revenue Hybrid Replacement Vehicles	Costs associated with the purchase of ten hybrid electric replacement vehicles		$219,000	$219,000	$0	2010		
SJ07-5040	212-0000-0332/ 212-0000-0165		Tier I	SJRTD	Operational Facilities	Expansion/Modernization	San Joaquin County-Capita	$7,500,000	$7,500,000	$0			
SJ07-5041			Tier I	SJRTD	Passenger Amenities	Bus shelters/pedestrian facilities, bike facilities, lighting and multifunctional landscaped area.	Stockton Metropolitan Area-Capita	$900,000	$900,000	$0			
SJ07-5042	212-0000-0352	140	Tier I	SJRTD	Regional Operations Facility	Expansion/Modernization	San Joaquin County-Capita	$35,000,000	$35,000,000	$0			
SJ07-5043	212-0000-0244		Tier I	SJRTD	RTD Capital Improvement Projects	Capital improvements	San Joaquin County-Capita	$20,000,000	$20,000,000	$0			
SJ07-5044			Tier I	SJRTD	SMA	Expansion and replacement buses	Stockton Metropolitan Area-Capita	$50,000,000	$50,000,000	$0			
SJ07-5045	212-0000-0161/ 212-0000-0246/ 212-0000-0159/ 212-0000-0245/ 212-0000-0167		Tier I	SJRTD	SMA	SMA Fixed Route and SMA DAR	Stockton Metropolitan Area-Operations	$1,114,374,000	$1,114,374,000	$0	various		2030
SJ07-5046	212-0000-0158		Tier I	SJRTD	Support Vehicles	Cost to secure support vehicles	San Joaquin County-Capita	$1,000,000	$1,000,000	$0			
SJ07-5047	212-0000-0364		Tier I	SJRTD/ City of Stockton	BRT Project Phase II Airport Way Corridor: Stockton Airport to Downtown Transit Center	Costs associated with the implementation of the BRT service along the corridor including traffic signal upgrades, bus stop amenities and access enhancments		$2,408,000	$2,408,000	$0	2009		
SJ07-5048	212-0000-0349		Tier I	Tracy	DAR	DAR Capital	Purchase 4 buses every 5 year period (20 Total)	$2,000,000	$2,000,000	$0	2011	n/a	2030
SJ07-5049	212-0000-0350		Tier I	Tracy	Fixed Route Service	Capital	Purchase 3 buses every 5 year period; Purchase 2 buses every 10 year period	$3,000,000	$3,000,000	$0	2011	n/a	2030
SJ07-5050	212-0000-0206		Tier I	Tracy	TRACER Capital	Construction of turnouts and 18 shelter	various locations including multi-modal station	$1,370,000	$1,370,000	$0			2011
SJ07-5051	212-0000-0206		Tier I	Tracy	TRACER Capital	Phase I Bus Turnouts - Street Facility improvements for bus turnouts to improve traffic flow, decrease emissions, and operations/passenger safety	TRACER Capital	$1,760,000	$1,760,000	$0			2011
SJ07-5052	212-0000-0206		Tier I	Tracy	TRACER Capital	Phase Bus Turnouts II - Passenger Shelters	Costs of passenger shelters and bus turnouts	$1,125,000	$1,125,000	$0			2021
SJ07-5053	212-0000-0347		Tier I	Tracy	TRACER Capital	Paratransit Minivans	Cost of Paratransit Minivans at $70,000 each	$140,000	$140,000	$0			2011
SJ07-5054	212-0000-0348		Tier I	Tracy	TRACER Capital	Transit Supervisor Vehicle	Cost of a Transit Supervisor Vehicle	$50,000	$50,000	$0			2011
SJ07-5055	212-0000-0149		Tier I	Tracy	TRACER Operations	Costs associated with the delivery of fixed route and paratransit services including salaries, contracting of service, equipments, etc.	Includes 3.0% increase in operations annually as a result of growth	$20,676,000	$20,676,000	$0	2008	n/a	2030
SJ07-5056	212-0000-0208		Tier I	Tracy	TRACER Project Mangement and Planning	Costs to support transit planning efforts to update the City of Tracy Short-Range Transit Analysis and Action Plan and Grant Management	TRACER Project Management and Planning	$1,377,000	$1,377,000	$0			2031
SJ07-5057	112-0000-0104	2K47	Tier I	Tracy	Tracy Multimodal Station	Construction of a new multimodal station	Downtown City of Tracy	$12,563,000	$12,563,000	$0	2007	2007	2009
SJ07-5058	212-0000-361		Tier I	Lodi	Dial-A-Ride Fixed Route Bus Replacement Project	Cost associated with the purchase of seven fixed route bus replacement projects		$1,000,000	$1,000,000	$0	2009		

Table 6-5: 2007 Regional Transportation Plan Project List - Bus Transit Category

Identifiers				2007 RTP Tier	Project Information					Cost to Deliver			Milestone Years		
2007 RTP MPO ID	CTIPS ID #		PPNO		Jurisdiction	Facility Name/Route	Project Description	Project Limits		Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Completion
SJ07-5059	212-0000-0400			Tier I	Various Agencies	FTA JARC Funding	Costs associated with the competively selected projects from the Coordinated Human Services Transportation Plan for San Joaquin County	San Joaquin County		$9,200,000	$0	$0	2007		
SJ07-5060	212-0000-0401//212-0000-0355			Tier I	Various Agencies	FTA New Freedom Funding	Costs associated with the competively selected projects from the Coordinated Human Services Transportation Plan for San Joaquin County, and the costs associated with the implementation of the Coordinated plan.	San Joaquin County		$3,200,000	$3,200,000	$0	2007		
SJ07-5061				Tier II	Manteca	Manteca MultiModal Statior	Costs associated with the construction of a multmodal station			$4,600,000	$0	$4,600,000			
SJ07-5062				Tier II	Ripon	Ripon Multi-Modal Statior	Construct a new bus and train statio	Ripon Multi-Modal Statior		$6,000,000	$0	$6,000,000			
SJ07-5063				Tier II	SJRTD	Countywide DAR	Countywide GPDAR	San Joaquin County-Operations		$44,348,000	$0	$44,348,000			
SJ07-5064				Tier II	SJRTD	Countywide DAR	Expansion and replacement buses	San Joaquin County-Capita		$1,000,000	$0	$1,000,000			
SJ07-5065				Tier II	SJRTD	Countywide DAR	Service Operations	San Joaquin County-Operations		$212,687,000	$0	$212,687,000			
SJ07-5066				Tier II	SJRTD	Countywide DAR Capita	Expansion and replacement buses	San Joaquin County-Capita		$22,880,000	$0	$22,880,000			
SJ07-5067				Tier II	SJRTD	Intercity/Interregiona	Operations	San Joaquin County-Operations		$50,854,000	$0	$50,854,000			
SJ07-5068				Tier II	SJRTD	Intercity/Interregiona	Expansion and replacement buses	Intercity/Interregional/Hoppe		$40,000,000	$0	$40,000,000			
SJ07-5069				Tier II	SJRTD	Intercity/Interregional Capita	Expansion and replacement buses	San Joaquin County-Capita		$33,760,000	$0	$33,760,000			
SJ07-5070				Tier II	SJRTD	Intercity/Interregional/Hoppe	I/C I/R Operations	San Joaquin County-Operations		$91,233,000	$0	$91,233,000			
SJ07-5071				Tier II	SJRTD	RTD Bus Rapid Transi	Regional/Interregional Bus Rapid Transit System	San Joaquin County-Operations		$80,000,000	$0	$80,000,000			
SJ07-5072				Tier II	SJRTD	RTD Bus Rapid Transit Vehicles	Purchase of buses for service expansion (Intercity/Interregional	San Joaquin County-Capita		$18,000,000	$0	$18,000,000			
SJ07-5073				Tier II	SJRTD	RTD Capital Improvement Projects	Capital improvements	San Joaquin County-Capita		$132,154,000	$0	$132,154,000			
SJ07-5074				Tier II	SJRTD	RTD Downtown Transit Center	Construction, continuing development and improvements to the Downtown Transit Center	San Joaquin County-Capita		$5,000,000	$0	$5,000,000			
SJ07-5075				Tier II	SJRTD	RTD Facility Modernizatior		San Joaquin County-Capita		$19,020,000	$0	$19,020,000			
SJ07-5076				Tier II	SJRTD	RTD Support Vehicles	Costs to secure support vehicle	San Joaquin County-Capita		$2,750,000	$0	$2,750,000			
SJ07-5077				Tier II	SJRTD	SMA	SMA Fixed Route and SMA DAR	Stockton Metropolitan Area-Operations		$230,328,000	$0	$230,328,000			
SJ07-5078				Tier II	SJRTD	SMA	Expansion and replacement buses	Stockton Metroplitan Area-Operations		$49,000,000	$0	$49,000,000			
SJ07-5079				Tier II	SJRTD	SMA Capital	Expansion and replacement buses	Stockton Metropolitan Area-Capita		$56,046,000	$0	$56,046,000			
SJ07-5080				Tier II	SJRTD	SMA Operations	Local Service Operations	Stockton Metropolitan Area-Operations		$582,605,000	$0	$582,605,000			
SJ07-5081				Tier II	Various	Local Service	Operations	Various Operations		$194,202,000	$0	$194,202,000			
SJ07-5082				Tier II	Various	Miscellaneous Capital Improvement Projects	Facility upgrades, passenger amenities, operating equipment	Various Capital		$57,961,000	$0	$57,961,000			
										$4,111,027,000	**$2,167,399,000**	**$1,682,265,000**			

Table 6-6: 2007 Regional Transportation Plan Project List - Rail Corridor Improvements Category

Identifiers	2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	Project Information	Jurisdiction	Facility Name/Route	Project Description	Project Limits	Cost to Deliver	Total	TIER I	TIER II	Milestone Years	FTIP Programming	NEPA Approval	Completion Date
SJ07-6001	112-0000-0139	2030	Tier I	Caltrans	Caltrans Intercity Rail	Construct double main track, panelized turnouts, relocate/renew siding turnout, and realign existing trackage.	San Joaquin County between Escalon and Stockton	$31,200,000	$31,200,000	$0							
SJ07-6002	212-0000-0121		Tier I	SJRRC	ACE Capital	Acquisition of two rail cars	ACE Capital	$3,648,000	$3,648,000	$0							
SJ07-6003	212-0000-0281		Tier I	SJRRC	ACE Capital	Purchase two additional rail cars for ACE service expansion	ACE Capital	$8,800,000	$8,800,000	$0							
SJ07-6004	212-0000-0190		Tier I	SJRRC	ACE Capital	SJRRC shared costs for the overall maintenance of vehicles	ACE Capital	$7,564,000	$7,564,000	$0							2030
SJ07-6005	212-0000-0262		Tier I	SJRRC	ACE Capital	Capital lease with UPRR for a 10 year trackage rights	ACE Capital	$14,780,000	$14,780,000	$0							
SJ07-6006	212-0000-0293		Tier I	SJRRC	ACE Capital	Signal Upgrade project	Between Niles Junction and Lathrop	$4,325,000	$4,325,000	$0							
SJ07-6007			Tier I	SJRRC	ACE Capital	Purchase of Replacement Vehicles (Bus, Van) for ACE Service	ACE Capital	$126,000	$126,000	$0							
SJ07-6008			Tier I	SJRRC	ACE Capital	Construction of an ADA compliant pedestrian underpass and Center Platform at the Station to facilitate train movement	Santa Clara Caltrain Station	$3,448,000	$3,448,000	$0							
SJ07-6009			Tier I	SJRRC	ACE Capital	Realignment of tracking	Near Altamont Pass	$4,064,000	$4,064,000	$0							
SJ07-6010	212-0000-0301	2066	Tier I	SJRRC	ACE Capital	Construction	Northwest Track Connection in Stockton	$7,500,000	$7,500,000	$0							
SJ07-6011	212-0000-0302		Tier I	SJRRC	ACE Capital	Improvements to the Wireless Security System on the ACE service	ACE Capital	$500,000	$500,000	$0							
SJ07-6012	212-0000-0303		Tier I	SJRRC	ACE Capital	Double Track in Lathrop and Track Extension in Stockton	Between Stockton and Lathrop	$4,000,000	$4,000,000	$0							
SJ07-6013	112-0000-0140	2031	Tier I	SJRRC	ACE Capital	Restoration of abandoned Depot building	Downtown Stockton, between Weber Ave and Miner Ave	$7,000,000	$7,000,000	$0	2007						
SJ07-6014	212-0000-0210		Tier I	SJRRC	ACE Equipment Maintenance Facility	Relocation of ACE Maintenance Facility from Union Pacific Railroad facility to permanent facility.	ACE Capital	$32,250,000	$32,250,000	$0							
SJ07-6015	212-0000-0306		Tier I	SJRRC	ACE Gap Closure Project	Allow SJRCC to operate on separate tracks from Union Pacific Railroad between maintenance yard and the station siding.	Between the Stockton ACE Station and the ACE Equipment Maintenance Facility	$7,000,000	$7,000,000	$0							
SJ07-6016			Tier I	SJRRC	ACE Service Extensions	Enhance/extend intercity rail to benefit residents; integrate ACE with the State intercity rail service; extend ACE service	San Joaquin County and San Joaquin Valley; Sacramento, Modesto, and San Francisco	$8,563,000	$8,563,000	$0	various						2030
SJ07-6017			Tier I	SJRRC	ACE Corridor	Acquisition of ACE Corridor between Lathrop and Niles Junction	Between Lathrop and Niles Junction	$45,000,000	$45,000,000	$0							
SJ07-6018			Tier I	SJRRC	Phase II Implementation Plan for the Central Valley Rail Service	Commuter rail service	Central Valley to Sacramento	$1,000,000	$1,000,000	$0							
SJ07-6019			Tier I	SJRRC	Operations	Shuttle Services in San Joaquin County stations	San Joaquin County	$1,123,000	$1,123,000	$0	various						2030
SJ07-6020			Tier I	SJRRC	Capital	Maintenance Facility Expansion from 9 train sets to 17 train sets Phase 1		$17,000,000	$17,000,000	$0							2015
SJ07-6021			Tier I	SJRRC	ACE Operations	ACE operations and Capital Access Fee (5 trains from 2012 to 2016, 6 trains from 2017 to 2021, 7 trains from 2022 to 2029 and 8 trains from 2030 to 2041)	SJRRC/Santa Clara/Alameda contributions shown	$241,365,000	$241,365,000	$0	various						2030
SJ07-6022			Tier I	SJRRC	Lathrop Transfer Station	Lathrop Transfer Station- Between ACE and Central Valley Service		$5,500,000	$5,500,000	$0							
SJ07-6023			Tier I	SJRRC	Rail Information Systems	Rail Information Systems (Ticket vending machines, on-train internet, changeable message signs at stations, trip planner via internet, real time system for train status for ACE and other connecting services)		$13,400,000	$13,400,000	$0							
SJ07-6024			Tier I	SJRRC	Rail Station Expansion	Rail Station Expansion/Improvements/Access	Stockton station, Lathrop station and Tracy 2nd station (west)	$28,250,000	$28,250,000	$0							
SJ07-6025			Tier I	SJRRC	Central Valley Rail Service	Central Valley Rail Service Operations and Maintenance, Capital Access Fees, ROW purchase)		$125,000,000	$125,000,000	$0							
SJ07-6026			Tier I	SJRRC	Central Valley Rail Service	Central Valley Commuter Rail Service (Rolling stock procurement and construction of layover facility in Ripon. Track construction projects include siding extension, construction of double track, road crossing improvements, and signal improvements.		$35,000,000	$35,000,000	$0							
SJ07-6027			Tier I	Various	Northern California Logistical Program	Implement rail freight shuttle	Between the Port of Stockton and Port of Oakland to divert truck freight traffic from the I-205 corridor	$10,000,000	$10,000,000	$0							
SJ07-6028			Tier II	SJRRC	ACE Capital	Rolling Stock/Track Improvements/ Station Improvements	ACE Capital	$32,000,000	$0	$32,000,000	various						2030

Table 6-6: 2007 Regional Transportation Plan Project List - Rail Corridor Improvements Category

Identifiers					Project Information					Cost to Deliver			Milestone Years			
	2007 RTP MPO ID	CTIPS ID #	PPNO	2007 RTP Tier	Jurisdiction	Facility Name/Route	Project Description	Project Limits		Total	TIER I	TIER II		FTIP Programming	NEPA Approval	Completion Date
	SJ07-6029			Tier II	SJRRC	ACE Train Extension (Central Valley to Sacramento Commuter Rail Project)	Extension of services	Central Valley to Sacramento		$54,000,000	$0	$54,000,000				
	SJ07-6030			Tier II	SJRRC	Altamount Service Improvements	Rolling Stock/Track Improvements/ Station Improvements	Altamount Operations (SJRRC)		$52,000,000	$0	$52,000,000				
	SJ07-6031			Tier II	SJRRC		Dual Mode Rail-Road Hybrid Demonstration Project (Vehicles that can run on rail & roads. Project can be on either the former CCT line between Stockton and Sacramento or on Byron Hwy line.)			$10,000,000	$0	$10,000,000				
	SJ07-6032			Tier II	SJRRC		Rail/Port to Port Rail Freight Service (planning, engineering, purchase of 52.6 Miles of ROW.) Track Construction projects include siding extensions, construction of double track, road crossing improvements and signal improvements.	Oakland to Stockton		$141,000,000	$0	$141,000,000				
	SJ07-6033			Tier II	SJRRC		Direct ACE/BART Connection (a direct connection between ACE and BART at Valley/Stanley or at Greenville Rd in Alameda County.			$20,000,000	$0	$20,000,000				
	SJ07-6034			Tier II	SJRRC		Byron Highway Commuter Rail Service Operations and Maintenance and ROW purchase (2 trains from 2015 to 2019, 3 trains from 2020 to 2029 and 4 trains from 2030 to 2041).			$100,000,000	$0	$100,000,000				
	SJ07-6035			Tier II	SJRRC		Altamont Corridor Speed and Safety upgrades (including signal upgrade to automatic train stop increase train speed from 79 to 90 MPH and several track realighment projects)			$30,000,000	$0	$30,000,000				
	SJ07-6036			Tier II	SJRRC		Maintenance Facility Expansion from 9 train sets to 17 train sets Phase 2			$15,000,000	$0	$15,000,000				2022
										$1,121,406,000	**$667,406,000**	**$454,000,000**				

Table 6-7: 2007 Regional Transportation Plan Project List - Public Airport-Aviation Projects Category

Identifiers		Project Information			Cost to Deliver			Milestone Years		
2007 RTP MPO ID	2007 RTP Tier	Jurisdiction	Facility Name/Route	Project Description	Total	TIER I	TIER II		NEPA Approval	Completion
SJ07-7001	Tier I	San Joaquin County	Stockton Metro Airport	Northeast Air Cargo Apron Expansion, Phase 1 (257' x 450')	$1,200,000	$1,200,000	$0			2007
SJ07-7002	Tier I	San Joaquin County	Stockton Metro Airport	Environmental Study Update	$300,000	$300,000	$0			2008
SJ07-7003	Tier I	San Joaquin County	Stockton Metro Airport	Reconstruct General Aviation Apron Phase 1	$1,582,000	$1,582,000	$0			2008
SJ07-7004	Tier I	San Joaquin County	Stockton Metro Airport	Engineering Design for several projects (8-15 of CIP)	$380,000	$380,000	$0			2008
SJ07-7005	Tier I	San Joaquin County	Stockton Metro Airport	Install Runway Centerline and Touchdown Zone Lights Runway 11L-29R	$1,082,000	$1,082,000	$0		FONSI 2008	2009
SJ07-7006	Tier I	San Joaquin County	Stockton Metro Airport	Infield Drainage Upgrade	$312,000	$312,000	$0		FONSI 2008	2009
SJ07-7007	Tier I	San Joaquin County	Stockton Metro Airport	Line Wash Rack Pond	$50,000	$50,000	$0		FONSI 2008	2009
SJ07-7008	Tier I	San Joaquin County	Stockton Metro Airport	Holding Apron Runway 29L	$162,000	$162,000	$0		FONSI 2008	2010
SJ07-7009	Tier I	San Joaquin County	Stockton Metro Airport	Install New 250 KVA Emergency Generator and Update Switch Gear at Terminal Building	$350,000	$350,000	$0		FONSI 2008	2010
SJ07-7010	Tier I	San Joaquin County	Stockton Metro Airport	Rehabilitate Home Rund Duct and Cable	$277,000	$277,000	$0		FONSI 2008	2010
SJ07-7011	Tier I	San Joaquin County	Stockton Metro Airport	Air Cargo Apron Expansion	$4,503,000	$4,503,000	$0		FONSI 2008	2010
SJ07-7012	Tier I	San Joaquin County	Stockton Metro Airport	Reconstruct GA Apron- Phase 2	$1,867,000	$1,867,000	$0		FONSI 2008	2011
SJ07-7013	Tier I	San Joaquin County	Stockton Metro Airport	Engineering Design for several projects (17-21 in the CIP)	$210,000	$210,000	$0		FONSI 2008	2011
SJ07-7014	Tier I	San Joaquin County	Stockton Metro Airport	Handicap Elevator- Airline Terminal Building	$264,000	$264,000	$0		FONSI 2008	2011
SJ07-7015	Tier I	San Joaquin County	Stockton Metro Airport	Reconstruct Taxiway B Shoulders	$661,000	$661,000	$0		FONSI 2008	2011
SJ07-7016	Tier I	San Joaquin County	Stockton Metro Airport	Overlay Runway 11R-29L Including Medium Intensity Runway Lights	$857,000	$857,000	$0			
SJ07-7017	Tier I	San Joaquin County	Stockton Metro Airport	Reconstruct Taxiway H	$1,346,000	$1,346,000	$0			
SJ07-7018	Tier I	San Joaquin County	Stockton Metro Airport	Construct Corporate Hangars (27,500 Sq Ft.)	$1,293,000	$1,293,000	$0			
SJ07-7042	Tier I	San Joaquin County	Stockton Metro Airport	North Side Development Phase 2 (CT-CIP, 2005)	$1,224,900	$1,224,900	$0			2009
SJ07-7043	Tier I	Tracy	New Jerusalem Airport	RWY Overlay (CT-CIP, 2005)	$400,000	$400,000	$0			2009
SJ07-7044	Tier I	Tracy	Tracy Municipal Airport	Construct Blast Pads, RWY 8-26 Ends (CT-CIP, 2005)	$50,000	$50,000	$0			2007
SJ07-7045	Tier I	Tracy	Tracy Municipal Airport	Construct Blast Pads, RWY 30 Ends (CT-CIP, 2005)	$25,000	$25,000	$0			2007
SJ07-7046	Tier I	Tracy	Tracy Municipal Airport	Construct Blast Pads, RWY 12 Ends (CT-CIP, 2005)	$65,000	$65,000	$0			2007

Table 6-7: 2007 Regional Transportation Plan Project List - Public Airport-Aviation Projects Category

Identifiers		Project Information				Cost to Deliver			Milestone Years		
2007 RTP MPO ID	2007 RTP Tier	Jurisdiction	Facility Name/Route	Project Description	Total	TIER I	TIER II		NEPA Approval	Completion
SJ07-7047	Tier I	Tracy	Tracy Municipal Airport	RSA Grading/Drainage (CT-CIP, 2005)	$75,000	$75,000	$0			2007
SJ07-7019	Tier I	Tracy	Tracy Municipal Airport	Establish Airport Concession Area	$20,000	$20,000	$0			2008
SJ07-7020	Tier I	Tracy	Tracy Municipal Airport	Improvements to main entrance road, lighting, road construction	$241,000	$241,000	$0			2011
SJ07-7021	Tier I	Tracy	Tracy Municipal Airport	Install Fixed Based Operator (FBO) Hangar Lighting	$10,000	$10,000	$0			2008
SJ07-7022	Tier I	Tracy	Tracy Municipal Airport	Install High-end sanitation restrooms	$40,000	$40,000	$0			2008
SJ07-7023	Tier I	Tracy	Tracy Municipal Airport	Install shade structures in airport park	$15,000	$15,000	$0			2008
SJ07-7024	Tier I	Tracy	Tracy Municipal Airport	Renovate Park Irrigation System	$10,000	$10,000	$0			2008
SJ07-7025	Tier I	Tracy	Tracy Municipal Airport	Slurry seal airport runway, taxiway, and hanger area	$505,000	$505,000	$0			2007
SJ07-7026	Tier I	Tracy	Tracy Municipal Airport	T-Hanger Installation	$2,112,000	$2,112,000	$0			2008
SJ07-7027	Tier I	Tracy	Tracy Municipal Airport	Upgrade septic system	$10,000	$10,000	$0			2008
SJ07-7028	Tier II	Tracy	Tracy Municipal Airport	Aircraft wash facility	$99,000	$0	$99,000			2011
SJ07-7029	Tier II	Tracy	Tracy Municipal Airport	Build permanent public restrooms	$221,000	$0	$221,000			2011
SJ07-7030	Tier II	Tracy	Tracy Municipal Airport	Construct FBO Facility in South Hanger area	$2,407,000	$0	$2,407,000			2017
SJ07-7031	Tier II	Tracy	Tracy Municipal Airport	Construct FBO, Administration Facility and Pilot Lounge in main airport area	$4,268,000	$0	$4,268,000			2017
SJ07-7032	Tier II	Tracy	Tracy Municipal Airport	FBO Office - Repair FBO Building	$1,017,000	$0	$1,017,000			2011
SJ07-7033	Tier II	Tracy	Tracy Municipal Airport	Install helicopter pad	$92,000	$0	$92,000			2017
SJ07-7034	Tier II	Tracy	Tracy Municipal Airport	Land acquisition identified in Airport Master Plan; Canal area; North of airport-safety and oversight areas; south hanger area.	$21,849,000	$0	$21,849,000			2011
SJ07-7035	Tier II	Tracy	Tracy Municipal Airport	Municipal Services Installation (water distribution system, sanitary sewer system, upgrade storm drainage system)	$2,775,000	$0	$2,775,000			2017
SJ07-7036	Tier II	Tracy	Tracy Municipal Airport	Public parking area repairs	$353,000	$0	$353,000			2017
SJ07-7037	Tier II	Tracy	Tracy Municipal Airport	Relocate Airport Beacon	$12,000					2017
SJ07-7038	Tier II	Tracy	Tracy Municipal Airport	Security (security enhancements, lighting in permanent hangar and tiedown areas)	$3,112,000	$0	$3,112,000			2011
SJ07-7039	Tier II	Tracy	Tracy Municipal Airport	Taxiway Construction (pavement, permanent hanger sites, north of runway 25, south hanger area)	$4,808,000	$0	$4,808,000			2011
SJ07-7040	Tier II	Tracy	Tracy Municipal Airport	Update Airport Master Plan	$0					
SJ07-7041	Tier II	Tracy	Tracy Municipal Airport	Update of the Airport Master Plan, Business Plan and Minimum Standards Document	$200,000	$0	$200,000			2011

Table 6-7: 2007 Regional Transportation Plan Project List - Public Airport-Aviation Projects Category

Identifiers			Project Information				Cost to Deliver				Milestone Years			
	2007 RTP MPO ID	2007 RTP Tier		Jurisdiction	Facility Name/Route	Project Description		Total	TIER I	TIER II		NEPA Approval	Completion	
								$62,711,900	$21,498,900	$41,201,000				

Table 6-8: 2007 Regional Transportation Plan Project List - Bicycle and Pedestrian Facilities Improvement Projects Category

Identifiers			Project Information					Cost to Deliver			Milestone Years		
2007 RTP MPO ID	CTIPS ID #	2007 RTP Tier	Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Completion	Project Milestone Years
SJ07-8001	212-0000-0119	Tier I	Lathrop	Lathrop Road	Bicycle Facilities Improvement Project: Provision of bicycle and pedestrian facilities	City of Lathrop	$175,000	$175,000	$0	2008	2008	2008	
SJ07-8002	212-0000-0339	Tier I	Ripon	Jack Tone Road	Reconstruct roadway to include a new Class 1 bikeway	Jack Tone Road	$3,000,000	$3,000,000	$0	2008		2008	
SJ07-8003		Tier I	Ripon	Stanislaus River Trail	Construct Class I bicycle/pedestrian trail along the Stanislaus River	Corps Park to Jack Tone Golf Course Stanislaus River Trail	$1,500,000	$1,500,000	$0				
SJ07-8004		Tier I	San Joaquin County	Airport Way	Construction of a Class III Bike Lane	Durham Ferry Road to Trahern Road, 3.7 miles	$148,000	$148,000	$0				
SJ07-8005		Tier I	San Joaquin County	Airport Way	Construction of a Class III Bike Lane	West Ripon Road to Trahern Road, 2.7 miles	$108,000	$108,000	$0				
SJ07-8006		Tier I	San Joaquin County	Armstrong Road	Widen existing 20' roadway to 32' wide for construction of a class III bike lane	Davis Road to Lower Sacramento Road	$1,609,000	$1,609,000	$0	2010	2009	2010	
SJ07-8007		Tier I	San Joaquin County	Armstrong Road	Construction of a Class III Bike Lane	Micke Grove Road to Frontage Road, 0.7 miles	$210,000	$210,000	$0				
SJ07-8008		Tier I	San Joaquin County	Armstrong Road	Construction of a Class III Bike Lane	West Lane to Micke Grove Road, 0.3 miles	$90,000	$90,000	$0				
SJ07-8009		Tier I	San Joaquin County	Armstrong Road	Construction of a Class III Bike Lane	Davis Road to West Lane, 3.0 miles	$900,000	$900,000	$0				
SJ07-8010		Tier I	San Joaquin County	Austin Road	Construct 4 feet roadway widening on each side to provide class III bike route and resurface existing roadway	French Camp Road to Louise Avenue, 2.3 miles	$1,884,000	$1,884,000	$0	N/A	N/A	2008	
SJ07-8011		Tier I	San Joaquin County	South Stockton Sidewalks	Installation of curb, gutter and sidewalks on streets in the southeast area of unincorporated Stockton	Eleventh Street (B Street to D Street), D Street (Loomis Road to Eighth Street), Eighth Street (Bieghle Street to D Street), Ninth Street (D Street to Pock Lane) and Pock Lane (City limits to Loomis Road)	$3,304,000	$3,304,000	$0	2011			
SJ07-8012		Tier I	Stockton	Calaveras Pedestrian Trail	Bike/Pedestrian Trail	From existing Bike/Pedestrian trail to city park at Buckley Cove	$320,000	$320,000	$0				
SJ07-8013		Tier I	Stockton	Center Street , Fremont Street to Bridge at Weber	Bicycle/Pedestrian Walkway	Center Street , Fremont Street to Bridge at Weber	$782,000	$782,000	$0				
SJ07-8014		Tier I	Stockton	Charter Way, French Camp - Stanislaus Street	Beautification project, landscaping, bike, lockers, bike racks	Charter Way, French Camp - Stanislaus Street	$732,000	$732,000	$0				
SJ07-8015		Tier I	Stockton	Duck Creek/Walker Slough	Bikeway improvements	Duck Creek/Walker Slough, 5.2 Miles	$287,000	$287,000	$0				
SJ07-8016		Tier I	Stockton	EBMUD Aqueduct	Bikeway improvements	EBMUD Aqueduct, 7.5 Miles	$371,000	$371,000	$0				
SJ07-8017		Tier I	Stockton	El Dorado St. n/s Corridor	Bikeway improvements	El Dorado St. n/s Corridor, 14.2 Miles	$35,000	$35,000	$0				
SJ07-8018		Tier I	Stockton	Pershing Avenue	Bikeway improvements	Pershing Avenue, 1.3 Miles	$3,000	$3,000	$0				
SJ07-8019		Tier I	Stockton	Weber Street Feature	Bike Lockers	Weber Street	$555,000	$555,000	$0				
SJ07-8020		Tier I	Tracy	Tracy Gateway, Landscape Gateways to the City (4 locations)	Gateway sites include: landscape PNR, bike trailways	4 locations	$279,000	$279,000	$0	2012	n/a	2014	
SJ07-8021		Tier I	Various	Miscellaneous Regional Bikeway Facilities	Specific projects are listed in the San Joaquin Regional Bikeway Plan; Corridors include Calaveras River, Stanislaus River, Tidewater Bikeway, and on-street bike lanes.	Calaveras River, Stanislaus River, Tidewater Bikeway, and on-street bike lanes.	$24,222,000	$24,222,000	$0				
SJ07-8022		Tier II	Lathrop	5th Street, Louise Avenue to Lathrop Road	Bikeway improvements	5th Street, Louise Avenue to Lathrop Road, 1.0 Miles	$11,000	$0	$11,000				
SJ07-8023		Tier II	Lathrop	Harlan Road, Louise Avenue to Howland Road	Bikeway improvements	Harlan Road, Louise Avenue to Howland Road, 1.6 Miles	$3,000	$0	$3,000				
SJ07-8024		Tier II	Lathrop	Thomsen Street, Harlan Road to 5th Street	Bikeway improvements	Thomsen Street, Harlan Road to 5th Street, 0.8 Miles	$6,000	$0	$6,000				
SJ07-8025		Tier II	Lodi	Harney Lane , Lower Sacramento Road to W 99 Frontage Road	Bikeway improvements	Harney Lane , Lower Sacramento Road to W 99 Frontage Road, 2.7 Miles	$192,000	$0	$192,000				
SJ07-8026		Tier II	Lodi	Hutchins St., Harney Lane to Holly Drive	Bikeway improvements	Hutchins St., Harney Lane to Holly Drive, 2.6 Miles	$185,000	$0	$185,000				
SJ07-8027		Tier II	Lodi	Lodi Loop Trail	Bikeway improvements	Lodi Loop Trail, 4.7 Miles	$517,000	$0	$517,000				
SJ07-8028		Tier II	Lodi	Turner Road Lodi City Limits	Bikeway improvements	Turner Road Lodi City Limits, 3.7 Miles	$349,000	$0	$349,000				
SJ07-8029		Tier II	Ripon	Milgeo Avenue, Murphy Road to Spring Creek Drive	Class II Bikeway improvements	Milgeo Avenue, Murphy Road to Spring Creek Drive, 2.1 Miles	$150,000	$0	$150,000			2010	

Table 6-8: 2007 Regional Transportation Plan Project List - Bicycle and Pedestrian Facilities Improvement Projects Category

Identifiers			Project Information				Cost to Deliver			Milestone Years			
2007 RTP MPO ID	CTIPS ID #	2007 RTP Tier	Jurisdiction	Facility Name/Route	Project Description	Project Limits	Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Completion	Project Milestone Years
SJ07-8030		Tier II	Ripon	South City, Doak Boulevard Bicycle Loop	Class I Bikeway improvements	South City, Doak Boulevard Bicycle Loop. 0.5 Miles	$200,000	$0	$200,000			2008	
SJ07-8031		Tier II	San Joaquin County	Austin Road	Construction of a Class III Bike Lane	Stanislaus River to West Ripon Road, 2.0 miles	$600,000	$0	$600,000	2015			
SJ07-8032		Tier II	San Joaquin County	Blossom Road	Construction of a Class III Bike Lane	Walnut Grove Road to Peltier Road, 2.2 miles	$330,000	$0	$330,000				
SJ07-8033		Tier II	San Joaquin County	Byron Road	Construction of a Class III Bike Lane	Developer to Grant Line Road, 2.4 miles	$96,000	$0	$96,000				
SJ07-8034		Tier II	San Joaquin County	Carlin Road	Construction of a Class III Bike Lane	Crocker Road to Roberts Road, 1.6 miles	$480,000	$0	$480,000				
SJ07-8035		Tier II	San Joaquin County	Chrisman Road*	Construction of a Class III Bike Lane	Durham Ferry Road to CA Aqueduct, 1.6 miles	$480,000	$0	$480,000				
SJ07-8036		Tier II	San Joaquin County	Chrisman Road*	Construction of a Class III Bike Lane	Tracy to Durham Ferry Road, 3.0 miles	$150,000	$0	$150,000				
SJ07-8037		Tier II	San Joaquin County	Collier Road	Construction of a Class III Bike Lane	Linn Road to Mackville Road, 1.1 miles	$330,000	$0	$330,000				
SJ07-8038		Tier II	San Joaquin County	Collier Road	Construction of a Class III Bike Lane	Elliot Road to Linne Road, 3.5 miles	$1,050,000	$0	$1,050,000				
SJ07-8039		Tier II	San Joaquin County	Collier Road	Construction of a Class III Bike Lane	Lower Sacramento Road to Elliot Road, 6.5 miles	$1,950,000	$0	$1,950,000				
SJ07-8040		Tier II	San Joaquin County	Copperopolis Road	Construction of a Class III Bike Lane	Milton Road to Escalon-Bellota Road, 5.2 miles	$1,560,000	$0	$1,560,000				
SJ07-8041		Tier II	San Joaquin County	Corral Hollow Road	Construction of a Class III Bike Lane	Tracy to Lammers Road, 2.2 miles	$660,000	$0	$660,000				
SJ07-8042		Tier II	San Joaquin County	Corral Hollow Road	Construction of a Class III Bike Lane	Alameda County to CA Aqueduct, 7.8 miles	$2,340,000	$0	$2,340,000				
SJ07-8043		Tier II	San Joaquin County	Crocker Road	Construction of a Class III Bike Lane	Undine Road to Carlin Road, 2.1 miles	$630,000	$0	$630,000				
SJ07-8044		Tier II	San Joaquin County	Davis Road*	Construction of a Class III Bike Lane	Turner Road to Hwy 12, 2.1 miles	$630,000	$0	$630,000				
SJ07-8045		Tier II	San Joaquin County	Dodds Road	Construction of a Class III Bike Lane	Escalon-Bellota Road to Van Allen Rd, 3.0 miles	$900,000	$0	$900,000				
SJ07-8046		Tier II	San Joaquin County	Dodds Road	Construction of a Class III Bike Lane	Stanislaus County to Escalon Bellota Rd, 4.0 miles	$1,200,000	$0	$1,200,000				
SJ07-8047		Tier II	San Joaquin County	Dos Reis Road	Construction of a Class III Bike Lane	Manthew Road to Dos Reis Staging Area, 1.4 miles	$420,000	$0	$420,000				
SJ07-8048		Tier II	San Joaquin County	Duncan Road	Construction of a Class III Bike Lane	Milton Road to Eight Mile Road, 5.3 miles	$1,590,000	$0	$1,590,000				
SJ07-8049		Tier II	San Joaquin County	Durham Ferry Road*	Construction of a Class III Bike Lane	Chrisman Road to Airport Way, 6.5 miles	$3,250,000	$0	$3,250,000				
SJ07-8050		Tier II	San Joaquin County	Eight Mile Road	Construction of a Class III Bike Lane	Stockton to Stockton, 0.5 miles	$20,000	$0	$20,000				
SJ07-8051		Tier II	San Joaquin County	Eight Mile Road	Construction of a Class III Bike Lane	Micke Grove Road to Frontage Road, 0.8 miles	$32,000	$0	$32,000				
SJ07-8052		Tier II	San Joaquin County	Eight Mile Road	Construction of a Class III Bike Lane	Jack Tone Road to Duncan Road, 2.7 miles	$108,000	$0	$108,000				
SJ07-8053		Tier II	San Joaquin County	Elliot Road	Construction of a Class III Bike Lane	Collier Road to Hwy 12, 4.3 miles	$1,290,000	$0	$1,290,000				
SJ07-8054		Tier II	San Joaquin County	Escalon-Belllota Road	Construction of a Class III Bike Lane	Milton Road to Hwy 4, 4.0 miles	$1,200,000	$0	$1,200,000				
SJ07-8055		Tier II	San Joaquin County	Escalon-Bellota Road	Construction of a Class III Bike Lane	Dodds Road to Escalon Bellota Road, 3.4 miles	$1,020,000	$0	$1,020,000				
SJ07-8056		Tier II	San Joaquin County	Escalon-Bellota Road	Construction of a Class III Bike Lane	HWY 4 to Dodds Road, 5.0 miles	$200,000	$0	$200,000				
SJ07-8057		Tier II	San Joaquin County	Grant Line Road	Construction of a Class III Bike Lane	Byron Road to Tracy Blvd, 0.4 miles	$120,000	$0	$120,000				
SJ07-8058		Tier II	San Joaquin County	Hansen Road	Construction of a Class III Bike Lane	Von Sosten Road to Schulte Road, 1.9 miles	$570,000	$0	$570,000				
SJ07-8059		Tier II	San Joaquin County	Harney Lane	Construction of a Class III Bike Lane	Tully Road to Tully Road, 0.5 miles	$150,000	$0	$150,000				
SJ07-8060		Tier II	San Joaquin County	Howard Road	Construction of a Class III Bike Lane	Roberts Road to Wolfe Road, 2.2 miles	$88,000	$0	$88,000				
SJ07-8061		Tier II	San Joaquin County	Howard Road	Construction of a Class III Bike Lane	Tracy Blvd. to Undine Road, 2.2 miles	$88,000	$0	$88,000				
SJ07-8062		Tier II	San Joaquin County	Jahant Road	Construction of a Class III Bike Lane	Linn Road to Mackville Road, 0.7 miles	$210,000	$0	$210,000				
SJ07-8063		Tier II	San Joaquin County	Kile Road	Construction of a Class III Bike Lane	Thorton Road to Ray Road, 3.2 miles	$960,000	$0	$960,000				

Table 6-8: 2007 Regional Transportation Plan Project List - Bicycle and Pedestrian Facilities Improvement Projects Category

Identifiers			Project Information					Cost to Deliver			Milestone Years			
2007 RTP MPO ID	CTIPS ID #	2007 RTP Tier	Jurisdiction	Facility Name/Route	Project Description	Project Limits		Total	TIER I	TIER II	FTIP Programming	NEPA Approval	Completion	Project Milestone Years
SJ07-8064		Tier II	San Joaquin County	Lammers Road	Construction of a Class III Bike Lane	Corral Hollow Road to Tracy Blvd, 0.3 miles		$90,000	$0	$90,000				
SJ07-8065		Tier II	San Joaquin County	Liberty Road	Construction of a Class III Bike Lane	HWY 88 to Amador County, 2.9 miles		$870,000	$0	$870,000				
SJ07-8066		Tier II	San Joaquin County	Liberty Road	Construction of a Class III Bike Lane	Mackville Road to Hwy 88, 2.1 miles		$630,000	$0	$630,000				
SJ07-8067		Tier II	San Joaquin County	Linn Road	Construction of a Class III Bike Lane	Collier Road to Jahant Road, 0.7 miles		$210,000	$0	$210,000				
SJ07-8068		Tier II	San Joaquin County	Linn Road	Construction of a Class III Bike Lane	Collier Road to Collier Road, 0.3 miles		$90,000	$0	$90,000				
SJ07-8069		Tier II	San Joaquin County	Live Oak Road	Construction of a Class III Bike Lane	Jack Tone Road to Tully Road, 1.5 miles		$450,000	$0	$450,000				
SJ07-8070		Tier II	San Joaquin County	Live Oak Road	Construction of a Class III Bike Lane	HWY 88 to Jack Tone Road, 1.8 miles		$540,000	$0	$540,000				
SJ07-8071		Tier II	San Joaquin County	Live Oak Road	Construction of a Class III Bike Lane	Frontage Road to Hwy 88, 4.0 miles		$1,200,000	$0	$1,200,000				
SJ07-8072		Tier II	San Joaquin County	Lone Tree Road	Construction of a Class III Bike Lane	Van Allen Road to French Camp Road, 5.0 miles		$1,500,000	$0	$1,500,000				
SJ07-8073		Tier II	San Joaquin County	Louise Avenue	Construction of a Class III Bike Lane	Austin Road to Jack Tone Road, 2.0 miles		$600,000	$0	$600,000				
SJ07-8074		Tier II	San Joaquin County	Lower Sacramento Road*	Construction of a Class III Bike Lane	Harney Lane to Eight Mile Road, 2.1 miles		$315,000	$0	$315,000				
SJ07-8075		Tier II	San Joaquin County	Mackville Road	Construction of a Class III Bike Lane	Collier Road to Liberty Road, 1.5 miles		$450,000	$0	$450,000				
SJ07-8076		Tier II	San Joaquin County	Mackville Road	Construction of a Class III Bike Lane	Collier Road to Hwy 12, 1.8 miles		$540,000	$0	$540,000				
SJ07-8077		Tier II	San Joaquin County	Matthews Road	Construction of a Class III Bike Lane	Wolf Road to Manthey Street, 1.2 miles		$48,000	$0	$48,000				
SJ07-8078		Tier II	San Joaquin County	Micke Grove Road	Construction of a Class III Bike Lane	Armstrong Rd to Eight Mile Rd		$1,000,000	$0	$1,000,000				
SJ07-8079		Tier II	San Joaquin County	Milgeo Road	Construction of a Class III Bike Lane	Ripon to Murphy Road, 0.4 miles		$120,000	$0	$120,000				
SJ07-8080		Tier II	San Joaquin County	Murphy Road	Construction of a Class III Bike Lane	Milgeo Road to French Camp Rd, 4.1 miles		$1,230,000	$0	$1,230,000				
SJ07-8081		Tier II	San Joaquin County	Odell Avenue	Construction of a Class III Bike Lane	Downing Street, s/o Horton Ave		$10,000	$0	$10,000				
SJ07-8082		Tier II	San Joaquin County	Patterson Pass Road	Construction of a Class III Bike Lane	Alameda County to Schulte Road, 1.8 miles		$540,000	$0	$540,000				
SJ07-8083		Tier II	San Joaquin County	Peltier Road	Construction of a Class III Bike Lane	Blossom Road to Thorton Road, 2.1 miles		$630,000	$0	$630,000				
SJ07-8084		Tier II	San Joaquin County	Ray Road	Construction of a Class III Bike Lane	Peltier Road to Woodbridge Road, 2.0 miles		$600,000	$0	$600,000				
SJ07-8085		Tier II	San Joaquin County	River Road	Construction of a Class III Bike Lane	McHenry Ave to Sante Fe Road, 2.6 miles		$104,000	$0	$104,000				
SJ07-8086		Tier II	San Joaquin County	Roberts Road	Construction of a Class III Bike Lane	Carlin Road to Howard Road, 0.9 miles		$270,000	$0	$270,000				
SJ07-8087		Tier II	San Joaquin County	Roth Road	Construction of a Class III Bike Lane	Manthey Street to Airport Way, 1.5 miles		$450,000	$0	$450,000				
SJ07-8088		Tier II	San Joaquin County	SR99 Frontage Road	Construction of a Class III Bike Lane	Harney Lane to Wilson Way, 6.5 miles		$1,950,000	$0	$1,950,000				
SJ07-8089		Tier II	San Joaquin County	Thornton Road	Construction of a Class III Bike Lane	Sacramento County to Walnut Grove Road, 2.2 miles		$330,000	$0	$330,000				
SJ07-8090		Tier II	San Joaquin County	Thornton Road	Construction of a Class III Bike Lane	Peltier Road to Woodbridge Road, 2.0 miles		$300,000	$0	$300,000				
SJ07-8091		Tier II	San Joaquin County	Thornton Road	Construction of a Class III Bike Lane	Kile Road to Peltier Road, 2.1 miles		$315,000	$0	$315,000				
SJ07-8092		Tier II	San Joaquin County	Thornton Road	Construction of a Class III Bike Lane	Walnut Grove Road to Kile Road, 1.0 miles		$150,000	$0	$150,000				
SJ07-8093		Tier II	San Joaquin County	Thornton Road*	Construction of a Class III Bike Lane	DeVries Road to Eight Mile Road, 1.1 miles		$55,000	$0	$55,000				
SJ07-8094		Tier II	San Joaquin County	Tracy Blvd*	Construction of a Class III Bike Lane	Howard Road to Lammers Road, 4.2 miles		$210,000	$0	$210,000				
SJ07-8095		Tier II	San Joaquin County	Tully Road	Construction of a Class III Bike Lane	HWY 12 to Brandt Road, 1.4 miles		$420,000	$0	$420,000				
SJ07-8096		Tier II	San Joaquin County	Tully Road	Construction of a Class III Bike Lane	Harney Lane to Live Oak Road, 1.5 miles		$450,000	$0	$450,000				
SJ07-8097		Tier II	San Joaquin County	Tully Road	Construction of a Class III Bike Lane	Brandt Road to Harney Lane, 3.1miles		$930,000	$0	$930,000				

Table 6-8: 2007 Regional Transportation Plan Project List - Bicycle and Pedestrian Facilities Improvement Projects Category

Identifiers: 2007 RTP MPO ID	CTIPS ID #	2007 RTP Tier	Project Information: Jurisdiction	Facility Name/Route	Project Description	Project Limits	Cost to Deliver: Total	TIER I	TIER II	Milestone Years: FTIP Programming	NEPA Approval	Completion	Project Milestone Years
SJ07-8098		Tier II	San Joaquin County	Tully Road	Construction of a Class III Bike Lane	Live Oak Road to Eight Mile Road, 1.5 miles	$450,000	$0	$450,000				
SJ07-8099		Tier II	San Joaquin County	Undine Road	Construction of a Class III Bike Lane	Howard Road to Crocker Road, 2.9 miles	$870,000	$0	$870,000				
SJ07-8100		Tier II	San Joaquin County	Van Allen Road	Construction of a Class III Bike Lane	Dodds Road to Lone Tree Road, 2.0 miles	$600,000	$0	$600,000				
SJ07-8101		Tier II	San Joaquin County	Von Sosten Road	Construction of a Class III Bike Lane	Patterson Pass Road to Byron Road, 2.9 miles	$870,000	$0	$870,000				
SJ07-8102		Tier II	San Joaquin County	Walnut Grove Road	Construction of a Class III Bike Lane	Blossom Road to Thorton Road, 1.0 miles	$300,000	$0	$300,000				
SJ07-8103		Tier II	San Joaquin County	Walnut Grove Road	Construction of a Class III Bike Lane	Contra Costa County to Blossom Road, 3.4 miles	$136,000	$0	$136,000				
SJ07-8104		Tier II	San Joaquin County	West Lane	Construction of a Class III Bike Lane	Lodi to Armstron Road, 0.9 miles	$36,000	$0	$36,000				
SJ07-8105		Tier II	San Joaquin County	West Lane	Construction of a Class III Bike Lane	Eight Mile Road to Armstrong Road, 2.4 miles	$96,000	$0	$96,000				
SJ07-8106		Tier II	San Joaquin County	Wolfe Lane Road	Construction of a Class III Bike Lane	Howard Road to Matthews Road, 0.3 miles	$12,000	$0	$12,000				
SJ07-8107		Tier II	San Joaquin County	Woodbridge Road	Construction of a Class III Bike Lane	Davis Road to Lower Sacramento Road, 1.9 miles	$570,000	$0	$570,000				
SJ07-8108		Tier II	San Joaquin County	Woodbridge Road	Construction of a Class III Bike Lane	Davis Road to Chestnut Road 1.9 miles	$570,000	$0	$570,000				
SJ07-8109		Tier II	San Joaquin County	Woodbridge Road	Construction of a Class III Bike Lane	Thorton Road to Ray Road, 1.2 miles	$360,000	$0	$360,000				
SJ07-8110		Tier II	Tracy	Corral Hollow Road, Parkside Road to Linne Road	Bikeway improvements	Corral Hollow Road, Parkside Road to Linne Road, 1.8 Miles	$117,000	$0	$117,000	2016	2014	2018	
SJ07-8111		Tier II	Tracy	MacArthur Boulevard, 3rd Street to Linne Road	Bikeway improvements	MacArthur Boulevard, 3rd Street to Linne Road, 2.4 Miles	$200,000	$0	$200,000	2011	n/a	2014	
						TOTAL	**$89,613,000**	**$40,514,000**	**$49,099,000**				

Table 6-9: 2007 Regional Transportation Plan Project List - Transportation Control Measure Category

Identifiers		Project Information				Cost to Deliver			Milestone Years
2007 RTP MPO ID	2007 RTP Tier	Jurisdiction	Project Name	Project Description	Total	TIER I	TIER II	Completion
SJ07-9001	Tier I	Various	Ridesharing and Vanpool Programs	Trip Reduction Coordination, Guaranteed Ride Home, Vanpool Enhancement, Match lists, TDM marketing, etc.	$4,600,000	$4,600,000	$0	2007-2030
SJ07-9002	Tier I	Various	Park and Ride Lots	Various Locations	$450,000	$450,000	$0	2007-2010
SJ07-9003	Tier I	Various	Traffic Flow Improvements and Systems Managements	Signal System Improvements, Operational and Intersection Improvements to Smooth Traffic Flow, Closed Circuit TV, Freeway Service Patrols	$5,000,000	$5,000,000	$0	2007-2030
SJ07-9004	Tier I	Stockton		Neighborhood Traffic Calming	$8,050,000	$8,050,000	$0	2007-2030
SJ07-9005	Tier I	Stockton		Sidewalk, Curb, Gutter & Wheelchair Ramps	$16,100,000	$16,100,000	$0	2007-2030
SJ07-9006	Tier I	Stockton		Street Lighting Improvements	$2,875,000	$2,875,000	$0	2007-2030
SJ07-9007	Tier I	Stockton		Traffic Control System Upgrades	$29,900,000	$29,900,000	$0	2007-2030
SJ07-9008	Tier I	Stockton		Install Traffic Signals	$2,560,000	$2,560,000	$0	2007-2011
SJ07-9009	Tier I	Tracy	Traffic Signal Coordination	Grant Line Road	See Regional Roadway Project List	$0	$0	2007-2011
SJ07-9010	Tier I	San Joaquin County	Traffic Signal/Ped Crossing	Grant Line Road and Seventh Street	See Regional Roadway Project List	$0	$0	2007-2011
SJ07-9011	Tier I	San Joaquin County	Traffic Signal	Chrisman Road	See Regional Roadway Project List	$0	$0	2007-2011
SJ07-9012	Tier I	San Joaquin County	Intersection Improvements	Howard Road and Tracy Blvd.	See Regional Roadway Project List	$0	$0	2007-2011
SJ07-9013	Tier I	San Joaquin County	Intersection Signalization	Byron Road and Grant Line Road	See Regional Roadway Project List	$0	$0	2007-2011
SJ07-9014	Tier I	San Joaquin County		South Stockton Sidewalks	See Regional Roadway Project List	$0	$0	2007-2011
SJ07-9015	Tier I	Stockton	Traffic Signal	Tam O'Shanter Drive and Hammertown Drive	See Regional Roadway Project List	$0	$0	2007-2011
SJ07-9016	Tier I	Tracy	Traffic Signal	Byron Road and Lammers Road	See Regional Roadway Project List	$0	$0	2007-2011
					$69,535,000	**$69,535,000**	**$0**	

Table 6-10: 2007 Regional Transportation Plan Project List - Transportation Control Measure Category

Identifiers	2007 RTP MPO ID	2007 RTP Tier	Project Information	Jurisdiction	Project Name	Project Description	Cost to Deliver	Total	TIER I	TIER II	Milestone Years	Completion
SJ07-10001	Tier II				Advanced Railroad highway interface Technology Deployment	Deploy Railroad/Highway grade crossing technology at crossing with safety and/or high volume and delay concers		$750,000	$0	$750,000		2007-2030
SJ07-10002	Tier II				City of Stockton Expansion of ATMS and Cent Cnlt Sys, Phase II	Expand Central Network, Add CCTV cameras, Interconnect Traffic Signals, Intagration w/Caltrans,		$9,700,000	$0	$9,700,000		2007-2030
SJ07-10003	Tier II			Stockton	Caltrans Traffic Ops System (TOS) gap closure Project (Region)	Elements that aid in surveillance and management activitiesto be par of the TOS		$2,000,000	$0	$2,000,000		2007-2030
SJ07-10004	Tier II				EVP Deployments	Emergency Vehcile Preemption for City of Stockton, Preempetion of signals to allow faster deployment of emergency vehciles.		$3,500,000	$0	$3,500,000		2007-2030
SJ07-10005	Tier II			Various	Integrated Smart Corridors	Implementation of multiple ITS packages and systems		$4,000,000	$0	$4,000,000		2007-2030
SJ07-10006	Tier II			Various	Communications Interie Projects Stockton, County, and Caltrans	Communications link of sharing of traffic information		$3,000,000	$0	$3,000,000		2007-2030
SJ07-10007	Tier II			Stockton	Urban Area Traffic Signal Coordination	Local traffic signal coordination		$1,500,000	$0	$1,500,000		2007-2030
SJ07-10008	Tier II			Port	Port of Stockton ITS Project	Inbound/Outbound Truck monitoring system Staging area improvments		$300,000	$0	$300,000		2007-2030
SJ07-10009	Tier II			Stockton/County	Railroad Highway Interface (RHI)corridor project	Deployment of Railroad/highway grade crossing safety technology at needed crossings.		$750,000	$0	$750,000		2007-2030
SJ07-10010	Tier II			Stockton/County	Alternate Route Signaling	Installation of 58 static alternate route signs w/in county for designated detour routes w/changeable/portable signage		$2,900,000	$0	$2,900,000		2007-2030
SJ07-10011	Tier II			County	Vanpool Vehicle Traffic Probes	Vehicle Tracking systems			$0	$0		2007-2030
SJ07-10012	Tier II				Incident Management/Emergency Services				$0	$0		2007-2030
SJ07-10013	Tier II			Various	Traffic Safety Task Force/Team	Devleop Traffic Safety Team		$150,000	$0	$150,000		2007-2030
SJ07-10014	Tier II				Transit Systems				$0	$0		2007-2030
SJ07-10015	Tier II			SJRTD	San Joaquin Transit Electronic Fare Payment	Corrdination of fare payment systems using "TransLink" similar to that used by MTC		$2,000,000	$0	$2,000,000		2007-2030
SJ07-10016	Tier II			SJRTD	Transit Management System (TrMS) Upgrades	Upgrades to the SmartTrac system		$2,000,000	$0	$2,000,000		2007-2030
SJ07-10017	Tier II			SJRTD	Smart Nextbus Arrival Signs	Deployment of electronic signage that will inform riders of the arrival times of transit vehicles		$200,000	$0	$200,000		2007-2030
SJ07-10018	Tier II			SJRTD/County	Demand-Responsive Transit System Integration Study	Study ofdemand-responsive transit system integration strategies		$2,700,000	$0	$2,700,000		2007-2030
SJ07-10019	Tier II			SJRTD	Transit Information System	Implement a system for collecting, processing and disseminating transit information		$600,000	$0	$600,000		2007-2030
SJ07-10020	Tier II				Traveler Information Systems				$0	$0		2007-2030
SJ07-10021	Tier II			County	Metropolitan Traveler Information System	This project would implement a comprehensive Integrated Traveler Information System		$4,000,000	$0	$4,000,000		2007-2030
SJ07-10022	Tier II			Various	Regional ITS configuration Management/Coordination Plan	Develop logical data exchange network partnerships		$300,000	$0	$300,000		2007-2030
								$40,350,000	**$0**	**$40,350,000**		

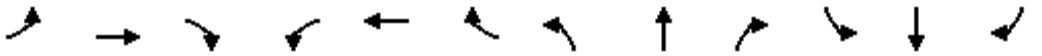
APPENDIX B

LEVEL OF SERVICE CALCULATION WORKSHEETS

EXISTING CONDITIONS
LEVEL OF SERVICE CALCULATION WORKSHEETS

INTERSECTIONS #3 – 9 AM & PM

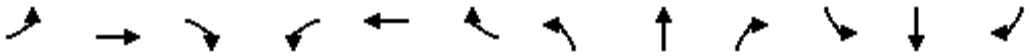
REFER TO CITY OF TRACY GENERAL PLAN (2/1/11) FOR EXISTING CONDITIONS LOS CALCULATIONS



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	143	0	98	13	103	0	0	472	247
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	0	147	0	101	13	106	0	0	487	255
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	620	620	487	620	620	106	487			106		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	620	620	487	620	620	106	487			106		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	63	100	89	99			100		
cM capacity (veh/h)	354	399	581	397	399	948	1076			1485		

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	248	120	487	255
Volume Left	147	13	0	0
Volume Right	101	0	0	255
cSH	520	1076	1700	1700
Volume to Capacity	0.48	0.01	0.29	0.15
Queue Length 95th (ft)	64	1	0	0
Control Delay (s)	18.1	1.0	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	18.1	1.0	0.0	
Approach LOS	C			

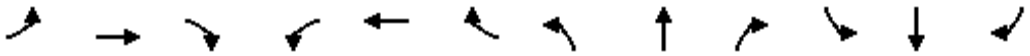
Intersection Summary				
Average Delay	4.2			
Intersection Capacity Utilization	45.4%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	64	0	8	0	0	0	0	52	13	71	544	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	67	0	8	0	0	0	0	54	14	74	567	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	776	782	567	776	776	61	567			68		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	776	782	567	776	776	61	567			68		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	78	100	98	100	100	100	100			95		
cM capacity (veh/h)	303	310	523	298	313	1004	1005			1534		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	75	68	641
Volume Left	67	0	74
Volume Right	8	14	0
cSH	318	1700	1534
Volume to Capacity	0.24	0.04	0.05
Queue Length 95th (ft)	22	0	4
Control Delay (s)	19.8	0.0	1.3
Lane LOS	C		A
Approach Delay (s)	19.8	0.0	1.3
Approach LOS	C		

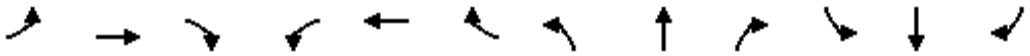
Intersection Summary				
Average Delay	3.0			
Intersection Capacity Utilization	49.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	194	3	78	1	46	0	0	201	209
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85
Hourly flow rate (vph)	0	0	0	228	4	92	1	54	0	0	236	246
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	418	416	359	416	539	54	482			54		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	418	416	359	416	539	54	482			54		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	58	99	91	100			100		
cM capacity (veh/h)	493	527	685	547	449	1013	1080			1551		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	324	55	482
Volume Left	228	1	0
Volume Right	92	0	246
cSH	627	1080	1700
Volume to Capacity	0.52	0.00	0.28
Queue Length 95th (ft)	74	0	0
Control Delay (s)	16.7	0.2	0.0
Lane LOS	C	A	
Approach Delay (s)	16.7	0.2	0.0
Approach LOS	C		

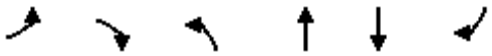
Intersection Summary				
Average Delay	6.3			
Intersection Capacity Utilization	45.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	0	7	0	0	0	0	9	2	39	356	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	45	0	8	0	0	0	0	11	2	46	424	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	529	530	424	529	529	12	424			13		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	529	530	424	529	529	12	424			13		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	100	99	100	100	100	100			97		
cM capacity (veh/h)	450	442	630	444	442	1069	1135			1605		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	54	13	470
Volume Left	45	0	46
Volume Right	8	2	0
cSH	471	1700	1605
Volume to Capacity	0.11	0.01	0.03
Queue Length 95th (ft)	10	0	2
Control Delay (s)	13.6	0.0	1.0
Lane LOS	B		A
Approach Delay (s)	13.6	0.0	1.0
Approach LOS	B		

Intersection Summary				
Average Delay	2.2			
Intersection Capacity Utilization	37.6%	ICU Level of Service	A	
Analysis Period (min)	15			



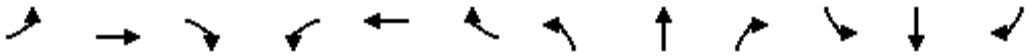
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	1	18	42	21	27	1
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.65	0.65	0.65	0.65	0.65	0.65
Hourly flow rate (vph)	2	28	65	32	42	2
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	204	42	43			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	204	42	43			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	97	96			
cM capacity (veh/h)	752	1028	1566			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	29	97	43
Volume Left	2	65	0
Volume Right	28	0	2
cSH	1009	1566	1700
Volume to Capacity	0.03	0.04	0.03
Queue Length 95th (ft)	2	3	0
Control Delay (s)	8.7	5.0	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	5.0	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	20.1%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
20: Arbor Ave & MACARTHUR DRIVE (N)

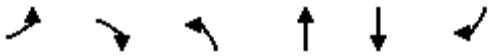
4/8/2010



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	7	5	22	14	25	4	64	21	5	2	24	8
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	8	6	25	16	28	5	73	24	6	2	27	9

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	39	49	102	39
Volume Left (vph)	8	16	73	2
Volume Right (vph)	25	5	6	9
Hadj (s)	-0.31	0.04	0.14	-0.10
Departure Headway (s)	4.0	4.3	4.3	4.1
Degree Utilization, x	0.04	0.06	0.12	0.04
Capacity (veh/h)	872	806	817	851
Control Delay (s)	7.1	7.6	7.9	7.3
Approach Delay (s)	7.1	7.6	7.9	7.3
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.6			
HCM Level of Service	A			
Intersection Capacity Utilization	22.1%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	25	25	25	80	103	25
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	27	27	87	112	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	267	126	139			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	267	126	139			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	98			
cM capacity (veh/h)	709	925	1444			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	54	114	139
Volume Left	27	27	0
Volume Right	27	0	27
cSH	803	1444	1700
Volume to Capacity	0.07	0.02	0.08
Queue Length 95th (ft)	5	1	0
Control Delay (s)	9.8	1.9	0.0
Lane LOS	A	A	
Approach Delay (s)	9.8	1.9	0.0
Approach LOS	A		

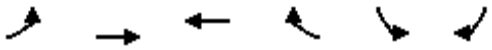
Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	25.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Sign Control	Stop			Stop	Stop	
Volume (vph)	185	34	67	172	75	71
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	201	37	73	187	82	77

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total (vph)	238	73	187	159
Volume Left (vph)	0	73	0	82
Volume Right (vph)	37	0	0	77
Hadj (s)	-0.06	0.53	0.03	-0.16
Departure Headway (s)	4.7	5.7	5.2	4.9
Degree Utilization, x	0.31	0.11	0.27	0.22
Capacity (veh/h)	732	609	671	678
Control Delay (s)	9.8	8.2	8.9	9.3
Approach Delay (s)	9.8	8.7		9.3
Approach LOS	A	A		A

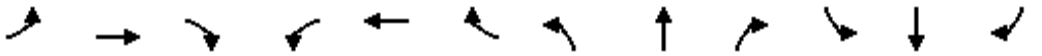
Intersection Summary			
Delay	9.2		
HCM Level of Service	A		
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	14	397	406	11	19	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	15	418	427	12	20	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			492			
pX, platoon unblocked						
vC, conflicting volume	439				881	433
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	439				881	433
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	98
cM capacity (veh/h)	1121				313	623

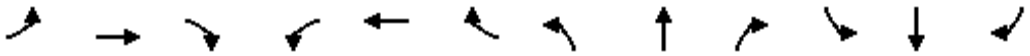
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	433	439	34
Volume Left	15	0	20
Volume Right	0	12	14
cSH	1121	1700	392
Volume to Capacity	0.01	0.26	0.09
Queue Length 95th (ft)	1	0	7
Control Delay (s)	0.4	0.0	15.0
Lane LOS	A		C
Approach Delay (s)	0.4	0.0	15.0
Approach LOS			C

Intersection Summary			
Average Delay	0.8		
Intersection Capacity Utilization	42.2%	ICU Level of Service	A
Analysis Period (min)	15		



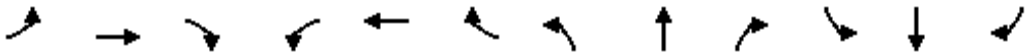
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	56	176	153	140	360	47	293	234	107	32	135	111
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.94	0.95	1.00	1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3478		4990	3539	1583	1770	3300	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3478		4990	3539	1583	1770	3300	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	61	191	166	152	391	51	318	254	116	35	147	121
RTOR Reduction (vph)	0	0	121	0	11	0	0	0	82	0	91	0
Lane Group Flow (vph)	61	191	45	152	431	0	318	254	34	35	177	0
Turn Type	Prot		Perm	Prot			Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4						2			
Actuated Green, G (s)	3.4	14.6	14.6	5.0	16.2		4.0	15.7	15.7	1.5	13.2	
Effective Green, g (s)	5.4	16.6	16.6	7.0	18.2		6.0	17.7	17.7	3.5	15.2	
Actuated g/C Ratio	0.09	0.27	0.27	0.12	0.30		0.10	0.29	0.29	0.06	0.25	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	157	966	432	204	1041		492	1030	461	102	825	
v/s Ratio Prot	0.03	0.05		c0.09	c0.12		c0.06	c0.07		0.02	0.05	
v/s Ratio Perm			0.03						0.02			
v/c Ratio	0.39	0.20	0.10	0.75	0.41		0.65	0.25	0.07	0.34	0.21	
Uniform Delay, d1	26.1	17.0	16.5	26.0	17.0		26.4	16.5	15.6	27.5	18.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.6	0.1	0.1	13.7	0.3		2.9	0.1	0.1	2.0	0.1	
Delay (s)	27.7	17.1	16.6	39.8	17.3		29.3	16.6	15.7	29.6	18.2	
Level of Service	C	B	B	D	B		C	B	B	C	B	
Approach Delay (s)		18.5			23.1			22.3			19.5	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM Average Control Delay	21.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	60.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	88	210	107	115	229	83	108	320	129	49	337	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.95		1.00	0.96		1.00	0.96		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3360		1770	3398		1770	3387		1770	3472	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3360		1770	3398		1770	3387		1770	3472	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	96	228	116	125	249	90	117	348	140	53	366	53
RTOR Reduction (vph)	0	92	0	0	53	0	0	53	0	0	15	0
Lane Group Flow (vph)	96	252	0	125	286	0	117	435	0	53	404	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	4.5	9.9		4.5	9.9		4.5	16.2		2.3	13.5	
Effective Green, g (s)	5.0	10.4		5.0	10.4		5.0	17.2		2.3	14.5	
Actuated g/C Ratio	0.10	0.20		0.10	0.20		0.10	0.34		0.05	0.28	
Clearance Time (s)	4.5	4.5		4.5	4.5		4.5	5.0		4.0	5.0	
Vehicle Extension (s)	1.0	3.5		1.0	3.5		1.0	3.5		3.0	3.5	
Lane Grp Cap (vph)	174	687		174	694		174	1145		80	989	
v/s Ratio Prot	0.05	0.08		c0.07	c0.08		c0.07	c0.13		0.03	0.12	
v/s Ratio Perm												
v/c Ratio	0.55	0.37		0.72	0.41		0.67	0.38		0.66	0.41	
Uniform Delay, d1	21.9	17.4		22.3	17.6		22.2	12.8		23.9	14.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.1	0.4		11.2	0.5		7.8	0.3		18.7	0.3	
Delay (s)	24.0	17.8		33.4	18.1		29.9	13.0		42.6	15.1	
Level of Service	C	B		C	B		C	B		D	B	
Approach Delay (s)		19.2			22.2			16.3			18.2	
Approach LOS		B			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	50.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



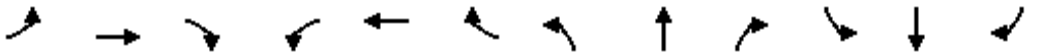
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	217	215	79	45	288	59	47	112	36	84	138	242
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.97		1.00	0.96		1.00	0.90	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3397		1770	3449		1770	3411		1770	3201	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3397		1770	3449		1770	3411		1770	3201	
Peak-hour factor, PHF	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78	0.78
Adj. Flow (vph)	278	276	101	58	369	76	60	144	46	108	177	310
RTOR Reduction (vph)	0	44	0	0	23	0	0	39	0	0	249	0
Lane Group Flow (vph)	278	333	0	58	422	0	60	151	0	108	238	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	13.5	24.1		3.4	14.0		3.1	9.4		5.1	11.4	
Effective Green, g (s)	13.5	24.1		3.4	14.0		3.1	9.4		5.1	11.4	
Actuated g/C Ratio	0.23	0.42		0.06	0.24		0.05	0.16		0.09	0.20	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	412	1412		104	833		95	553		156	629	
v/s Ratio Prot	c0.16	0.10		0.03	c0.12		0.03	0.04		c0.06	c0.07	
v/s Ratio Perm												
v/c Ratio	0.67	0.24		0.56	0.51		0.63	0.27		0.69	0.38	
Uniform Delay, d1	20.3	11.0		26.6	19.0		26.9	21.3		25.7	20.2	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.3	0.1		6.3	0.5		12.9	0.3		12.5	0.4	
Delay (s)	24.6	11.1		32.9	19.5		39.8	21.6		38.2	20.6	
Level of Service	C	B		C	B		D	C		D	C	
Approach Delay (s)		16.8			21.1			25.9			23.8	
Approach LOS		B			C			C			C	

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	58.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



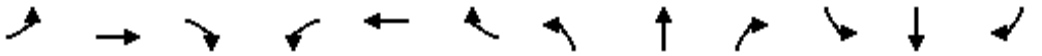
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	272	63	72	376	16	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	296	68	78	409	17	13
RTOR Reduction (vph)	0	44	0	0	0	10
Lane Group Flow (vph)	296	24	78	409	17	3
Turn Type		Perm	Prot			Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Actuated Green, G (s)	10.8	10.8	1.8	16.6	6.3	6.3
Effective Green, g (s)	10.8	10.8	1.8	16.6	6.3	6.3
Actuated g/C Ratio	0.35	0.35	0.06	0.54	0.20	0.20
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	651	553	103	1001	361	323
v/s Ratio Prot	0.16		c0.04	c0.22	c0.01	
v/s Ratio Perm		0.02				0.00
v/c Ratio	0.45	0.04	0.76	0.41	0.05	0.01
Uniform Delay, d1	7.8	6.6	14.3	4.2	9.9	9.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	0.0	26.7	0.3	0.1	0.0
Delay (s)	8.3	6.7	41.1	4.5	9.9	9.8
Level of Service	A	A	D	A	A	A
Approach Delay (s)	8.0			10.4	9.9	
Approach LOS	A			B	A	

Intersection Summary			
HCM Average Control Delay	9.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	30.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	31.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



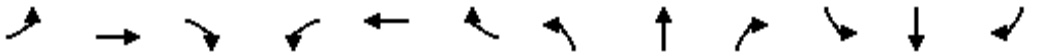
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	8	172	16	170	1205	24	37	31	30	19	69	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	1.00	0.91	1.00	0.97	0.95	1.00	0.97	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	1770	5085	1583	3433	3539	1583	3433	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	1770	5085	1583	3433	3539	1583	3433	1863	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	187	17	185	1310	26	40	34	33	21	75	190
RTOR Reduction (vph)	0	0	12	0	0	7	0	0	26	0	0	154
Lane Group Flow (vph)	9	187	5	185	1310	19	40	34	7	21	75	36
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	1.1	17.4	17.4	9.9	26.2	26.2	2.5	11.6	11.6	1.1	10.2	10.2
Effective Green, g (s)	3.2	19.5	19.5	12.0	28.3	28.3	4.6	13.7	13.7	3.2	12.3	12.3
Actuated g/C Ratio	0.05	0.30	0.30	0.19	0.44	0.44	0.07	0.21	0.21	0.05	0.19	0.19
Clearance Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	171	1540	479	330	2235	696	245	753	337	171	356	302
v/s Ratio Prot	0.00	0.04		c0.10	c0.26		c0.01	0.01		0.01	c0.04	
v/s Ratio Perm			0.00			0.01			0.00			0.02
v/c Ratio	0.05	0.12	0.01	0.56	0.59	0.03	0.16	0.05	0.02	0.12	0.21	0.12
Uniform Delay, d1	29.2	16.2	15.7	23.8	13.6	10.2	28.1	20.2	20.0	29.3	22.0	21.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.0	0.0	2.2	0.4	0.0	0.3	0.0	0.0	0.3	0.3	0.2
Delay (s)	29.3	16.3	15.7	26.0	14.0	10.3	28.4	20.2	20.1	29.6	22.3	21.7
Level of Service	C	B	B	C	B	B	C	C	C	C	C	C
Approach Delay (s)		16.8			15.4			23.2			22.5	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	16.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	64.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



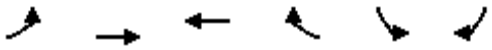
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	82	267	73	140	482	209	508	996	135	419	564	109
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	89	290	79	152	524	227	552	1083	147	455	613	118
RTOR Reduction (vph)	0	0	63	0	0	174	0	0	57	0	0	79
Lane Group Flow (vph)	89	290	16	152	524	53	552	1083	90	455	613	39
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases			2			6			4			8
Actuated Green, G (s)	4.6	15.9	15.9	6.1	17.4	17.4	14.2	32.8	32.8	8.1	26.7	26.7
Effective Green, g (s)	6.6	17.9	17.9	8.1	19.4	19.4	16.2	34.8	34.8	10.1	28.7	28.7
Actuated g/C Ratio	0.08	0.21	0.21	0.09	0.22	0.22	0.19	0.40	0.40	0.12	0.33	0.33
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	261	1047	326	320	1135	353	640	1417	634	399	1169	523
v/s Ratio Prot	0.03	0.06		c0.04	c0.10		c0.16	c0.31		c0.13	0.17	
v/s Ratio Perm			0.01			0.03			0.06			0.02
v/c Ratio	0.34	0.28	0.05	0.47	0.46	0.15	0.86	0.76	0.14	1.14	0.52	0.07
Uniform Delay, d1	38.1	29.1	27.7	37.4	29.2	27.1	34.3	22.5	16.6	38.4	23.6	20.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.1	0.1	1.1	0.3	0.2	11.5	2.5	0.1	89.1	0.4	0.1
Delay (s)	38.9	29.2	27.7	38.5	29.5	27.3	45.8	25.0	16.7	127.5	24.0	20.0
Level of Service	D	C	C	D	C	C	D	C	B	F	C	C
Approach Delay (s)		30.8			30.5			30.8			63.3	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



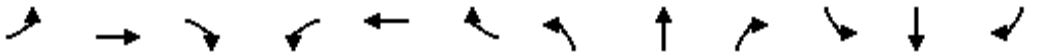
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	390	243	177	399	142	279	503	152	95	377	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	424	264	192	434	154	303	547	165	103	410	171
RTOR Reduction (vph)	0	0	198	0	0	111	0	0	117	0	0	113
Lane Group Flow (vph)	130	424	66	192	434	43	303	547	48	103	410	58
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Actuated Green, G (s)	5.8	14.5	14.5	7.5	16.2	16.2	6.1	17.0	17.0	4.6	15.5	15.5
Effective Green, g (s)	6.8	16.5	16.5	8.5	18.2	18.2	7.1	19.0	19.0	5.6	17.5	17.5
Actuated g/C Ratio	0.10	0.25	0.25	0.13	0.28	0.28	0.11	0.29	0.29	0.09	0.27	0.27
Clearance Time (s)	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0	5.0	6.0	6.0
Vehicle Extension (s)	2.0	2.5	2.5	2.0	2.5	2.5	2.0	2.0	2.0	2.0	2.0	2.0
Lane Grp Cap (vph)	356	890	398	445	982	439	372	1025	458	293	944	422
v/s Ratio Prot	0.04	0.12		c0.06	c0.12		c0.09	c0.15		0.03	0.12	
v/s Ratio Perm			0.04			0.03			0.03			0.04
v/c Ratio	0.37	0.48	0.17	0.43	0.44	0.10	0.81	0.53	0.10	0.35	0.43	0.14
Uniform Delay, d1	27.4	20.9	19.2	26.3	19.5	17.6	28.6	19.6	17.1	28.3	19.9	18.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.3	0.1	0.2	0.2	0.1	12.2	0.3	0.0	0.3	0.1	0.1
Delay (s)	27.6	21.2	19.3	26.6	19.7	17.7	40.8	19.8	17.1	28.6	20.1	18.4
Level of Service	C	C	B	C	B	B	D	B	B	C	C	B
Approach Delay (s)		21.6			21.0			25.7			20.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	65.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	48.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



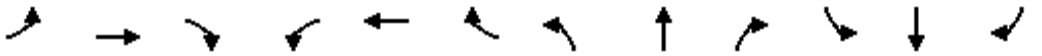
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	0	550	906	93	77	99
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0
Lane Util. Factor		0.95	0.95		1.00	1.00
Frt		1.00	0.99		1.00	0.85
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		3539	3490		1770	1583
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		3539	3490		1770	1583
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	0	632	1041	107	89	114
RTOR Reduction (vph)	0	0	22	0	0	77
Lane Group Flow (vph)	0	632	1126	0	89	37
Turn Type						Perm
Protected Phases		4	8		6	
Permitted Phases						6
Actuated Green, G (s)		16.6	16.6		7.1	7.1
Effective Green, g (s)		16.6	16.6		7.1	7.1
Actuated g/C Ratio		0.52	0.52		0.22	0.22
Clearance Time (s)		4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		1853	1828		396	355
v/s Ratio Prot		0.18	c0.32		c0.05	
v/s Ratio Perm						0.02
v/c Ratio		0.34	0.62		0.22	0.10
Uniform Delay, d1		4.4	5.3		10.1	9.8
Progression Factor		1.00	1.00		1.00	1.00
Incremental Delay, d2		0.1	0.6		0.3	0.1
Delay (s)		4.5	5.9		10.3	9.9
Level of Service		A	A		B	A
Approach Delay (s)		4.5	5.9		10.1	
Approach LOS		A	A		B	

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	31.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



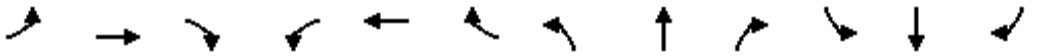
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	462	94	483	758	11	203	29	628	1	18	27
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00		1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		0.96	1.00		1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583		1785	1583		1858	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00		0.74	1.00		0.99	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583		1375	1583		1842	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	27	502	102	525	824	12	221	32	683	1	20	29
RTOR Reduction (vph)	0	0	80	0	0	5	0	0	4	0	0	0
Lane Group Flow (vph)	27	502	22	525	824	7	0	253	679	0	21	29
Turn Type	Prot		Perm	Prot		Perm	Perm		pm+ov	Perm		Free
Protected Phases	7	4		3	8			2	3		6	
Permitted Phases			4			8	2		2	6		Free
Actuated Green, G (s)	1.8	14.9	14.9	24.4	37.5	37.5		17.4	41.8		17.4	68.7
Effective Green, g (s)	1.8	14.9	14.9	24.4	37.5	37.5		17.4	41.8		17.4	68.7
Actuated g/C Ratio	0.03	0.22	0.22	0.36	0.55	0.55		0.25	0.61		0.25	1.00
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)	46	768	343	629	1932	864		348	1055		467	1583
v/s Ratio Prot	0.02	c0.14		c0.30	0.23				c0.23			
v/s Ratio Perm			0.01			0.00		c0.18	0.20		0.01	0.02
v/c Ratio	0.59	0.65	0.06	0.83	0.43	0.01		0.73	0.64		0.04	0.02
Uniform Delay, d1	33.1	24.5	21.4	20.3	9.2	7.1		23.5	8.7		19.4	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00
Incremental Delay, d2	17.7	2.0	0.1	9.3	0.2	0.0		7.4	1.4		0.0	0.0
Delay (s)	50.8	26.6	21.4	29.6	9.4	7.1		30.9	10.0		19.4	0.0
Level of Service	D	C	C	C	A	A		C	B		B	A
Approach Delay (s)		26.8			17.2			15.6			8.2	
Approach LOS		C			B			B			A	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	68.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	69.0%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



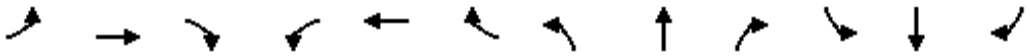
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	30	21	162	28	448	15	490	69	194	310	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95		0.97	0.95	
Frt	1.00	1.00	0.85	1.00	0.86		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3039		1770	3474		3433	3493	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3039		1770	3474		3433	3493	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	33	23	176	30	487	16	533	75	211	337	32
RTOR Reduction (vph)	0	0	21	0	220	0	0	13	0	0	7	0
Lane Group Flow (vph)	46	33	2	176	297	0	16	595	0	211	362	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	2.0	5.2	5.2	9.8	13.0		0.6	18.0		7.3	24.7	
Effective Green, g (s)	2.0	5.2	5.2	9.8	13.0		0.6	18.0		7.3	24.7	
Actuated g/C Ratio	0.04	0.09	0.09	0.17	0.23		0.01	0.32		0.13	0.44	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	63	327	146	308	702		19	1111		445	1532	
v/s Ratio Prot	0.03	0.01		c0.10	c0.10		0.01	c0.17		c0.06	0.10	
v/s Ratio Perm			0.00									
v/c Ratio	0.73	0.10	0.01	0.57	0.42		0.84	0.54		0.47	0.24	
Uniform Delay, d1	26.9	23.4	23.2	21.3	18.5		27.8	15.7		22.7	9.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	34.9	0.1	0.0	2.6	0.4		131.7	0.5		0.8	0.1	
Delay (s)	61.8	23.5	23.3	23.9	18.9		159.5	16.2		23.5	10.0	
Level of Service	E	C	C	C	B		F	B		C	A	
Approach Delay (s)		40.7			20.1			19.9			14.9	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM Average Control Delay	19.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	56.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	53.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	235	275	27	97	327	156	62	382	67	123	244	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	0.99		1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3492		1770	3367		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3492		1770	3367		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	255	299	29	105	355	170	67	415	73	134	265	147
RTOR Reduction (vph)	0	9	0	0	81	0	0	0	56	0	0	107
Lane Group Flow (vph)	255	319	0	105	444	0	67	415	17	134	265	40
Turn Type	Prot			Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	11.1	18.1		7.0	14.0		3.4	14.1	14.1	6.1	16.8	16.8
Effective Green, g (s)	11.1	18.1		7.0	14.0		3.4	14.1	14.1	6.1	16.8	16.8
Actuated g/C Ratio	0.18	0.30		0.11	0.23		0.06	0.23	0.23	0.10	0.27	0.27
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	321	1031		202	769		98	814	364	176	970	434
v/s Ratio Prot	c0.14	0.09		0.06	c0.13		0.04	c0.12		c0.08	c0.07	
v/s Ratio Perm									0.01			0.03
v/c Ratio	0.79	0.31		0.52	0.58		0.68	0.51	0.05	0.76	0.27	0.09
Uniform Delay, d1	24.0	16.8		25.6	21.0		28.4	20.6	18.4	26.9	17.5	16.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.7	0.2		2.3	1.1		17.9	0.5	0.1	17.5	0.2	0.1
Delay (s)	36.7	16.9		27.8	22.1		46.3	21.1	18.4	44.4	17.6	16.7
Level of Service	D	B		C	C		D	C	B	D	B	B
Approach Delay (s)		25.6			23.0			23.8			23.9	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	61.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	71	202	118	5	144	29	227	425	14	24	334	71
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	83	235	137	6	167	34	264	494	16	28	388	83

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	317	137	207	264	510	28	471
Volume Left (vph)	83	0	6	264	0	28	0
Volume Right (vph)	0	137	34	0	16	0	83
Hadj (s)	0.16	-0.67	-0.06	0.53	0.01	0.53	-0.09
Departure Headway (s)	8.9	8.1	9.4	8.9	8.4	9.1	8.5
Degree Utilization, x	0.78	0.31	0.54	0.65	1.19	0.07	1.11
Capacity (veh/h)	399	440	368	396	435	388	434
Control Delay (s)	36.1	13.4	22.8	25.8	130.8	11.6	103.1
Approach Delay (s)	29.3		22.8	95.0		98.0	
Approach LOS	D		C	F		F	

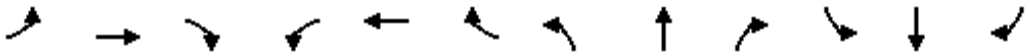
Intersection Summary				
Delay	72.6			
HCM Level of Service	F			
Intersection Capacity Utilization	72.0%	ICU Level of Service	C	
Analysis Period (min)	15			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	6	261	12	11	59	1
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	284	13	12	64	1
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	148	19			25	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	148	19			25	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	73			96	
cM capacity (veh/h)	810	1059			1589	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	290	25	65
Volume Left	7	0	64
Volume Right	284	12	0
cSH	1052	1700	1589
Volume to Capacity	0.28	0.01	0.04
Queue Length 95th (ft)	28	0	3
Control Delay (s)	9.7	0.0	7.2
Lane LOS	A		A
Approach Delay (s)	9.7	0.0	7.2
Approach LOS	A		

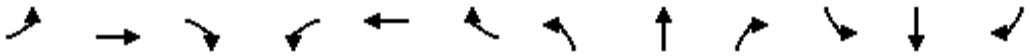
Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	33.1%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	3	51	21	78	214	87	42	160	13	55	140	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	3	55	23	85	233	95	46	174	14	60	152	4

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	82	412	234	216
Volume Left (vph)	3	85	46	60
Volume Right (vph)	23	95	14	4
Hadj (s)	-0.13	-0.06	0.04	0.08
Departure Headway (s)	5.8	5.3	5.7	5.8
Degree Utilization, x	0.13	0.61	0.37	0.35
Capacity (veh/h)	528	646	573	566
Control Delay (s)	9.7	16.1	12.1	11.9
Approach Delay (s)	9.7	16.1	12.1	11.9
Approach LOS	A	C	B	B

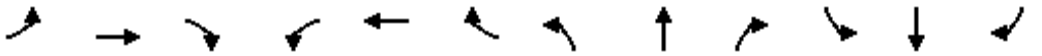
Intersection Summary				
Delay	13.6			
HCM Level of Service	B			
Intersection Capacity Utilization	50.6%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	75	110	9	40	161	140	9	151	63	83	124	91
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	82	120	10	43	175	152	10	164	68	90	135	99

Direction, Lane #	EB 1	EB 2	WB 1	NB 1	NB 2	SB 1	SB 2
Volume Total (vph)	82	129	371	10	233	90	234
Volume Left (vph)	82	0	43	10	0	90	0
Volume Right (vph)	0	10	152	0	68	0	99
Hadj (s)	0.53	-0.02	-0.19	0.53	-0.17	0.53	-0.26
Departure Headway (s)	7.6	7.0	6.5	7.6	6.9	7.5	6.7
Degree Utilization, x	0.17	0.25	0.66	0.02	0.44	0.19	0.43
Capacity (veh/h)	435	469	537	441	479	452	499
Control Delay (s)	11.0	11.2	21.3	9.6	14.1	11.0	13.4
Approach Delay (s)	11.1		21.3	13.9		12.7	
Approach LOS	B		C	B		B	

Intersection Summary				
Delay	15.5			
HCM Level of Service	C			
Intersection Capacity Utilization	52.3%	ICU Level of Service		A
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	164	17	31	263	38	30	97	32	30	105	107
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1203	1249		1203	1243		1203	1220		1203	1267	1077
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1203	1249		1203	1243		1203	1220		1203	1267	1077
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	91	180	19	34	289	42	33	107	35	33	115	118
RTOR Reduction (vph)	0	5	0	0	7	0	0	20	0	0	0	91
Lane Group Flow (vph)	91	194	0	34	324	0	33	122	0	33	115	27
Heavy Vehicles (%)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Turn Type	Prot			Prot			Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												6
Actuated Green, G (s)	4.5	22.8		1.2	19.5		1.2	11.3		2.2	12.3	12.3
Effective Green, g (s)	4.5	22.8		1.2	19.5		1.2	11.3		2.2	12.3	12.3
Actuated g/C Ratio	0.08	0.43		0.02	0.36		0.02	0.21		0.04	0.23	0.23
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	101	532		27	453		27	258		49	291	248
v/s Ratio Prot	c0.08	c0.16		0.03	c0.26		c0.03	c0.10		0.03	0.09	
v/s Ratio Perm												0.03
v/c Ratio	0.90	0.36		1.26	0.72		1.22	0.47		0.67	0.40	0.11
Uniform Delay, d1	24.3	10.4		26.2	14.6		26.2	18.5		25.3	17.4	16.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	58.8	0.4		261.3	5.3		247.9	1.4		30.8	0.9	0.2
Delay (s)	83.0	10.9		287.4	19.9		274.1	19.9		56.1	18.3	16.5
Level of Service	F	B		F	B		F	B		E	B	B
Approach Delay (s)		33.5			44.8			67.8			22.2	
Approach LOS		C			D			E			C	

Intersection Summary			
HCM Average Control Delay	40.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	53.5	Sum of lost time (s)	20.0
Intersection Capacity Utilization	44.5%	ICU Level of Service	A
Analysis Period (min)	15		

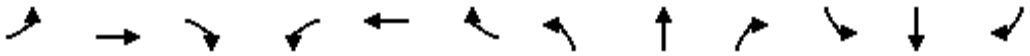
c Critical Lane Group



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	143	58	66	40	57	238
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (vph)	162	66	75	45	65	270
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	498	98			120	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	498	98			120	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	68	93			96	
cM capacity (veh/h)	508	958			1467	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	228	120	335
Volume Left	162	0	65
Volume Right	66	45	0
cSH	588	1700	1467
Volume to Capacity	0.39	0.07	0.04
Queue Length 95th (ft)	46	0	3
Control Delay (s)	15.0	0.0	1.8
Lane LOS	B		A
Approach Delay (s)	15.0	0.0	1.8
Approach LOS	B		

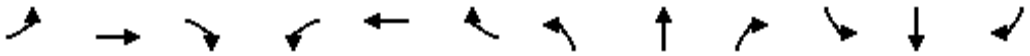
Intersection Summary			
Average Delay		5.9	
Intersection Capacity Utilization		40.5%	ICU Level of Service A
Analysis Period (min)		15	



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	14	41	31	27	102	146	32	14	25	157	19	68
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Hourly flow rate (vph)	17	51	38	33	126	180	40	17	31	194	23	84

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	106	340	88	301
Volume Left (vph)	17	33	40	194
Volume Right (vph)	38	180	31	84
Hadj (s)	-0.15	-0.26	-0.09	0.00
Departure Headway (s)	5.3	4.9	5.5	5.2
Degree Utilization, x	0.16	0.46	0.13	0.43
Capacity (veh/h)	604	696	578	649
Control Delay (s)	9.3	11.9	9.3	12.1
Approach Delay (s)	9.3	11.9	9.3	12.1
Approach LOS	A	B	A	B

Intersection Summary				
Delay	11.4			
HCM Level of Service	B			
Intersection Capacity Utilization	45.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	1	88	10	1	16	70	254	6	9	367	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.86		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1599		1770	5066		1770	5032	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1599		1770	5066		1770	5032	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	1	96	11	1	17	76	276	7	10	399	30
RTOR Reduction (vph)	0	0	84	0	16	0	0	3	0	0	12	0
Lane Group Flow (vph)	87	1	12	11	2	0	76	280	0	10	417	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	4.2	4.9	4.9	0.6	1.3		2.3	17.6		0.6	15.9	
Effective Green, g (s)	4.2	4.9	4.9	0.6	1.3		2.3	17.6		0.6	15.9	
Actuated g/C Ratio	0.11	0.12	0.12	0.02	0.03		0.06	0.44		0.02	0.40	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	187	230	195	27	52		103	2246		27	2015	
v/s Ratio Prot	c0.05	0.00		0.01	0.00		c0.04	0.06		0.01	c0.08	
v/s Ratio Perm			c0.01									
v/c Ratio	0.47	0.00	0.06	0.41	0.03		0.74	0.12		0.37	0.21	
Uniform Delay, d1	16.7	15.3	15.4	19.4	18.6		18.4	6.5		19.4	7.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.0	0.1	9.7	0.2		23.8	0.0		8.4	0.1	
Delay (s)	18.5	15.3	15.5	29.1	18.8		42.2	6.5		27.7	7.8	
Level of Service	B	B	B	C	B		D	A		C	A	
Approach Delay (s)		16.9			22.7			14.1			8.3	
Approach LOS		B			C			B			A	

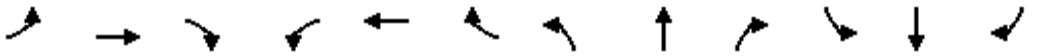
Intersection Summary			
HCM Average Control Delay	12.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.26		
Actuated Cycle Length (s)	39.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	32.7%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	223	773	78	50	106	84
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	242	840	85	54	115	91
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		1325	0	1002	905
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		1325	0	1002	905
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	85		36	95	0	61
cM capacity (veh/h)	1623		132	1085	92	235

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	1083	139	115	91
Volume Left	242	0	115	0
Volume Right	840	54	0	0
cSH	1623	202	92	235
Volume to Capacity	0.15	0.69	1.25	0.39
Queue Length 95th (ft)	13	108	204	43
Control Delay (s)	3.4	55.1	258.8	29.7
Lane LOS	A	F	F	D
Approach Delay (s)	3.4	55.1	157.5	
Approach LOS		F	F	

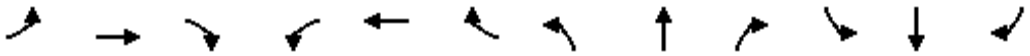
Intersection Summary			
Average Delay	30.8		
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	15	0	50	27	514	0	0	217	102
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Hourly flow rate (vph)	0	0	0	17	0	58	31	598	0	0	252	119
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	913	913	252	913	913	598	252			598		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	913	913	252	913	913	598	252			598		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	93	100	88	98			100		
cM capacity (veh/h)	221	267	786	250	267	502	1313			979		

Direction, Lane #	WB 1	NB 1	SB 1	SB 2
Volume Total	76	629	252	119
Volume Left	17	31	0	0
Volume Right	58	0	0	119
cSH	407	1313	1700	1700
Volume to Capacity	0.19	0.02	0.15	0.07
Queue Length 95th (ft)	17	2	0	0
Control Delay (s)	15.8	0.7	0.0	0.0
Lane LOS	C	A		
Approach Delay (s)	15.8	0.7	0.0	
Approach LOS	C			

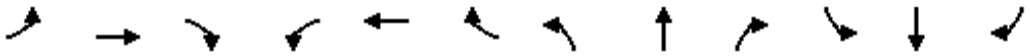
Intersection Summary				
Average Delay	1.5			
Intersection Capacity Utilization	53.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	198	0	93	0	0	0	0	343	265	165	67	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	208	0	98	0	0	0	0	361	279	174	71	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	918	1058	71	918	918	501	71			640		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	918	1058	71	918	918	501	71			640		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	4	100	90	100	100	100	100			82		
cM capacity (veh/h)	216	183	992	195	221	570	1530			944		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	306	640	244
Volume Left	208	0	174
Volume Right	98	279	0
cSH	289	1700	944
Volume to Capacity	1.06	0.38	0.18
Queue Length 95th (ft)	297	0	17
Control Delay (s)	109.8	0.0	7.4
Lane LOS	F		A
Approach Delay (s)	109.8	0.0	7.4
Approach LOS	F		

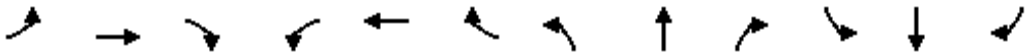
Intersection Summary				
Average Delay	29.8			
Intersection Capacity Utilization	73.6%	ICU Level of Service	D	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	0	56	2	6	9	312	0	0	80	43
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (vph)	0	0	0	62	2	7	10	343	0	0	88	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	475	474	112	474	498	343	135			343		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	475	474	112	474	498	343	135			343		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	100	88	100	99	99			100		
cM capacity (veh/h)	491	486	942	498	471	700	1449			1216		

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	70	353	135
Volume Left	62	10	0
Volume Right	7	0	47
cSH	511	1449	1700
Volume to Capacity	0.14	0.01	0.08
Queue Length 95th (ft)	12	1	0
Control Delay (s)	13.2	0.3	0.0
Lane LOS	B	A	
Approach Delay (s)	13.2	0.3	0.0
Approach LOS	B		

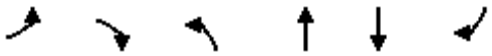
Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	33.9%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	181	0	3	0	0	0	0	140	321	75	61	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	189	0	3	0	0	0	0	146	334	78	64	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	533	700	64	533	533	313	64			480		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	533	700	64	533	533	313	64			480		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	56	100	100	100	100	100	100			93		
cM capacity (veh/h)	432	337	1001	431	420	727	1539			1082		

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	192	480	142
Volume Left	189	0	78
Volume Right	3	334	0
cSH	436	1700	1082
Volume to Capacity	0.44	0.28	0.07
Queue Length 95th (ft)	55	0	6
Control Delay (s)	19.6	0.0	5.0
Lane LOS	C		A
Approach Delay (s)	19.6	0.0	5.0
Approach LOS	C		

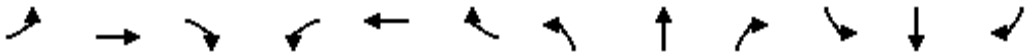
Intersection Summary				
Average Delay	5.5			
Intersection Capacity Utilization	54.7%	ICU Level of Service	A	
Analysis Period (min)	15			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	2	40	29	30	30	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	2	43	32	33	33	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	128	33	33			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	128	33	33			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	96	98			
cM capacity (veh/h)	849	1041	1579			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	46	64	33
Volume Left	2	32	0
Volume Right	43	0	0
cSH	1030	1579	1700
Volume to Capacity	0.04	0.02	0.02
Queue Length 95th (ft)	3	2	0
Control Delay (s)	8.7	3.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	3.7	0.0
Approach LOS	A		

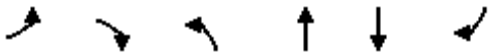
Intersection Summary			
Average Delay	4.4		
Intersection Capacity Utilization	19.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (vph)	14	22	67	12	9	1	28	12	16	2	33	12
Peak Hour Factor	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Hourly flow rate (vph)	17	27	81	14	11	1	34	14	19	2	40	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	124	27	67	57
Volume Left (vph)	17	14	34	2
Volume Right (vph)	81	1	19	14
Hadj (s)	-0.33	0.12	-0.04	-0.11
Departure Headway (s)	3.9	4.4	4.2	4.2
Degree Utilization, x	0.13	0.03	0.08	0.07
Capacity (veh/h)	898	784	811	826
Control Delay (s)	7.5	7.6	7.6	7.5
Approach Delay (s)	7.5	7.6	7.6	7.5
Approach LOS	A	A	A	A

Intersection Summary				
Delay	7.5			
HCM Level of Service	A			
Intersection Capacity Utilization	22.6%	ICU Level of Service	A	
Analysis Period (min)	15			



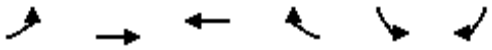
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	25	25	25	123	103	25
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	27	27	27	134	112	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	314	126	139			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	314	126	139			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	97	98			
cM capacity (veh/h)	666	925	1444			

Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	54	161	139
Volume Left	27	27	0
Volume Right	27	0	27
cSH	775	1444	1700
Volume to Capacity	0.07	0.02	0.08
Queue Length 95th (ft)	6	1	0
Control Delay (s)	10.0	1.4	0.0
Lane LOS	A	A	
Approach Delay (s)	10.0	1.4	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	28.1%	ICU Level of Service	A
Analysis Period (min)	15		

INTERSECTION #22 PM

REFER TO CITY OF TRACY GENERAL PLAN (2/1/11) FOR EXISTING CONDITIONS LOS CALCULATIONS



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	132	320	328	105	73	138
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	135	327	335	107	74	141
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			492			
pX, platoon unblocked						
vC, conflicting volume	442				984	388
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	442				984	388
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	88				69	79
cM capacity (veh/h)	1118				242	660

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	461	442	215
Volume Left	135	0	74
Volume Right	0	107	141
cSH	1118	1700	413
Volume to Capacity	0.12	0.26	0.52
Queue Length 95th (ft)	10	0	73
Control Delay (s)	3.4	0.0	22.8
Lane LOS	A		C
Approach Delay (s)	3.4	0.0	22.8
Approach LOS			C

Intersection Summary			
Average Delay	5.8		
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

INTERSECTIONS #25-27 PM

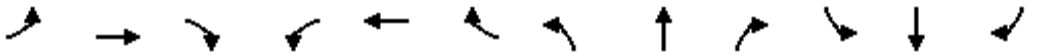
REFER TO CITY OF TRACY GENERAL PLAN (2/1/11) FOR EXISTING CONDITIONS LOS CALCULATIONS

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	486	14	9	194	70	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	1770	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	1770	1863	1770	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	528	15	10	211	76	37
RTOR Reduction (vph)	0	9	0	0	0	29
Lane Group Flow (vph)	528	6	10	211	76	8
Turn Type		Perm	Prot			Perm
Protected Phases	4		3	8	2	
Permitted Phases		4				2
Actuated Green, G (s)	13.8	13.8	0.5	18.3	7.2	7.2
Effective Green, g (s)	13.8	13.8	0.5	18.3	7.2	7.2
Actuated g/C Ratio	0.41	0.41	0.01	0.55	0.21	0.21
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	767	652	26	1018	380	340
v/s Ratio Prot	c0.28		0.01	c0.11	c0.04	
v/s Ratio Perm		0.00				0.01
v/c Ratio	0.69	0.01	0.38	0.21	0.20	0.02
Uniform Delay, d1	8.1	5.8	16.3	3.9	10.8	10.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.6	0.0	9.2	0.1	0.3	0.0
Delay (s)	10.7	5.8	25.6	4.0	11.0	10.4
Level of Service	B	A	C	A	B	B
Approach Delay (s)	10.5			5.0	10.8	
Approach LOS	B			A	B	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	33.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTIONS #29-45 PM

REFER TO CITY OF TRACY GENERAL PLAN (2/1/11) FOR EXISTING CONDITIONS LOS CALCULATIONS



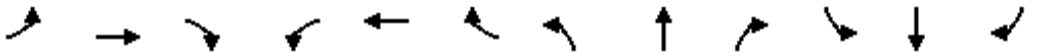
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	3	131	50	3	16	129	384	48	16	616	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	0.91		1.00	0.91	
Frt	1.00	1.00	0.85	1.00	0.87		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1625		1770	5001		1770	5024	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1625		1770	5001		1770	5024	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	70	3	142	54	3	17	140	417	52	17	670	59
RTOR Reduction (vph)	0	0	124	0	16	0	0	19	0	0	14	0
Lane Group Flow (vph)	70	3	18	54	4	0	140	450	0	17	715	0
Turn Type	Prot		Perm	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	4.4	5.9	5.9	1.3	2.8		4.2	22.8		0.6	19.2	
Effective Green, g (s)	4.4	5.9	5.9	1.3	2.8		4.2	22.8		0.6	19.2	
Actuated g/C Ratio	0.09	0.13	0.13	0.03	0.06		0.09	0.49		0.01	0.41	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	167	236	200	49	98		160	2447		23	2070	
v/s Ratio Prot	0.04	0.00		c0.03	0.00		c0.08	c0.09		0.01	c0.14	
v/s Ratio Perm			c0.01									
v/c Ratio	0.42	0.01	0.09	1.10	0.04		0.88	0.18		0.74	0.35	
Uniform Delay, d1	19.9	17.8	18.0	22.7	20.6		20.9	6.7		22.9	9.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.7	0.0	0.2	159.9	0.2		37.4	0.0		77.7	0.1	
Delay (s)	21.6	17.8	18.2	182.5	20.8		58.4	6.7		100.6	9.5	
Level of Service	C	B	B	F	C		E	A		F	A	
Approach Delay (s)		19.3			138.8			18.6			11.6	
Approach LOS		B			F			B			B	

Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	46.6	Sum of lost time (s)	20.0
Intersection Capacity Utilization	40.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

INTERSECTION #47 PM

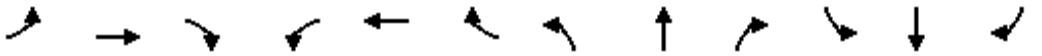
REFER TO CITY OF TRACY GENERAL PLAN (2/1/11) FOR EXISTING CONDITIONS LOS CALCULATIONS

FUTURE CONDITIONS (2035)
LEVEL OF SERVICE CALCULATION WORKSHEETS



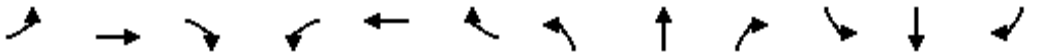
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	1800	0	675	0	1170	380	0	700	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.91	0.91	1.00		0.95	0.88		0.91	1.00
Frt				1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				3221	1610	1583		3539	2787		5085	1583
Flt Permitted				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3221	1610	1583		3539	2787		5085	1583
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	1800	0	675	0	1170	380	0	700	30
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	17
Lane Group Flow (vph)	0	0	0	1206	594	675	0	1170	380	0	700	13
Turn Type				Split		Free			pm+ov			Perm
Protected Phases				8	8			2	8		6	
Permitted Phases						Free			2			6
Actuated Green, G (s)				35.0	35.0	75.0		32.0	67.0		32.0	32.0
Effective Green, g (s)				35.0	35.0	75.0		32.0	67.0		32.0	32.0
Actuated g/C Ratio				0.47	0.47	1.00		0.43	0.89		0.43	0.43
Clearance Time (s)				4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)				3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)				1503	751	1583		1510	2787		2170	675
v/s Ratio Prot				c0.37	0.37			c0.33	0.06		0.14	
v/s Ratio Perm						0.43			0.07			0.01
v/c Ratio				0.80	0.79	0.43		0.77	0.14		0.32	0.02
Uniform Delay, d1				17.1	16.9	0.0		18.4	0.5		14.3	12.4
Progression Factor				1.00	1.00	1.00		0.85	1.00		0.98	0.75
Incremental Delay, d2				3.2	5.7	0.8		3.8	0.0		0.4	0.0
Delay (s)				20.2	22.6	0.8		19.5	0.5		14.3	9.3
Level of Service				C	C	A		B	A		B	A
Approach Delay (s)		0.0			15.5			14.8			14.1	
Approach LOS		A			B			B			B	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	0	675	0	0	0	0	1500	1150	0	2175	325
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	4.0
Lane Util. Factor		1.00	1.00					0.91	0.88		0.91	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1770	1583					5085	2787		5085	1583
Flt Permitted		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1770	1583					5085	2787		5085	1583
Peak-hour factor, PHF	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. Flow (vph)	50	0	675	0	0	0	0	1500	1150	0	2175	325
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	242	0	0	68
Lane Group Flow (vph)	0	50	675	0	0	0	0	1500	908	0	2175	257
Turn Type	Prot		Free						Perm			Perm
Protected Phases	7	4						2			6	
Permitted Phases			Free						2			6
Actuated Green, G (s)		7.8	75.0					59.2	59.2		59.2	59.2
Effective Green, g (s)		7.8	75.0					59.2	59.2		59.2	59.2
Actuated g/C Ratio		0.10	1.00					0.79	0.79		0.79	0.79
Clearance Time (s)		4.0						4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0						3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		184	1583					4014	2200		4014	1250
v/s Ratio Prot		0.03						0.29			c0.43	
v/s Ratio Perm			c0.43						0.33			0.16
v/c Ratio		0.27	0.43					0.37	0.41		0.54	0.21
Uniform Delay, d1		31.0	0.0					2.4	2.5		2.9	2.0
Progression Factor		1.00	1.00					1.00	1.00		0.74	1.63
Incremental Delay, d2		0.8	0.8					0.3	0.6		0.4	0.3
Delay (s)		31.8	0.8					2.6	3.0		2.5	3.5
Level of Service		C	A					A	A		A	A
Approach Delay (s)		3.0			0.0			2.8			2.7	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	2.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



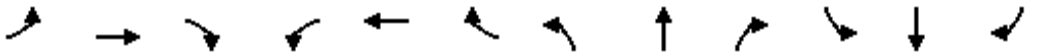
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	170	200	250	100	10	1150	350	250	10	40	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.94	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	5016		4990	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	5016		4990	1863	1583	1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	70	170	200	250	100	10	1150	350	250	10	40	50
RTOR Reduction (vph)	0	0	169	0	7	0	0	0	196	0	0	45
Lane Group Flow (vph)	70	170	31	250	103	0	1150	350	54	10	40	5
Turn Type	Prot		Perm	Prot			Prot		Over	Prot		Over
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2									
Actuated Green, G (s)	6.2	10.4	10.4	14.8	19.0		22.5	26.3	14.8	0.6	4.4	6.2
Effective Green, g (s)	6.2	10.4	10.4	14.8	19.0		22.5	26.3	14.8	0.6	4.4	6.2
Actuated g/C Ratio	0.09	0.15	0.15	0.22	0.28		0.33	0.39	0.22	0.01	0.06	0.09
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	161	540	242	385	1399		1649	719	344	16	120	144
v/s Ratio Prot	0.04	c0.05		c0.14	0.02		c0.23	c0.19	0.03	0.01	0.02	0.00
v/s Ratio Perm			0.02									
v/c Ratio	0.43	0.31	0.13	0.65	0.07		0.70	0.49	0.16	0.62	0.33	0.03
Uniform Delay, d1	29.3	25.7	24.9	24.3	18.1		19.8	15.8	21.6	33.6	30.4	28.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.3	0.2	3.8	0.0		1.3	0.5	0.2	57.6	1.6	0.1
Delay (s)	31.2	26.0	25.2	28.0	18.1		21.1	16.3	21.8	91.2	32.1	28.3
Level of Service	C	C	C	C	B		C	B	C	F	C	C
Approach Delay (s)		26.4			25.0			20.3			36.1	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	22.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	68.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	57.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



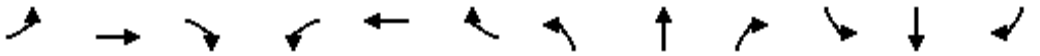
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	600	1100	0	1175	350	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	1.00		0.91	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3539	1583		5085	1770	1583
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3539	1583		5085	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	600	1100	0	1175	350	150
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	600	1100	0	1175	350	150
Turn Type		Free				Free
Protected Phases	4			8	2	
Permitted Phases		Free				Free
Actuated Green, G (s)	22.6	60.0		22.6	29.4	60.0
Effective Green, g (s)	22.6	60.0		22.6	29.4	60.0
Actuated g/C Ratio	0.38	1.00		0.38	0.49	1.00
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1333	1583		1915	867	1583
v/s Ratio Prot	0.17			0.23	0.20	
v/s Ratio Perm		c0.69				0.09
v/c Ratio	0.45	0.69		0.61	0.40	0.09
Uniform Delay, d1	14.0	0.0		15.2	9.7	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	0.2	2.5		0.6	1.4	0.1
Delay (s)	14.3	2.5		15.7	11.1	0.1
Level of Service	B	A		B	B	A
Approach Delay (s)	6.7			15.7	7.8	
Approach LOS	A			B	A	

Intersection Summary			
HCM Average Control Delay	10.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



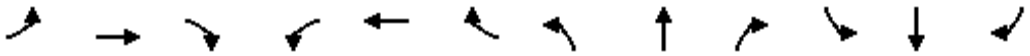
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	410	0	560	275	275	0	0	320	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95	1.00	0.97	1.00			0.95	
Frt				1.00	1.00	0.85	1.00	1.00			0.95	
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1681	1681	1583	3433	1863			3348	
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				1681	1681	1583	3433	1863			3348	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	410	0	560	275	275	0	0	320	180
RTOR Reduction (vph)	0	0	0	0	0	438	0	0	0	0	109	0
Lane Group Flow (vph)	0	0	0	205	205	122	275	275	0	0	391	0
Turn Type				Split		Perm	Split					
Protected Phases				8	8		2	2			6	
Permitted Phases						8						
Actuated Green, G (s)				16.3	16.3	16.3	33.4	33.4			13.3	
Effective Green, g (s)				16.3	16.3	16.3	33.4	33.4			13.3	
Actuated g/C Ratio				0.22	0.22	0.22	0.45	0.45			0.18	
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				365	365	344	1529	830			594	
v/s Ratio Prot				c0.12	0.12		0.08	c0.15			c0.12	
v/s Ratio Perm						0.08						
v/c Ratio				0.56	0.56	0.35	0.18	0.33			0.66	
Uniform Delay, d1				26.2	26.2	24.9	12.5	13.5			28.7	
Progression Factor				1.00	1.00	1.00	0.57	0.64			1.25	
Incremental Delay, d2				2.0	2.0	0.6	0.3	1.1			2.6	
Delay (s)				28.1	28.1	25.5	7.4	9.7			38.5	
Level of Service				C	C	C	A	A			D	
Approach Delay (s)		0.0			26.6			8.6			38.5	
Approach LOS		A			C			A			D	

Intersection Summary			
HCM Average Control Delay	24.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



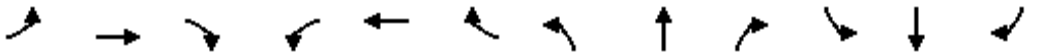
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	0	400	0	0	0	0	460	440	200	530	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1770	1583					3539	1583	1770	3539	
Flt Permitted		0.95	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1770	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	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. Flow (vph)	90	0	400	0	0	0	0	460	440	200	530	0
RTOR Reduction (vph)	0	0	346	0	0	0	0	0	221	0	0	0
Lane Group Flow (vph)	0	90	54	0	0	0	0	460	219	200	530	0
Turn Type	Split		Perm						Perm	Split		
Protected Phases	4	4						2		6	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.1	10.1					37.4	37.4	15.5	15.5	
Effective Green, g (s)		10.1	10.1					37.4	37.4	15.5	15.5	
Actuated g/C Ratio		0.13	0.13					0.50	0.50	0.21	0.21	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		238	213					1765	789	366	731	
v/s Ratio Prot		c0.05						0.13		0.11	c0.15	
v/s Ratio Perm			0.03						c0.14			
v/c Ratio		0.38	0.25					0.26	0.28	0.55	0.73	
Uniform Delay, d1		29.6	29.1					10.8	10.9	26.6	27.8	
Progression Factor		1.00	1.00					1.00	1.00	1.61	1.60	
Incremental Delay, d2		1.0	0.6					0.4	0.9	1.5	3.2	
Delay (s)		30.6	29.7					11.2	11.8	44.3	47.5	
Level of Service		C	C					B	B	D	D	
Approach Delay (s)		29.9			0.0			11.5			46.6	
Approach LOS		C			A			B			D	

Intersection Summary			
HCM Average Control Delay	27.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	105.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



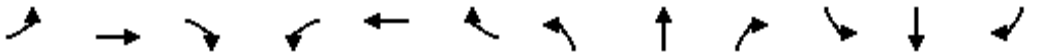
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	160	0	70	425	40	0	0	50	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		0.97	1.00			1.00	
Frt					0.96		1.00	1.00			0.96	
Flt Protected					0.97		0.95	1.00			1.00	
Satd. Flow (prot)					1726		3433	1863			1791	
Flt Permitted					0.97		0.95	1.00			1.00	
Satd. Flow (perm)					1726		3433	1863			1791	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	160	0	70	425	40	0	0	50	20
RTOR Reduction (vph)	0	0	0	0	23	0	0	0	0	0	18	0
Lane Group Flow (vph)	0	0	0	0	207	0	425	40	0	0	52	0
Turn Type				Split			Split					
Protected Phases				8	8		2	2			6	
Permitted Phases												
Actuated Green, G (s)					14.1		41.2	41.2			7.7	
Effective Green, g (s)					14.1		41.2	41.2			7.7	
Actuated g/C Ratio					0.19		0.55	0.55			0.10	
Clearance Time (s)					4.0		4.0	4.0			4.0	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					324		1886	1023			184	
v/s Ratio Prot					c0.12		c0.12	0.02			c0.03	
v/s Ratio Perm												
v/c Ratio					0.64		0.23	0.04			0.28	
Uniform Delay, d1					28.1		8.7	7.8			31.1	
Progression Factor					1.00		0.39	0.43			1.02	
Incremental Delay, d2					4.1		0.3	0.1			0.8	
Delay (s)					32.2		3.7	3.4			32.5	
Level of Service					C		A	A			C	
Approach Delay (s)		0.0			32.2			3.6			32.5	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	14.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



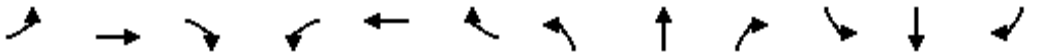
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	15	0	410	0	0	0	0	450	360	10	200	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00						0.95	1.00	1.00	1.00	
Frt		0.87						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1617						3539	1583	1770	1863	
Flt Permitted		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1617						3539	1583	1770	1863	
Peak-hour factor, PHF	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. Flow (vph)	15	0	410	0	0	0	0	450	360	10	200	0
RTOR Reduction (vph)	0	359	0	0	0	0	0	0	166	0	0	0
Lane Group Flow (vph)	0	66	0	0	0	0	0	450	194	10	200	0
Turn Type	Split								Perm	Split		
Protected Phases	4	4						2		6	6	
Permitted Phases									2			
Actuated Green, G (s)		9.3						40.5	40.5	13.2	13.2	
Effective Green, g (s)		9.3						40.5	40.5	13.2	13.2	
Actuated g/C Ratio		0.12						0.54	0.54	0.18	0.18	
Clearance Time (s)		4.0						4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		201						1911	855	312	328	
v/s Ratio Prot		c0.04						c0.13		0.01	c0.11	
v/s Ratio Perm									0.12			
v/c Ratio		0.33						0.24	0.23	0.03	0.61	
Uniform Delay, d1		30.0						9.1	9.0	25.6	28.5	
Progression Factor		1.00						1.00	1.00	1.63	1.53	
Incremental Delay, d2		1.0						0.3	0.6	0.0	3.0	
Delay (s)		31.0						9.4	9.7	41.8	46.5	
Level of Service		C						A	A	D	D	
Approach Delay (s)		31.0			0.0			9.5			46.3	
Approach LOS		C			A			A			D	

Intersection Summary			
HCM Average Control Delay	21.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



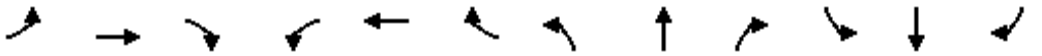
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	1575	550	0	1175	350	0	0	0	125	75	1175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0				4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00		0.95	1.00				0.95	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85				1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (prot)	1770	5085	1583		3539	1583				1681	1747	1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00				0.95	0.99	1.00
Satd. Flow (perm)	1770	5085	1583		3539	1583				1681	1747	1583
Peak-hour factor, PHF	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. Flow (vph)	150	1575	550	0	1175	350	0	0	0	125	75	1175
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	150	1575	550	0	1175	350	0	0	0	99	101	1175
Turn Type	Prot		Free			Free				Prot		Free
Protected Phases	5	2			6					7	4	
Permitted Phases			Free			Free						Free
Actuated Green, G (s)	12.7	73.3	90.0		56.6	90.0				8.7	8.7	90.0
Effective Green, g (s)	12.7	73.3	90.0		56.6	90.0				8.7	8.7	90.0
Actuated g/C Ratio	0.14	0.81	1.00		0.63	1.00				0.10	0.10	1.00
Clearance Time (s)	4.0	4.0			4.0					4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0					3.0	3.0	
Lane Grp Cap (vph)	250	4141	1583		2226	1583				162	169	1583
v/s Ratio Prot	0.08	0.31			0.33					0.06	0.06	
v/s Ratio Perm			0.35			0.22						c0.74
v/c Ratio	0.60	0.38	0.35		0.53	0.22				0.61	0.60	0.74
Uniform Delay, d1	36.3	2.2	0.0		9.3	0.0				39.0	39.0	0.0
Progression Factor	1.00	1.00	1.00		1.00	1.00				1.00	1.00	1.00
Incremental Delay, d2	4.0	0.3	0.6		0.9	0.3				6.7	5.6	3.2
Delay (s)	40.3	2.5	0.6		10.2	0.3				45.7	44.6	3.2
Level of Service	D	A	A		B	A				D	D	A
Approach Delay (s)		4.5			7.9			0.0			9.3	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



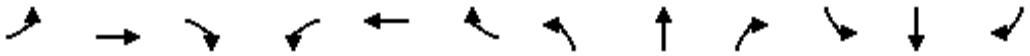
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	280	0	10	250	240	0	0	170	460
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					1.00		1.00	0.91			1.00	1.00
Frt					1.00		1.00	1.00			1.00	0.85
Flt Protected					0.95		0.95	1.00			1.00	1.00
Satd. Flow (prot)					1769		1770	5085			1863	1583
Flt Permitted					0.95		0.95	1.00			1.00	1.00
Satd. Flow (perm)					1769		1770	5085			1863	1583
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	280	0	10	250	240	0	0	170	460
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	298
Lane Group Flow (vph)	0	0	0	0	288	0	250	240	0	0	170	162
Turn Type				Split			Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases												6
Actuated Green, G (s)					13.9		13.0	38.1			21.1	21.1
Effective Green, g (s)					13.9		13.0	38.1			21.1	21.1
Actuated g/C Ratio					0.23		0.22	0.64			0.35	0.35
Clearance Time (s)					4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					410		384	3229			655	557
v/s Ratio Prot					c0.16		c0.14	0.05			0.09	
v/s Ratio Perm												c0.10
v/c Ratio					0.70		0.65	0.07			0.26	0.29
Uniform Delay, d1					21.1		21.4	4.2			13.9	14.0
Progression Factor					1.00		0.65	0.67			1.00	1.00
Incremental Delay, d2					5.4		3.9	0.0			1.0	1.3
Delay (s)					26.5		17.9	2.9			14.8	15.4
Level of Service					C		B	A			B	B
Approach Delay (s)		0.0			26.5			10.5			15.2	
Approach LOS		A			C			B			B	

Intersection Summary			
HCM Average Control Delay	15.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



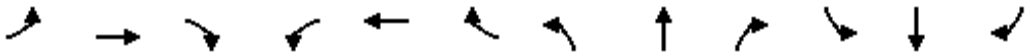
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	0	220	0	0	0	0	180	630	10	440	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0	4.0	4.0	
Lane Util. Factor	0.94	1.00						0.95	1.00	1.00	0.95	
Frt	1.00	0.85						1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1583						3539	1583	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1583						3539	1583	1770	3539	
Peak-hour factor, PHF	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. Flow (vph)	310	0	220	0	0	0	0	180	630	10	440	0
RTOR Reduction (vph)	0	185	0	0	0	0	0	0	242	0	0	0
Lane Group Flow (vph)	310	35	0	0	0	0	0	180	389	10	440	0
Turn Type	Split								Perm	Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	9.6	9.6						37.0	37.0	1.4	42.4	
Effective Green, g (s)	9.6	9.6						37.0	37.0	1.4	42.4	
Actuated g/C Ratio	0.16	0.16						0.62	0.62	0.02	0.71	
Clearance Time (s)	4.0	4.0						4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	798	253						2182	976	41	2501	
v/s Ratio Prot	c0.06	0.02						0.05		0.01	c0.12	
v/s Ratio Perm									c0.25			
v/c Ratio	0.39	0.14						0.08	0.40	0.24	0.18	
Uniform Delay, d1	22.6	21.6						4.6	5.8	28.8	2.9	
Progression Factor	1.00	1.00						1.00	1.00	1.08	1.14	
Incremental Delay, d2	0.3	0.3						0.1	1.2	2.8	0.1	
Delay (s)	22.9	21.9						4.7	7.1	33.9	3.5	
Level of Service	C	C						A	A	C	A	
Approach Delay (s)		22.5			0.0			6.5			4.2	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	10.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



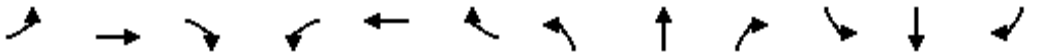
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized						Yes			Yes			
Volume (veh/h)	20	110	0	0	550	250	150	0	230	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	20	110	0	0	550	250	150	0	230	0	0	0
Approach Volume (veh/h)		130			550			150			0	
Crossing Volume (veh/h)		0			170			130			700	
High Capacity (veh/h)		1385			1212			1251			795	
High v/c (veh/h)		0.09			0.45			0.12			0.00	
Low Capacity (veh/h)		1161			1005			1040			632	
Low v/c (veh/h)		0.11			0.55			0.14			0.00	

Intersection Summary				
Maximum v/c High	0.45			
Maximum v/c Low	0.55			
Intersection Capacity Utilization	58.1%	ICU Level of Service	B	



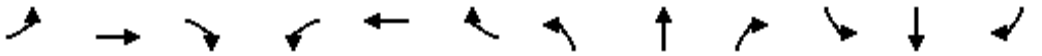
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes									
Volume (veh/h)	0	60	20	150	550	0	0	0	0	70	0	10
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	60	20	150	550	0	0	0	0	70	0	10
Approach Volume (veh/h)		60			700			0			80	
Crossing Volume (veh/h)		220			0			130			700	
High Capacity (veh/h)		1166			1385			1251			795	
High v/c (veh/h)		0.05			0.51			0.00			0.10	
Low Capacity (veh/h)		962			1161			1040			632	
Low v/c (veh/h)		0.06			0.60			0.00			0.13	

Intersection Summary					
Maximum v/c High	0.51				
Maximum v/c Low	0.60				
Intersection Capacity Utilization	54.5%	ICU Level of Service		A	



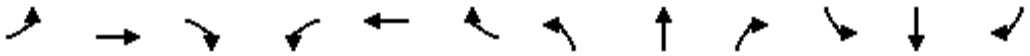
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	0	0	180	130	870	0	0	415	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)						4.0	4.0	4.0			4.0	4.0
Lane Util. Factor						1.00	1.00	0.95			0.95	1.00
Frt						0.85	1.00	1.00			1.00	0.85
Flt Protected						1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)						1583	1770	3539			3539	1583
Flt Permitted						1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)						1583	1770	3539			3539	1583
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	0	0	180	130	870	0	0	415	240
RTOR Reduction (vph)	0	0	0	0	0	142	0	0	0	0	0	106
Lane Group Flow (vph)	0	0	0	0	0	38	130	870	0	0	415	134
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)						7.4	7.2	44.6			33.4	33.4
Effective Green, g (s)						7.4	7.2	44.6			33.4	33.4
Actuated g/C Ratio						0.12	0.12	0.74			0.56	0.56
Clearance Time (s)						4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)						3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)						195	212	2631			1970	881
v/s Ratio Prot							c0.07	c0.25			0.12	
v/s Ratio Perm						c0.02						0.08
v/c Ratio						0.19	0.61	0.33			0.21	0.15
Uniform Delay, d1						23.6	25.1	2.6			6.7	6.4
Progression Factor						1.00	0.67	0.73			1.00	1.00
Incremental Delay, d2						0.5	4.9	0.3			0.2	0.4
Delay (s)						24.1	21.7	2.2			6.9	6.8
Level of Service						C	C	A			A	A
Approach Delay (s)		0.0			24.1			4.8			6.9	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



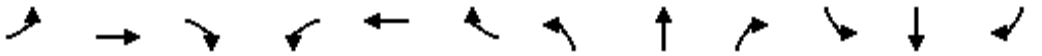
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	0	50	0	0	0	0	900	10	85	330	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95		1.00	0.95	
Frt	1.00	1.00	0.85					1.00		1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1681	1681	1583					3533		1770	3539	
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1681	1681	1583					3533		1770	3539	
Peak-hour factor, PHF	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. Flow (vph)	100	0	50	0	0	0	0	900	10	85	330	0
RTOR Reduction (vph)	0	0	45	0	0	0	0	1	0	0	0	0
Lane Group Flow (vph)	50	50	5	0	0	0	0	909	0	85	330	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	6.2	6.2	6.2					34.6		7.2	45.8	
Effective Green, g (s)	6.2	6.2	6.2					34.6		7.2	45.8	
Actuated g/C Ratio	0.10	0.10	0.10					0.58		0.12	0.76	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	174	174	164					2037		212	2701	
v/s Ratio Prot	c0.03	0.03						c0.26		c0.05	0.09	
v/s Ratio Perm			0.00									
v/c Ratio	0.29	0.29	0.03					0.45		0.40	0.12	
Uniform Delay, d1	24.9	24.9	24.2					7.2		24.4	1.9	
Progression Factor	1.00	1.00	1.00					1.00		0.76	1.43	
Incremental Delay, d2	0.9	0.9	0.1					0.7		1.2	0.1	
Delay (s)	25.8	25.8	24.3					7.9		19.8	2.7	
Level of Service	C	C	C					A		B	A	
Approach Delay (s)		25.3			0.0			7.9			6.2	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM Average Control Delay	9.2	HCM Level of Service	A
HCM Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	43.2%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



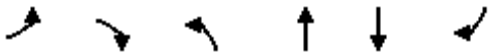
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	210	0	120	50	225	0	0	230	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	1.00
Frt					1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1770	1583	1770	1863			3539	1583
Flt Permitted					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1770	1583	1770	1863			3539	1583
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	210	0	120	50	225	0	0	230	210
RTOR Reduction (vph)	0	0	0	0	0	92	0	0	0	0	0	134
Lane Group Flow (vph)	0	0	0	0	210	28	50	225	0	0	230	76
Turn Type				Perm		Perm	Prot					Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8						6
Actuated Green, G (s)					8.0	8.0	2.1	18.7			12.6	12.6
Effective Green, g (s)					8.0	8.0	2.1	18.7			12.6	12.6
Actuated g/C Ratio					0.23	0.23	0.06	0.54			0.36	0.36
Clearance Time (s)					4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					408	365	107	1004			1285	575
v/s Ratio Prot							c0.03	c0.12			0.06	
v/s Ratio Perm					0.12	0.02						0.05
v/c Ratio					0.51	0.08	0.47	0.22			0.18	0.13
Uniform Delay, d1					11.7	10.5	15.8	4.2			7.5	7.4
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					1.1	0.1	3.2	0.1			0.1	0.1
Delay (s)					12.8	10.5	19.0	4.3			7.6	7.5
Level of Service					B	B	B	A			A	A
Approach Delay (s)		0.0			12.0			7.0			7.5	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	8.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	34.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	0	20	0	0	0	0	150	10	40	400	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00						0.95	1.00	1.00	1.00	
Frt	1.00	0.85						1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1583						3539	1583	1770	1863	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1583						3539	1583	1770	1863	
Peak-hour factor, PHF	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. Flow (vph)	125	0	20	0	0	0	0	150	10	40	400	0
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	5	0	0	0
Lane Group Flow (vph)	125	4	0	0	0	0	0	150	5	40	400	0
Turn Type	Perm								Perm	Prot		
Protected Phases		4						2		1	6	
Permitted Phases	4								2			
Actuated Green, G (s)	6.5	6.5						17.3	17.3	1.3	22.6	
Effective Green, g (s)	6.5	6.5						17.3	17.3	1.3	22.6	
Actuated g/C Ratio	0.18	0.18						0.47	0.47	0.04	0.61	
Clearance Time (s)	4.0	4.0						4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	310	277						1650	738	62	1135	
v/s Ratio Prot		0.00						0.04		0.02	c0.21	
v/s Ratio Perm	c0.07								0.00			
v/c Ratio	0.40	0.01						0.09	0.01	0.65	0.35	
Uniform Delay, d1	13.6	12.6						5.5	5.3	17.7	3.6	
Progression Factor	1.00	1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2	0.9	0.0						0.0	0.0	20.7	0.2	
Delay (s)	14.4	12.7						5.5	5.3	38.4	3.8	
Level of Service	B	B						A	A	D	A	
Approach Delay (s)		14.2			0.0			5.5			6.9	
Approach LOS		B			A			A			A	

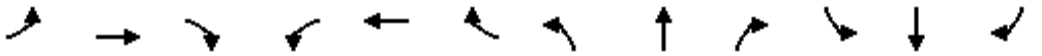
Intersection Summary			
HCM Average Control Delay	8.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	37.1	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	20	50	30	30	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	20	50	30	30	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	160	30	30			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160	30	30			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	98	97			
cM capacity (veh/h)	805	1044	1583			

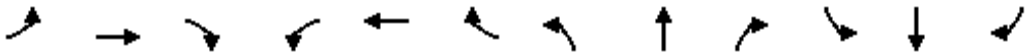
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	20	80	30
Volume Left	0	50	0
Volume Right	20	0	0
cSH	1044	1583	1700
Volume to Capacity	0.02	0.03	0.02
Queue Length 95th (ft)	1	2	0
Control Delay (s)	8.5	4.7	0.0
Lane LOS	A	A	
Approach Delay (s)	8.5	4.7	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	75	400	100	80	25	370	75	225	25	50	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.89		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1796		3433	1653		1770	1770	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1796		3433	1653		1770	1770	
Peak-hour factor, PHF	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. Flow (vph)	50	75	400	100	80	25	370	75	225	25	50	25
RTOR Reduction (vph)	0	0	0	0	18	0	0	103	0	0	15	0
Lane Group Flow (vph)	50	75	400	100	87	0	370	197	0	25	60	0
Turn Type	Prot		Free	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									
Actuated Green, G (s)	5.2	7.0	75.0	8.3	10.1		13.2	40.6		3.1	30.5	
Effective Green, g (s)	5.2	7.0	75.0	8.3	10.1		13.2	40.6		3.1	30.5	
Actuated g/C Ratio	0.07	0.09	1.00	0.11	0.13		0.18	0.54		0.04	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	123	330	1583	196	242		604	895		73	720	
v/s Ratio Prot	0.03	0.02		c0.06	c0.05		c0.11	0.12		0.01	0.03	
v/s Ratio Perm			c0.25									
v/c Ratio	0.41	0.23	0.25	0.51	0.36		0.61	0.22		0.34	0.08	
Uniform Delay, d1	33.4	31.5	0.0	31.4	29.5		28.5	9.0		35.0	13.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.08	1.08		1.00	1.00	
Incremental Delay, d2	2.2	0.4	0.4	2.2	0.9		1.6	0.5		2.8	0.2	
Delay (s)	35.6	31.8	0.4	33.7	30.4		32.4	10.1		37.8	13.9	
Level of Service	D	C	A	C	C		C	B		D	B	
Approach Delay (s)		8.2			32.0			22.4			19.9	
Approach LOS		A			C			C			B	

Intersection Summary			
HCM Average Control Delay	18.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	10	30	20	30	25	70	25	10	25	25	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	10	30	20	30	25	70	25	10	25	25	25
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	55			40			195	170	25	180	172	42
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	55			40			195	170	25	180	172	42
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			90	96	99	97	96	98
cM capacity (veh/h)	1550			1570			710	702	1051	737	700	1028

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	65	75	105	75
Volume Left	25	20	70	25
Volume Right	30	25	10	25
cSH	1550	1570	730	798
Volume to Capacity	0.02	0.01	0.14	0.09
Queue Length 95th (ft)	1	1	13	8
Control Delay (s)	2.9	2.0	10.8	10.0
Lane LOS	A	A	B	A
Approach Delay (s)	2.9	2.0	10.8	10.0
Approach LOS			B	A

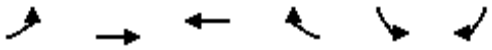
Intersection Summary				
Average Delay	6.9			
Intersection Capacity Utilization	23.4%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	25	30	25	25	25	30	250	100	25	620	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	1.00	0.88	1.00	1.00	
Frt	1.00	0.92		1.00	0.92		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1710		3433	1723		1770	1863	2787	1770	1850	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.60	1.00	
Satd. Flow (perm)	1770	1710		3433	1723		1770	1863	2787	1125	1850	
Peak-hour factor, PHF	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. Flow (vph)	30	25	30	25	25	25	30	250	100	25	620	30
RTOR Reduction (vph)	0	28	0	0	23	0	0	0	0	0	1	0
Lane Group Flow (vph)	30	27	0	25	27	0	30	250	100	25	649	0
Turn Type	Prot			Prot			Prot		Free	Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases									Free	6		
Actuated Green, G (s)	1.9	4.7		1.9	4.7		3.2	56.4	75.0	49.2	49.2	
Effective Green, g (s)	1.9	4.7		1.9	4.7		3.2	56.4	75.0	49.2	49.2	
Actuated g/C Ratio	0.03	0.06		0.03	0.06		0.04	0.75	1.00	0.66	0.66	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	45	107		87	108		76	1401	2787	738	1214	
v/s Ratio Prot	c0.02	c0.02		0.01	0.02		c0.02	0.13			c0.35	
v/s Ratio Perm									0.04	0.02		
v/c Ratio	0.67	0.25		0.29	0.25		0.39	0.18	0.04	0.03	0.53	
Uniform Delay, d1	36.2	33.5		35.9	33.5		35.0	2.7	0.0	4.5	6.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	31.5	1.2		1.8	1.2		3.4	0.3	0.0	0.1	1.7	
Delay (s)	67.7	34.7		37.7	34.7		38.3	2.9	0.0	4.6	8.5	
Level of Service	E	C		D	C		D	A	A	A	A	
Approach Delay (s)		46.4			35.7			5.0			8.4	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM Average Control Delay	11.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

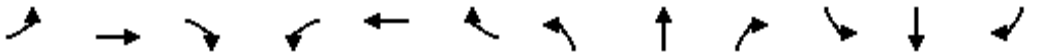
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	230	40	660	180	80	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	3433	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	3433	1863	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	230	40	660	180	80	320
RTOR Reduction (vph)	0	27	0	0	0	0
Lane Group Flow (vph)	230	13	660	180	80	320
Turn Type		Over	Prot			Free
Protected Phases	4	2	3	8	2	
Permitted Phases						Free
Actuated Green, G (s)	12.3	18.9	16.8	33.1	18.9	60.0
Effective Green, g (s)	12.3	18.9	16.8	33.1	18.9	60.0
Actuated g/C Ratio	0.20	0.32	0.28	0.55	0.32	1.00
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	382	499	961	1028	558	1583
v/s Ratio Prot	c0.12	0.01	c0.19	0.10	0.05	
v/s Ratio Perm						c0.20
v/c Ratio	0.60	0.03	0.69	0.18	0.14	0.20
Uniform Delay, d1	21.6	14.2	19.3	6.7	14.7	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.7	0.1	2.1	0.1	0.5	0.3
Delay (s)	24.3	14.3	21.3	6.8	15.3	0.3
Level of Service	C	B	C	A	B	A
Approach Delay (s)	22.8			18.2	3.3	
Approach LOS	C			B	A	

Intersection Summary			
HCM Average Control Delay	15.1	HCM Level of Service	B
HCM Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



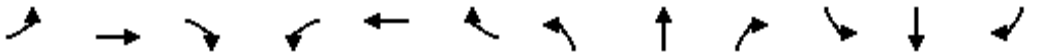
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	25	1050	780	40	25	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	25	1050	780	40	25	25
RTOR Reduction (vph)	0	0	0	14	0	21
Lane Group Flow (vph)	25	1050	780	26	25	4
Turn Type	Prot			pm+ov		Perm
Protected Phases	7	4	8	6	6	
Permitted Phases				8		6
Actuated Green, G (s)	0.6	21.9	17.3	23.6	6.3	6.3
Effective Green, g (s)	0.6	21.9	17.3	23.6	6.3	6.3
Actuated g/C Ratio	0.02	0.60	0.48	0.65	0.17	0.17
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	29	2141	1691	1207	308	275
v/s Ratio Prot	0.01	c0.30	0.22	0.00	c0.01	
v/s Ratio Perm				0.01		0.00
v/c Ratio	0.86	0.49	0.46	0.02	0.08	0.02
Uniform Delay, d1	17.8	4.0	6.3	2.2	12.5	12.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	109.1	0.2	0.2	0.0	0.1	0.0
Delay (s)	126.9	4.2	6.5	2.2	12.6	12.4
Level of Service	F	A	A	A	B	B
Approach Delay (s)		7.0	6.3		12.5	
Approach LOS		A	A		B	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	36.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



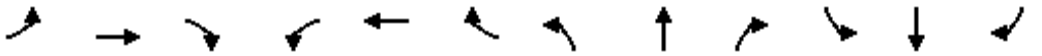
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	25	20	25	10	90	60	920	25	50	340	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		0.97	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	0.99	
Flt Protected		0.98	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1822	1583		1799	1583	1770	5065		3433	3510	
Flt Permitted		0.85	1.00		0.77	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1588	1583		1429	1583	1770	5065		3433	3510	
Peak-hour factor, PHF	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. Flow (vph)	20	25	20	25	10	90	60	920	25	50	340	20
RTOR Reduction (vph)	0	0	16	0	0	50	0	2	0	0	3	0
Lane Group Flow (vph)	0	45	4	0	35	40	60	943	0	50	357	0
Turn Type	Perm		pm+ov	Perm		pm+ov	Prot			Prot		
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		7.5	14.4		7.5	13.0	6.9	50.0		5.5	48.6	
Effective Green, g (s)		7.5	14.4		7.5	13.0	6.9	50.0		5.5	48.6	
Actuated g/C Ratio		0.10	0.19		0.10	0.17	0.09	0.67		0.07	0.65	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		159	388		143	359	163	3377		252	2274	
v/s Ratio Prot			0.00			0.01	c0.03	c0.19		0.01	0.10	
v/s Ratio Perm		c0.03	0.00		0.02	0.02						
v/c Ratio		0.28	0.01		0.24	0.11	0.37	0.28		0.20	0.16	
Uniform Delay, d1		31.3	24.5		31.1	26.1	32.0	5.1		32.7	5.2	
Progression Factor		1.00	1.00		1.00	1.00	0.78	1.43		1.33	1.55	
Incremental Delay, d2		1.0	0.0		0.9	0.1	1.4	0.2		0.4	0.1	
Delay (s)		32.2	24.5		32.0	26.3	26.2	7.5		43.8	8.2	
Level of Service		C	C		C	C	C	A		D	A	
Approach Delay (s)		29.9			27.9			8.6			12.5	
Approach LOS		C			C			A			B	

Intersection Summary			
HCM Average Control Delay	12.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



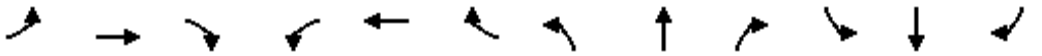
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	90	280	370	150	640	130	520	820	110	420	460	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95		0.94	0.95	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	3450		4990	3539	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	3450		4990	3539	1583	4990	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	90	280	370	150	640	130	520	820	110	420	460	140
RTOR Reduction (vph)	0	0	0	0	20	0	0	0	47	0	0	0
Lane Group Flow (vph)	90	280	370	150	750	0	520	820	63	420	460	140
Turn Type	Prot		Free	Prot			Prot		pm+ov	Prot		Free
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			Free						2			Free
Actuated Green, G (s)	5.6	10.3	90.0	19.1	23.8		13.4	32.1	51.2	12.5	31.2	90.0
Effective Green, g (s)	5.6	10.3	90.0	19.1	23.8		13.4	32.1	51.2	12.5	31.2	90.0
Actuated g/C Ratio	0.06	0.11	1.00	0.21	0.26		0.15	0.36	0.57	0.14	0.35	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	110	582	1583	729	912		743	1262	901	693	1227	1583
v/s Ratio Prot	c0.05	0.06		0.04	c0.22		c0.10	c0.23	0.01	0.08	0.13	
v/s Ratio Perm			c0.23						0.02			0.09
v/c Ratio	0.82	0.48	0.23	0.21	0.82		0.70	0.65	0.07	0.61	0.37	0.09
Uniform Delay, d1	41.7	37.3	0.0	29.2	31.1		36.4	24.2	8.7	36.4	22.1	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	35.7	0.6	0.3	0.1	6.1		2.9	2.6	0.0	1.5	0.9	0.1
Delay (s)	77.4	38.0	0.3	29.3	37.2		39.3	26.8	8.7	37.9	23.0	0.1
Level of Service	E	D	A	C	D		D	C	A	D	C	A
Approach Delay (s)		24.0			35.9			29.9			26.0	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	29.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	70.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



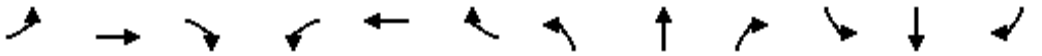
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	360	270	120	230	90	350	600	70	50	540	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3390		3433	3484		1770	3471	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3390		3433	3484		1770	3471	
Peak-hour factor, PHF	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. Flow (vph)	190	360	270	120	230	90	350	600	70	50	540	80
RTOR Reduction (vph)	0	0	96	0	39	0	0	7	0	0	10	0
Lane Group Flow (vph)	190	360	174	120	281	0	350	663	0	50	610	0
Turn Type	Prot		pm+ov	Prot			Prot			Prot		
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	14.2	16.1	30.9	10.9	12.8		14.8	33.1		4.7	23.0	
Effective Green, g (s)	14.7	16.6	30.9	11.4	13.3		15.3	34.1		5.2	24.0	
Actuated g/C Ratio	0.18	0.20	0.37	0.14	0.16		0.18	0.41		0.06	0.29	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	312	705	673	242	541		631	1426		110	1000	
v/s Ratio Prot	c0.11	c0.10	0.05	0.07	0.08		c0.10	0.19		0.03	c0.18	
v/s Ratio Perm			0.06									
v/c Ratio	0.61	0.51	0.26	0.50	0.52		0.55	0.46		0.45	0.61	
Uniform Delay, d1	31.6	29.7	18.2	33.3	32.1		30.9	17.9		37.7	25.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.4	0.6	0.2	1.6	0.9		1.1	0.2		3.0	1.1	
Delay (s)	35.0	30.4	18.4	34.9	33.0		32.0	18.2		40.6	26.7	
Level of Service	C	C	B	C	C		C	B		D	C	
Approach Delay (s)		27.5			33.5			22.9			27.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	26.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	83.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	60.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



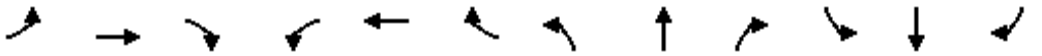
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	220	80	50	290	70	80	520	40	130	400	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.96		1.00	0.97		1.00	0.99		1.00	0.94	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3398		1770	3436		1770	3501		1770	3335	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3398		1770	3436		1770	3501		1770	3335	
Peak-hour factor, PHF	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. Flow (vph)	300	220	80	50	290	70	80	520	40	130	400	250
RTOR Reduction (vph)	0	42	0	0	25	0	0	6	0	0	107	0
Lane Group Flow (vph)	300	258	0	50	335	0	80	554	0	130	543	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	16.7	27.8		3.3	14.4		4.6	17.9		8.8	22.1	
Effective Green, g (s)	16.7	27.8		3.3	14.4		4.6	17.9		8.8	22.1	
Actuated g/C Ratio	0.23	0.38		0.04	0.20		0.06	0.24		0.12	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	401	1280		79	670		110	849		211	999	
v/s Ratio Prot	c0.17	0.08		0.03	c0.10		0.05	c0.16		c0.07	0.16	
v/s Ratio Perm												
v/c Ratio	0.75	0.20		0.63	0.50		0.73	0.65		0.62	0.54	
Uniform Delay, d1	26.6	15.5		34.7	26.5		34.0	25.2		30.9	21.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.5	0.1		15.4	0.6		21.1	1.8		5.3	0.6	
Delay (s)	34.0	15.6		50.0	27.1		55.1	27.0		36.2	22.2	
Level of Service	C	B		D	C		E	C		D	C	
Approach Delay (s)		24.8			29.9			30.5			24.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	73.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	63.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



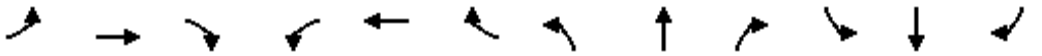
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	300	130	90	410	25	120	400	40	25	330	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	3509		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	3509		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	130	300	130	90	410	25	120	400	40	25	330	40
RTOR Reduction (vph)	0	0	78	0	8	0	0	0	26	0	0	29
Lane Group Flow (vph)	130	300	52	90	427	0	120	400	14	25	330	11
Turn Type	Prot		pt+ov	Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4	4 5	3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	3.0	10.8	19.0	3.0	10.8		4.2	16.9	16.9	0.6	13.3	13.3
Effective Green, g (s)	3.0	10.8	19.0	3.0	10.8		4.2	16.9	16.9	0.6	13.3	13.3
Actuated g/C Ratio	0.06	0.23	0.40	0.06	0.23		0.09	0.36	0.36	0.01	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	218	808	636	112	801		157	1264	566	22	995	445
v/s Ratio Prot	0.04	0.08	0.03	c0.05	c0.12		c0.07	c0.11		0.01	0.09	
v/s Ratio Perm									0.01			0.01
v/c Ratio	0.60	0.37	0.08	0.80	0.53		0.76	0.32	0.03	1.14	0.33	0.03
Uniform Delay, d1	21.6	15.4	8.8	21.9	16.0		21.1	11.0	9.9	23.3	13.5	12.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.3	0.3	0.1	32.6	0.7		19.6	0.1	0.0	237.5	0.2	0.0
Delay (s)	25.9	15.7	8.8	54.5	16.7		40.7	11.2	9.9	260.9	13.7	12.3
Level of Service	C	B	A	D	B		D	B	A	F	B	B
Approach Delay (s)		16.5			23.2			17.4			29.2	
Approach LOS		B			C			B			C	

Intersection Summary			
HCM Average Control Delay	20.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	44.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	75	775	600	625	975	50	775	230	550	120	125	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	75	775	600	625	975	50	775	230	550	120	125	175
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	75	775	600	625	975	50	775	230	550	120	125	175
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	7.2	22.1	90.0	15.0	29.9	90.0	28.4	30.1	90.0	6.8	8.5	90.0
Effective Green, g (s)	7.2	22.1	90.0	15.0	29.9	90.0	28.4	30.1	90.0	6.8	8.5	90.0
Actuated g/C Ratio	0.08	0.25	1.00	0.17	0.33	1.00	0.32	0.33	1.00	0.08	0.09	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	142	1249	1583	572	1689	1583	1083	1184	1583	259	334	1583
v/s Ratio Prot	0.04	c0.15		c0.18	c0.19		c0.23	0.06		0.03	0.04	
v/s Ratio Perm			c0.38			0.03			0.35			0.11
v/c Ratio	0.53	0.62	0.38	1.09	0.58	0.03	0.72	0.19	0.35	0.46	0.37	0.11
Uniform Delay, d1	39.8	30.2	0.0	37.5	24.8	0.0	27.2	21.3	0.0	39.9	38.3	0.0
Progression Factor	1.28	1.39	1.00	1.00	1.00	1.00	0.80	0.70	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.8	1.8	0.5	65.4	1.4	0.0	2.1	0.1	0.5	1.3	0.7	0.1
Delay (s)	53.8	43.9	0.5	102.9	26.3	0.0	23.9	15.0	0.5	41.2	39.0	0.1
Level of Service	D	D	A	F	C	A	C	B	A	D	D	A
Approach Delay (s)		26.5			54.5			14.3			23.4	
Approach LOS		C			D			B			C	

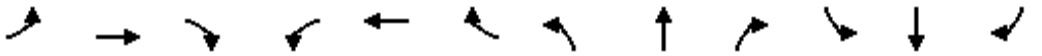
Intersection Summary			
HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	71.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	470	1070	140	150	890	550	510	1870	140	640	1030	340
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	100%	100%	80%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	470	1070	112	150	890	550	510	1870	140	640	1030	340
RTOR Reduction (vph)	0	0	7	0	0	1	0	0	4	0	0	12
Lane Group Flow (vph)	470	1070	105	150	890	549	510	1870	136	640	1030	328
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	15.0	32.8	64.5	7.0	24.8	45.8	31.7	42.0	49.0	21.0	31.3	46.3
Effective Green, g (s)	15.0	32.8	64.5	7.0	24.8	45.8	31.7	42.0	49.0	21.0	31.3	46.3
Actuated g/C Ratio	0.13	0.28	0.54	0.06	0.21	0.39	0.27	0.35	0.41	0.18	0.26	0.39
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	433	1404	859	202	1062	610	916	1798	653	607	1340	617
v/s Ratio Prot	c0.14	0.21	0.03	0.04	0.18	c0.16	0.15	c0.37	0.01	c0.19	0.20	0.07
v/s Ratio Perm			0.03			0.19			0.07			0.14
v/c Ratio	1.09	0.76	0.12	0.74	0.84	0.90	0.56	1.04	0.21	1.05	0.77	0.53
Uniform Delay, d1	51.9	39.4	13.3	55.0	45.1	34.3	37.5	38.4	22.4	48.9	40.4	27.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	68.2	2.5	0.1	13.7	5.9	16.1	0.7	32.5	0.2	51.7	2.7	0.9
Delay (s)	120.1	41.9	13.4	68.7	51.0	50.4	38.2	70.9	22.6	100.6	43.1	28.8
Level of Service	F	D	B	E	D	D	D	E	C	F	D	C
Approach Delay (s)		62.2			52.5			61.6			59.0	
Approach LOS		E			D			E			E	

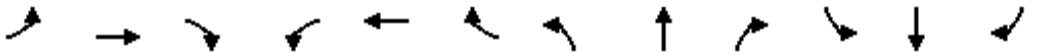
Intersection Summary			
HCM Average Control Delay	59.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	118.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



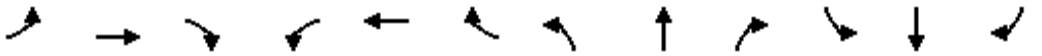
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	360	1030	470	150	900	150	500	550	160	100	480	330
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	2.0	4.0	4.0	3.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	360	1030	470	150	900	150	500	550	160	100	480	330
RTOR Reduction (vph)	0	0	44	0	0	39	0	0	47	0	0	14
Lane Group Flow (vph)	360	1030	426	150	900	111	500	550	113	100	480	316
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases			2			6			8			4
Actuated Green, G (s)	16.0	46.1	68.4	8.9	39.0	59.9	22.3	23.1	32.0	20.9	20.7	36.7
Effective Green, g (s)	17.0	48.1	70.4	9.9	41.0	63.9	23.3	25.1	36.0	20.9	22.7	38.7
Actuated g/C Ratio	0.14	0.40	0.59	0.08	0.34	0.53	0.19	0.21	0.30	0.17	0.19	0.32
Clearance Time (s)	5.0	6.0	5.0	5.0	6.0	4.0	5.0	6.0	5.0	4.0	6.0	5.0
Vehicle Extension (s)	2.0	2.5	2.0	2.0	2.5	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Lane Grp Cap (vph)	486	1419	929	283	1209	843	667	740	475	598	669	511
v/s Ratio Prot	c0.10	c0.29	0.09	0.04	0.25	0.03	c0.15	c0.16	0.02	0.03	0.14	0.09
v/s Ratio Perm			0.18			0.05			0.05			0.11
v/c Ratio	0.74	0.73	0.46	0.53	0.74	0.13	0.75	0.74	0.24	0.17	0.72	0.62
Uniform Delay, d1	49.4	30.4	14.0	52.8	34.9	14.1	45.6	44.4	31.7	42.1	45.6	34.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3	3.3	0.1	1.0	4.2	0.1	4.1	3.6	0.1	0.1	3.1	1.6
Delay (s)	54.7	33.7	14.2	53.8	39.1	14.2	49.7	48.0	31.8	42.3	48.7	36.0
Level of Service	D	C	B	D	D	B	D	D	C	D	D	D
Approach Delay (s)		32.8			37.8			46.5			43.4	
Approach LOS		C			D			D			D	

Intersection Summary			
HCM Average Control Delay	39.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	76.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	960	50	20	1390	240	120	120	130	200	40	220
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	0.87	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3263		1770	3090	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3263		1770	3090	
Peak-hour factor, PHF	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. Flow (vph)	130	960	50	20	1390	240	120	120	130	200	40	220
RTOR Reduction (vph)	0	0	19	0	0	90	0	115	0	0	149	0
Lane Group Flow (vph)	130	960	31	20	1390	150	120	135	0	200	111	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	5.1	41.6	49.9	1.8	38.3	50.6	8.3	9.4		12.3	13.4	
Effective Green, g (s)	5.1	41.6	49.9	1.8	38.3	50.6	8.3	9.4		12.3	13.4	
Actuated g/C Ratio	0.06	0.51	0.62	0.02	0.47	0.62	0.10	0.12		0.15	0.17	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	111	1815	1052	39	1671	1066	181	378		268	511	
v/s Ratio Prot	c0.07	c0.27	0.00	0.01	c0.39	0.02	0.07	c0.04		c0.11	c0.04	
v/s Ratio Perm			0.02			0.07						
v/c Ratio	1.17	0.53	0.03	0.51	0.83	0.14	0.66	0.36		0.75	0.22	
Uniform Delay, d1	38.0	13.2	6.1	39.2	18.6	6.3	35.1	33.1		32.9	29.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	138.7	0.3	0.0	10.9	3.7	0.1	8.8	0.6		10.8	0.2	
Delay (s)	176.7	13.5	6.1	50.1	22.3	6.3	43.9	33.6		43.7	29.5	
Level of Service	F	B	A	D	C	A	D	C		D	C	
Approach Delay (s)		31.8			20.3			37.0			35.7	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	27.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	81.1	Sum of lost time (s)	24.0
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	390	820	100	490	960	70	210	530	630	25	190	450
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	3539	1583	1770	3539	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	3539	1583	1770	3539	1583	1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	390	820	100	490	960	70	210	530	630	25	190	450
RTOR Reduction (vph)	0	0	59	0	0	27	0	0	0	0	0	0
Lane Group Flow (vph)	390	820	41	490	960	43	210	530	630	25	190	450
Turn Type	Prot		pt+ov	Prot		pt+ov	Prot		Free	Prot		Free
Protected Phases	7	4	4 5	3	8	8 1	5	2		1	6	
Permitted Phases									Free			Free
Actuated Green, G (s)	12.6	21.1	36.1	25.0	33.5	41.4	11.0	21.4	87.4	3.9	14.3	87.4
Effective Green, g (s)	12.6	21.1	36.1	25.0	33.5	41.4	11.0	21.4	87.4	3.9	14.3	87.4
Actuated g/C Ratio	0.14	0.24	0.41	0.29	0.38	0.47	0.13	0.24	1.00	0.04	0.16	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	495	854	654	506	1356	750	223	867	1583	79	305	1583
v/s Ratio Prot	0.11	c0.23	0.03	c0.28	0.27	0.03	c0.12	c0.15		0.01	0.10	
v/s Ratio Perm									0.40			0.28
v/c Ratio	0.79	0.96	0.06	0.97	0.71	0.06	0.94	0.61	0.40	0.32	0.62	0.28
Uniform Delay, d1	36.1	32.7	15.5	30.8	22.8	12.4	37.9	29.3	0.0	40.5	34.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	8.1	21.6	0.0	31.6	1.7	0.0	44.0	1.3	0.7	2.3	3.9	0.5
Delay (s)	44.2	54.3	15.5	62.4	24.5	12.5	81.9	30.6	0.7	42.8	38.0	0.5
Level of Service	D	D	B	E	C	B	F	C	A	D	D	A
Approach Delay (s)		48.3			36.2			24.7			12.8	
Approach LOS		D			D			C			B	

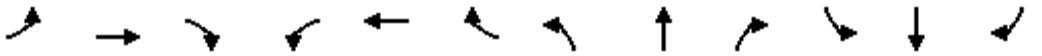
Intersection Summary			
HCM Average Control Delay	33.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	10	40	180	20	40	170
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	10	40	180	20	40	170
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	430	180			200	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	180			200	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	95			97	
cM capacity (veh/h)	565	863			1372	

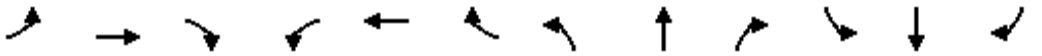
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	10	40	180	20	40	170
Volume Left	10	0	0	0	40	0
Volume Right	0	40	0	20	0	0
cSH	565	863	1700	1700	1372	1700
Volume to Capacity	0.02	0.05	0.11	0.01	0.03	0.10
Queue Length 95th (ft)	1	4	0	0	2	0
Control Delay (s)	11.5	9.4	0.0	0.0	7.7	0.0
Lane LOS	B	A			A	
Approach Delay (s)	9.8		0.0		1.5	
Approach LOS	A					

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	26.1%	ICU Level of Service	A
Analysis Period (min)	15		



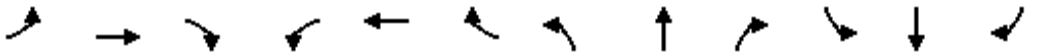
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	150	20	30	240	160	20	340	20	100	270	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3477		1770	1863	1583	1770	1847		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3477		1770	1863	1583	1770	1847		1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	30	150	20	30	240	160	20	340	20	100	270	10
RTOR Reduction (vph)	0	15	0	0	0	122	0	3	0	0	0	6
Lane Group Flow (vph)	30	155	0	30	240	38	20	357	0	100	270	4
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	2.0	13.5		1.7	13.2	13.2	0.6	18.5		6.4	24.3	24.3
Effective Green, g (s)	2.0	13.5		1.7	13.2	13.2	0.6	18.5		6.4	24.3	24.3
Actuated g/C Ratio	0.04	0.24		0.03	0.24	0.24	0.01	0.33		0.11	0.43	0.43
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	63	837		54	438	372	19	609		202	807	686
v/s Ratio Prot	c0.02	0.04		0.02	c0.13		0.01	c0.19		c0.06	0.14	
v/s Ratio Perm						0.02						0.00
v/c Ratio	0.48	0.18		0.56	0.55	0.10	1.05	0.59		0.50	0.33	0.01
Uniform Delay, d1	26.5	16.9		26.8	18.8	16.8	27.8	15.6		23.3	10.5	9.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	5.6	0.1		11.8	1.4	0.1	224.0	1.4		1.9	0.2	0.0
Delay (s)	32.1	17.0		38.6	20.2	16.9	251.8	17.1		25.2	10.8	9.0
Level of Service	C	B		D	C	B	F	B		C	B	A
Approach Delay (s)		19.3			20.3			29.4			14.5	
Approach LOS		B			C			C			B	

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	56.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



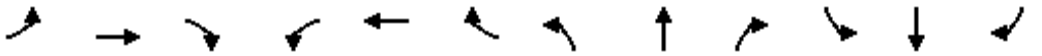
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	100	25	150	380	240	10	1700	100	75	1125	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	0.97		1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3433		1770	3334		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3433		1770	3334		1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	10	100	25	150	380	240	10	1700	100	75	1125	50
RTOR Reduction (vph)	0	22	0	0	125	0	0	0	39	0	0	23
Lane Group Flow (vph)	10	103	0	150	495	0	10	1700	61	75	1125	27
Turn Type	Prot			Prot			Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	2.1	8.8		11.3	18.0		0.7	33.9	45.2	4.3	37.5	39.6
Effective Green, g (s)	2.1	8.8		11.3	18.0		0.7	33.9	45.2	4.3	37.5	39.6
Actuated g/C Ratio	0.03	0.12		0.15	0.24		0.01	0.46	0.61	0.06	0.50	0.53
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	50	407		269	808		17	2320	1048	102	2566	929
v/s Ratio Prot	0.01	0.03		c0.08	c0.15		0.01	c0.33	0.01	c0.04	c0.22	0.00
v/s Ratio Perm									0.03			0.02
v/c Ratio	0.20	0.25		0.56	0.61		0.59	0.73	0.06	0.74	0.44	0.03
Uniform Delay, d1	35.3	29.8		29.2	25.0		36.7	16.5	5.9	34.4	11.7	8.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.3		2.5	1.4		42.8	1.2	0.0	23.8	0.1	0.0
Delay (s)	37.2	30.1		31.7	26.4		79.4	17.7	5.9	58.2	11.8	8.2
Level of Service	D	C		C	C		E	B	A	E	B	A
Approach Delay (s)		30.6			27.5			17.4			14.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	74.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



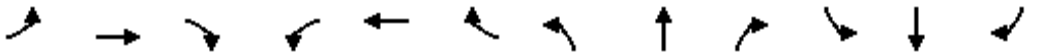
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	200	30	170	450	570	80	670	70	640	440	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	1770	1863	1583	1770	3539	1583	3433	5022	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	1770	1863	1583	1770	3539	1583	3433	5022	
Peak-hour factor, PHF	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. Flow (vph)	280	200	30	170	450	570	80	670	70	640	440	40
RTOR Reduction (vph)	0	0	23	0	0	0	0	0	53	0	9	0
Lane Group Flow (vph)	280	200	7	170	450	570	80	670	17	640	471	0
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			
Actuated Green, G (s)	13.6	24.8	24.8	15.0	26.2	102.2	24.3	25.3	25.3	21.1	22.1	
Effective Green, g (s)	13.6	24.8	24.8	15.0	26.2	102.2	24.3	25.3	25.3	21.1	22.1	
Actuated g/C Ratio	0.13	0.24	0.24	0.15	0.26	1.00	0.24	0.25	0.25	0.21	0.22	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	457	859	384	260	478	1583	421	876	392	709	1086	
v/s Ratio Prot	0.08	0.06		c0.10	c0.24		0.05	c0.19		c0.19	0.09	
v/s Ratio Perm			0.00			c0.36			0.01			
v/c Ratio	0.61	0.23	0.02	0.65	0.94	0.36	0.19	0.76	0.04	0.90	0.43	
Uniform Delay, d1	41.8	31.1	29.4	41.1	37.2	0.0	31.1	35.7	29.3	39.5	34.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.4	0.1	0.0	5.8	27.0	0.6	0.2	4.0	0.0	14.8	0.3	
Delay (s)	44.2	31.2	29.5	46.9	64.3	0.6	31.3	39.7	29.3	54.3	34.9	
Level of Service	D	C	C	D	E	A	C	D	C	D	C	
Approach Delay (s)		38.3			31.3			38.0			46.0	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	38.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	102.2	Sum of lost time (s)	8.0
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



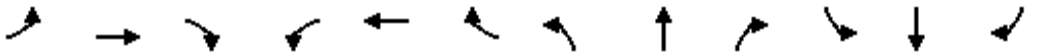
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	490	300	100	610	230	190	400	70	130	320	180
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3394		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3394		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	240	490	300	100	610	230	190	400	70	130	320	180
RTOR Reduction (vph)	0	0	117	0	42	0	0	0	63	0	0	147
Lane Group Flow (vph)	240	490	183	100	798	0	190	400	7	130	320	33
Turn Type	Prot		pm+ov	Prot			Prot		Over	Prot		Over
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases			4									
Actuated Green, G (s)	14.4	30.0	42.0	7.6	23.2		12.0	17.5	7.6	8.4	13.9	14.4
Effective Green, g (s)	14.4	30.0	42.0	7.6	23.2		12.0	17.5	7.6	8.4	13.9	14.4
Actuated g/C Ratio	0.18	0.38	0.53	0.10	0.29		0.15	0.22	0.10	0.11	0.17	0.18
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	321	1335	916	169	990		267	779	151	187	619	287
v/s Ratio Prot	c0.14	0.14	0.03	0.06	c0.24		c0.11	c0.11	0.00	0.07	0.09	0.02
v/s Ratio Perm			0.09									
v/c Ratio	0.75	0.37	0.20	0.59	0.81		0.71	0.51	0.04	0.70	0.52	0.11
Uniform Delay, d1	30.8	17.9	9.9	34.5	26.1		32.1	27.3	32.7	34.3	29.8	27.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	9.2	0.2	0.1	5.5	4.9		8.6	0.6	0.1	10.7	0.7	0.2
Delay (s)	40.0	18.1	10.0	39.9	30.9		40.7	27.8	32.8	45.0	30.5	27.4
Level of Service	D	B	A	D	C		D	C	C	D	C	C
Approach Delay (s)		20.8			31.9			32.1			32.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	28.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	79.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



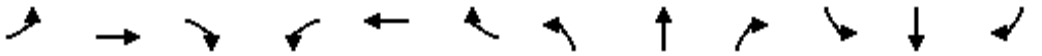
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	210	230	40	150	20	470	540	50	30	560	280
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.99		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1830		3433	3494		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1830		3433	3494		1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	250	210	230	40	150	20	470	540	50	30	560	280
RTOR Reduction (vph)	0	0	165	0	5	0	0	8	0	0	0	119
Lane Group Flow (vph)	250	210	65	40	165	0	470	582	0	30	560	161
Turn Type	Prot		Perm	Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4									6
Actuated Green, G (s)	13.9	24.6	24.6	3.4	14.1		13.1	40.2		2.8	29.9	43.8
Effective Green, g (s)	13.9	24.6	24.6	3.4	14.1		13.1	40.2		2.8	29.9	43.8
Actuated g/C Ratio	0.16	0.28	0.28	0.04	0.16		0.15	0.46		0.03	0.34	0.50
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	283	527	448	69	297		517	1614		57	640	870
v/s Ratio Prot	c0.14	0.11		0.02	c0.09		c0.14	0.17		0.02	c0.30	0.03
v/s Ratio Perm			0.04									0.07
v/c Ratio	0.88	0.40	0.15	0.58	0.56		0.91	0.36		0.53	0.88	0.19
Uniform Delay, d1	35.8	25.2	23.3	41.1	33.6		36.4	15.1		41.4	26.8	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	26.0	0.5	0.2	11.3	2.2		19.7	0.1		8.5	12.7	0.1
Delay (s)	61.8	25.7	23.5	52.4	35.8		56.1	15.2		50.0	39.5	11.9
Level of Service	E	C	C	D	D		E	B		D	D	B
Approach Delay (s)		38.0			39.0			33.4			31.0	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM Average Control Delay	34.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	87.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



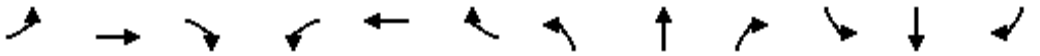
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	50	25	100	175	75	35	1875	25	75	1175	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	25	50	25	100	175	75	35	1875	25	75	1175	25
RTOR Reduction (vph)	0	0	22	0	0	59	0	0	7	0	0	10
Lane Group Flow (vph)	25	50	3	100	175	16	35	1875	18	75	1175	15
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	1.4	9.2	9.2	9.9	17.7	17.7	2.7	39.1	39.1	6.5	42.9	42.9
Effective Green, g (s)	1.4	9.2	9.2	9.9	17.7	17.7	2.7	39.1	39.1	6.5	42.9	42.9
Actuated g/C Ratio	0.02	0.11	0.11	0.12	0.22	0.22	0.03	0.48	0.48	0.08	0.53	0.53
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	31	212	180	217	409	347	59	2464	767	143	2703	842
v/s Ratio Prot	0.01	0.03		c0.06	c0.09		0.02	c0.37		c0.04	c0.23	
v/s Ratio Perm			0.00			0.01			0.01			0.01
v/c Ratio	0.81	0.24	0.02	0.46	0.43	0.05	0.59	0.76	0.02	0.52	0.43	0.02
Uniform Delay, d1	39.5	32.5	31.7	32.9	27.1	24.8	38.5	17.0	10.8	35.6	11.5	8.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	83.8	0.6	0.0	1.5	0.7	0.1	15.0	1.4	0.0	3.4	0.1	0.0
Delay (s)	123.3	33.1	31.8	34.5	27.9	24.9	53.4	18.4	10.9	39.1	11.6	8.9
Level of Service	F	C	C	C	C	C	D	B	B	D	B	A
Approach Delay (s)		55.3			29.1			19.0			13.2	
Approach LOS		E			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	80.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.2%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



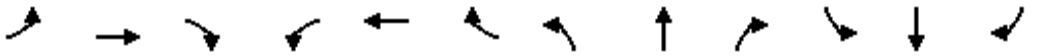
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	140	30	80	290	250	50	280	50	270	310	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.97		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1813		1770	1863	1583	1770	3459		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1813		1770	1863	1583	1770	3459		1770	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	200	140	30	80	290	250	50	280	50	270	310	140
RTOR Reduction (vph)	0	10	0	0	0	124	0	21	0	0	0	75
Lane Group Flow (vph)	200	160	0	80	290	126	50	309	0	270	310	65
Turn Type	Prot			Prot		pm+ov	Prot			Prot		pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases						8						6
Actuated Green, G (s)	9.1	18.1		6.4	15.4	27.5	3.4	12.7		12.1	21.4	30.5
Effective Green, g (s)	9.1	18.1		6.4	15.4	27.5	3.4	12.7		12.1	21.4	30.5
Actuated g/C Ratio	0.14	0.28		0.10	0.24	0.42	0.05	0.19		0.19	0.33	0.47
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	247	503		173	439	764	92	673		328	1160	836
v/s Ratio Prot	c0.11	c0.09		0.05	c0.16	0.03	0.03	c0.09		c0.15	0.09	0.01
v/s Ratio Perm						0.05						0.03
v/c Ratio	0.81	0.32		0.46	0.66	0.17	0.54	0.46		0.82	0.27	0.08
Uniform Delay, d1	27.3	18.7		27.8	22.6	11.8	30.2	23.3		25.6	16.2	9.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.5	0.4		2.0	3.7	0.1	6.4	0.5		15.3	0.1	0.0
Delay (s)	44.8	19.1		29.8	26.3	11.9	36.6	23.8		40.8	16.3	9.7
Level of Service	D	B		C	C	B	D	C		D	B	A
Approach Delay (s)		33.0			20.9			25.5			24.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	25.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	65.3	Sum of lost time (s)	20.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	120	10	50	350	150	10	460	70	90	320	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3498		3433	3539	1583	1770	3539	1583	1770	3386	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3498		3433	3539	1583	1770	3539	1583	1770	3386	
Peak-hour factor, PHF	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. Flow (vph)	80	120	10	50	350	150	10	460	70	90	320	130
RTOR Reduction (vph)	0	8	0	0	0	133	0	0	65	0	45	0
Lane Group Flow (vph)	80	122	0	50	350	17	10	460	5	90	405	0
Turn Type	Prot			Prot		Over	Prot		Over	Prot		
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases												
Actuated Green, G (s)	6.4	14.3		4.3	12.2	6.6	0.6	16.2	4.3	6.6	22.2	
Effective Green, g (s)	6.4	14.3		4.3	12.2	6.6	0.6	16.2	4.3	6.6	22.2	
Actuated g/C Ratio	0.11	0.25		0.07	0.21	0.11	0.01	0.28	0.07	0.11	0.39	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	197	871		257	752	182	19	999	119	204	1310	
v/s Ratio Prot	c0.05	0.04		0.01	c0.10	0.01	0.01	c0.13	0.00	c0.05	0.12	
v/s Ratio Perm												
v/c Ratio	0.41	0.14		0.19	0.47	0.09	0.53	0.46	0.04	0.44	0.31	
Uniform Delay, d1	23.7	16.8		24.9	19.8	22.7	28.3	17.0	24.6	23.7	12.3	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	0.1		0.4	0.5	0.2	23.9	0.3	0.2	1.5	0.1	
Delay (s)	25.1	16.8		25.3	20.2	23.0	52.1	17.3	24.8	25.2	12.4	
Level of Service	C	B		C	C	C	D	B	C	C	B	
Approach Delay (s)		20.0			21.4			18.9			14.5	
Approach LOS		B			C			B			B	

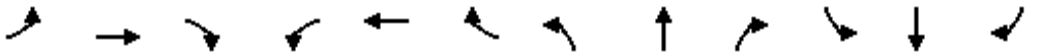
Intersection Summary			
HCM Average Control Delay	18.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	57.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	130	20	20	120	50	30	160	20	50	110	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1203	1267	1077	1203	1211		1203	1246		1203	1267	1077
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1203	1267	1077	1203	1211		1203	1246		1203	1267	1077
Peak-hour factor, PHF	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. Flow (vph)	80	130	20	20	120	50	30	160	20	50	110	70
RTOR Reduction (vph)	0	0	12	0	28	0	0	8	0	0	0	45
Lane Group Flow (vph)	80	130	8	20	142	0	30	172	0	50	110	25
Heavy Vehicles (%)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4									6
Actuated Green, G (s)	5.0	15.7	16.9	0.6	11.3		1.2	9.8		2.0	10.6	15.6
Effective Green, g (s)	5.0	15.7	16.9	0.6	11.3		1.2	9.8		2.0	10.6	15.6
Actuated g/C Ratio	0.11	0.36	0.38	0.01	0.26		0.03	0.22		0.05	0.24	0.35
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	136	451	510	16	310		33	277		55	305	479
v/s Ratio Prot	c0.07	0.10	0.00	0.02	c0.12		0.02	c0.14		c0.04	0.09	0.01
v/s Ratio Perm			0.01									0.02
v/c Ratio	0.59	0.29	0.02	1.25	0.46		0.91	0.62		0.91	0.36	0.05
Uniform Delay, d1	18.6	10.2	8.4	21.8	13.8		21.4	15.5		21.0	13.9	9.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	6.4	0.4	0.0	314.0	1.1		118.0	4.3		87.5	0.7	0.0
Delay (s)	24.9	10.5	8.4	335.8	14.9		139.4	19.8		108.5	14.7	9.4
Level of Service	C	B	A	F	B		F	B		F	B	A
Approach Delay (s)		15.4			48.7			36.9			33.5	
Approach LOS		B			D			D			C	

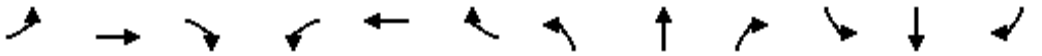
Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	44.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



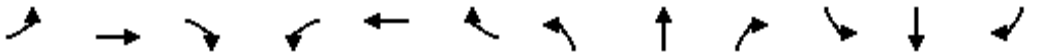
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	230	0	230	330	130	25	220	420	110	300	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.96		1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3539		3433	3389		1770	1863	1583	1770	1762	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3539		3433	3389		1770	1863	1583	1770	1762	
Peak-hour factor, PHF	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. Flow (vph)	70	230	0	230	330	130	25	220	420	110	300	170
RTOR Reduction (vph)	0	0	0	0	48	0	0	0	0	0	21	0
Lane Group Flow (vph)	70	230	0	230	412	0	25	220	420	110	449	0
Turn Type	Prot			Prot			Prot		Free	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	4.9	13.1		9.7	17.9		1.3	17.6	62.5	6.1	22.4	
Effective Green, g (s)	4.9	13.1		9.7	17.9		1.3	17.6	62.5	6.1	22.4	
Actuated g/C Ratio	0.08	0.21		0.16	0.29		0.02	0.28	1.00	0.10	0.36	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	139	742		533	971		37	525	1583	173	632	
v/s Ratio Prot	0.04	0.06		c0.07	c0.12		0.01	c0.12		0.06	c0.26	
v/s Ratio Perm									0.27			
v/c Ratio	0.50	0.31		0.43	0.42		0.68	0.42	0.27	0.64	0.71	
Uniform Delay, d1	27.6	20.9		23.9	18.1		30.4	18.3	0.0	27.1	17.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.9	0.2		0.6	0.3		39.3	0.5	0.4	7.4	3.8	
Delay (s)	30.5	21.1		24.5	18.4		69.7	18.8	0.4	34.6	21.0	
Level of Service	C	C		C	B		E	B	A	C	C	
Approach Delay (s)		23.3			20.4			9.1			23.6	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	62.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



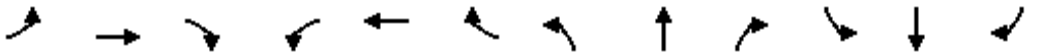
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	240	490	40	30	510	150	40	20	30	160	20	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	0.99		1.00	0.97			0.96			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.98			0.96	1.00
Satd. Flow (prot)	3433	3499		1770	3419			1740			1783	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.98			0.96	1.00
Satd. Flow (perm)	3433	3499		1770	3419			1740			1783	1583
Peak-hour factor, PHF	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. Flow (vph)	240	490	40	30	510	150	40	20	30	160	20	110
RTOR Reduction (vph)	0	6	0	0	31	0	0	22	0	0	0	96
Lane Group Flow (vph)	240	524	0	30	629	0	0	68	0	0	180	14
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	10.0	30.0		1.8	21.8			7.1			25.7	10.0
Effective Green, g (s)	10.0	30.0		1.8	21.8			7.1			25.7	10.0
Actuated g/C Ratio	0.12	0.37		0.02	0.27			0.09			0.32	0.12
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	426	1302		40	925			153			569	196
v/s Ratio Prot	c0.07	0.15		0.02	c0.18			c0.04			c0.10	0.01
v/s Ratio Perm												
v/c Ratio	0.56	0.40		0.75	0.68			0.45			0.32	0.07
Uniform Delay, d1	33.2	18.7		39.2	26.3			34.9			20.8	31.2
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	1.7	0.2		55.2	2.1			2.1			0.3	0.2
Delay (s)	35.0	18.9		94.4	28.4			36.9			21.1	31.3
Level of Service	C	B		F	C			D			C	C
Approach Delay (s)		23.9			31.2			36.9			25.0	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	27.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	80.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	56.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



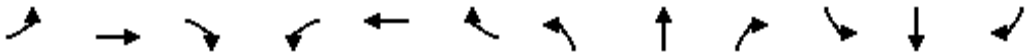
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	375	25	25	1200	50	25	10	25	40	10	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.99		1.00	0.89		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	5038		1770	5055		1770	1663		1770	1863	1583
Flt Permitted	0.20	1.00		0.51	1.00		0.75	1.00		0.73	1.00	1.00
Satd. Flow (perm)	381	5038		946	5055		1399	1663		1368	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	150	375	25	25	1200	50	25	10	25	40	10	150
RTOR Reduction (vph)	0	8	0	0	6	0	0	21	0	0	0	65
Lane Group Flow (vph)	150	392	0	25	1244	0	25	14	0	40	10	85
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	30.9	30.9		30.9	30.9		6.5	6.5		6.5	6.5	6.5
Effective Green, g (s)	30.9	30.9		30.9	30.9		6.5	6.5		6.5	6.5	6.5
Actuated g/C Ratio	0.68	0.68		0.68	0.68		0.14	0.14		0.14	0.14	0.14
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	259	3429		644	3441		200	238		196	267	227
v/s Ratio Prot		0.08			0.25			0.01			0.01	
v/s Ratio Perm	c0.39			0.03			0.02			0.03		c0.05
v/c Ratio	0.58	0.11		0.04	0.36		0.12	0.06		0.20	0.04	0.37
Uniform Delay, d1	3.8	2.5		2.4	3.1		17.0	16.8		17.2	16.8	17.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.1	0.0		0.0	0.1		0.3	0.1		0.5	0.1	1.0
Delay (s)	6.9	2.5		2.4	3.1		17.3	16.9		17.7	16.8	18.6
Level of Service	A	A		A	A		B	B		B	B	B
Approach Delay (s)		3.7			3.1			17.0			18.4	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	45.4	Sum of lost time (s)	8.0
Intersection Capacity Utilization	51.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



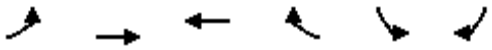
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	20	350	130	30	50	725	890	230	60	250	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	0.94	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	2787	1770	1863	1583	4990	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	2787	1770	1863	1583	4990	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	40	20	350	130	30	50	725	890	230	60	250	50
RTOR Reduction (vph)	0	0	265	0	0	45	0	0	198	0	0	32
Lane Group Flow (vph)	40	20	85	130	30	5	725	890	32	60	250	18
Turn Type	Prot		Over	Prot		Over	Prot		Over	Prot		Perm
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	
Permitted Phases												6
Actuated Green, G (s)	5.3	2.9	18.3	10.4	8.0	6.9	18.3	38.8	10.4	6.9	27.4	27.4
Effective Green, g (s)	5.3	2.9	18.3	10.4	8.0	6.9	18.3	38.8	10.4	6.9	27.4	27.4
Actuated g/C Ratio	0.07	0.04	0.24	0.14	0.11	0.09	0.24	0.52	0.14	0.09	0.37	0.37
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	125	72	680	245	199	146	1218	2631	220	163	1858	578
v/s Ratio Prot	0.02	0.01	0.03	c0.07	c0.02	0.00	c0.15	c0.18	0.02	0.03	0.05	
v/s Ratio Perm												0.01
v/c Ratio	0.32	0.28	0.13	0.53	0.15	0.03	0.60	0.34	0.14	0.37	0.13	0.03
Uniform Delay, d1	33.1	35.0	22.1	30.0	30.4	31.0	25.1	10.6	28.4	32.0	15.9	15.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.81	1.78	0.97	0.52	1.53	2.84
Incremental Delay, d2	1.5	2.1	0.1	2.2	0.4	0.1	0.6	0.3	0.2	1.4	0.1	0.1
Delay (s)	34.6	37.1	22.2	32.2	30.8	31.1	20.9	19.1	27.8	18.1	24.4	43.5
Level of Service	C	D	C	C	C	C	C	B	C	B	C	D
Approach Delay (s)		24.1			31.8			20.9			26.0	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



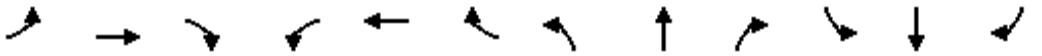
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized						Yes						
Volume (veh/h)	0	0	0	0	0	230	0	0	0	0	70	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	0	230	0	0	0	0	70	0
Approach Volume (veh/h)		0			0			0			70	
Crossing Volume (veh/h)		70			0			0			0	
High Capacity (veh/h)		1311			1385			1385			1385	
High v/c (veh/h)		0.00			0.00			0.00			0.05	
Low Capacity (veh/h)		1094			1161			1161			1161	
Low v/c (veh/h)		0.00			0.00			0.00			0.06	

Intersection Summary					
Maximum v/c High	0.05				
Maximum v/c Low	0.06				
Intersection Capacity Utilization	30.9%	ICU Level of Service		A	



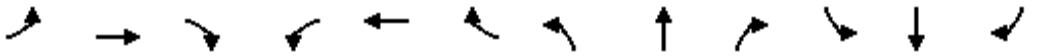
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Right Turn Channelized						
Volume (veh/h)	40	260	0	0	150	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	260	0	0	150	0
Approach Volume (veh/h)		300	0		150	
Crossing Volume (veh/h)		150	40		0	
High Capacity (veh/h)		1232	1342		1385	
High v/c (veh/h)		0.24	0.00		0.11	
Low Capacity (veh/h)		1022	1123		1161	
Low v/c (veh/h)		0.29	0.00		0.13	

Intersection Summary			
Maximum v/c High	0.24		
Maximum v/c Low	0.29		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	50	10	100	280	30	20	340	50	20	240	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.98		1.00	0.99		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1816		1770	1836		1770	3471		1770	3498	
Flt Permitted	0.57	1.00		0.56	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1065	1816		1045	1836		1770	3471		1770	3498	
Peak-hour factor, PHF	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. Flow (vph)	10	50	10	100	280	30	20	340	50	20	240	20
RTOR Reduction (vph)	0	7	0	0	5	0	0	16	0	0	9	0
Lane Group Flow (vph)	10	53	0	100	305	0	20	374	0	20	251	0
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	11.6	11.1		17.8	14.2		0.7	11.9		0.7	11.9	
Effective Green, g (s)	11.6	11.1		17.8	14.2		0.7	11.9		0.7	11.9	
Actuated g/C Ratio	0.27	0.26		0.41	0.33		0.02	0.27		0.02	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	293	466		490	602		29	954		29	961	
v/s Ratio Prot	0.00	0.03		c0.02	c0.17		c0.01	c0.11		0.01	0.07	
v/s Ratio Perm	0.01			0.07								
v/c Ratio	0.03	0.11		0.20	0.51		0.69	0.39		0.69	0.26	
Uniform Delay, d1	11.7	12.3		8.1	11.7		21.2	12.8		21.2	12.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	0.1		0.2	0.7		51.3	0.3		51.3	0.1	
Delay (s)	11.7	12.4		8.3	12.4		72.4	13.0		72.4	12.4	
Level of Service	B	B		A	B		E	B		E	B	
Approach Delay (s)		12.3			11.4			15.9			16.7	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	14.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	43.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



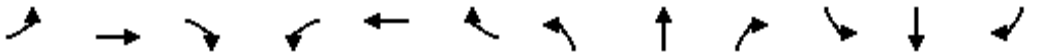
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	25	25	100	25	150	25	130	30	80	200	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00		1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.87		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	1623		1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	1623		1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	25	25	25	100	25	150	25	130	30	80	200	25
RTOR Reduction (vph)	0	0	24	0	126	0	0	0	26	0	0	24
Lane Group Flow (vph)	25	25	1	100	49	0	25	130	4	80	200	1
Turn Type	Prot		Over	Prot			Prot		Over	Prot		Over
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases												
Actuated Green, G (s)	1.5	2.8	1.5	5.0	6.3		1.5	12.1	5.0	3.1	13.7	1.5
Effective Green, g (s)	1.5	2.8	1.5	5.0	6.3		1.5	12.1	5.0	3.1	13.7	1.5
Actuated g/C Ratio	0.04	0.07	0.04	0.13	0.16		0.04	0.31	0.13	0.08	0.35	0.04
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	68	254	61	440	262		68	1098	203	273	1243	61
v/s Ratio Prot	0.01	0.01	0.00	c0.03	c0.03		0.01	0.04	0.00	c0.02	c0.06	0.00
v/s Ratio Perm												
v/c Ratio	0.37	0.10	0.02	0.23	0.19		0.37	0.12	0.02	0.29	0.16	0.02
Uniform Delay, d1	18.3	16.9	18.0	15.3	14.1		18.3	9.6	14.9	16.9	8.7	18.0
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.3	0.2	0.1	0.3	0.3		3.3	0.0	0.0	0.6	0.1	0.1
Delay (s)	21.6	17.1	18.1	15.5	14.5		21.6	9.7	14.9	17.5	8.8	18.1
Level of Service	C	B	B	B	B		C	A	B	B	A	B
Approach Delay (s)		19.0			14.9			12.1			11.8	
Approach LOS		B			B			B			B	

Intersection Summary			
HCM Average Control Delay	13.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.18		
Actuated Cycle Length (s)	39.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



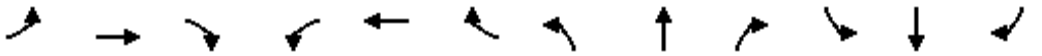
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	60	110	180	40	290	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.64	1.00
Satd. Flow (perm)	1770	1583	1863	1583	1199	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	60	110	180	40	290	150
RTOR Reduction (vph)	0	96	0	16	0	0
Lane Group Flow (vph)	60	14	180	24	290	150
Turn Type		custom		Perm	Perm	
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	4.0	4.0	18.9	18.9	18.9	18.9
Effective Green, g (s)	4.0	4.0	18.9	18.9	18.9	18.9
Actuated g/C Ratio	0.13	0.13	0.61	0.61	0.61	0.61
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	229	205	1140	968	733	1140
v/s Ratio Prot			0.10			0.08
v/s Ratio Perm	c0.03	0.01		0.02	c0.24	
v/c Ratio	0.26	0.07	0.16	0.03	0.40	0.13
Uniform Delay, d1	12.1	11.8	2.6	2.4	3.1	2.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6	0.1	0.1	0.0	0.4	0.1
Delay (s)	12.7	12.0	2.6	2.4	3.4	2.6
Level of Service	B	B	A	A	A	A
Approach Delay (s)	12.2		2.6			3.1
Approach LOS	B		A			A

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	30.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	38.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	470	210	730	650	160	320	110	480	70	50	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95		0.97	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	3434		3433	1863	1583	1770	1816	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	3434		3433	1863	1583	1770	1816	
Peak-hour factor, PHF	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. Flow (vph)	10	470	210	730	650	160	320	110	480	70	50	10
RTOR Reduction (vph)	0	0	0	0	15	0	0	0	0	0	7	0
Lane Group Flow (vph)	10	470	210	730	795	0	320	110	480	70	53	0
Turn Type	Prot		Free	Prot			Prot		Free	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free						Free			
Actuated Green, G (s)	1.2	31.1	91.9	22.5	52.4		12.6	14.7	91.9	7.6	9.7	
Effective Green, g (s)	1.2	31.1	91.9	22.5	52.4		12.6	14.7	91.9	7.6	9.7	
Actuated g/C Ratio	0.01	0.34	1.00	0.24	0.57		0.14	0.16	1.00	0.08	0.11	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	23	630	1583	841	1958		471	298	1583	146	192	
v/s Ratio Prot	0.01	c0.25		c0.21	0.23		c0.09	c0.06		0.04	0.03	
v/s Ratio Perm			0.13						0.30			
v/c Ratio	0.43	0.75	0.13	0.87	0.41		0.68	0.37	0.30	0.48	0.28	
Uniform Delay, d1	45.0	26.9	0.0	33.3	11.0		37.7	34.5	0.0	40.3	37.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.6	4.8	0.2	9.4	0.1		3.9	0.8	0.5	2.5	0.8	
Delay (s)	57.6	31.7	0.2	42.7	11.2		41.6	35.2	0.5	42.7	38.6	
Level of Service	E	C	A	D	B		D	D	A	D	D	
Approach Delay (s)		22.5			26.1			19.2			40.8	
Approach LOS		C			C			B			D	

Intersection Summary			
HCM Average Control Delay	24.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	91.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	460	500	75	40	855	60	125	25	25	30	30	585
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.92		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1583	1770	3539	1583	1770	1723		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1583	1770	3539	1583	1770	1723		1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	460	500	75	40	855	60	125	25	25	30	30	585
RTOR Reduction (vph)	0	0	29	0	0	35	0	20	0	0	0	0
Lane Group Flow (vph)	460	500	46	40	855	25	125	30	0	30	30	585
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		Free
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases			4			8						Free
Actuated Green, G (s)	10.5	32.2	42.5	3.3	25.0	29.6	10.3	13.6		4.6	7.9	69.7
Effective Green, g (s)	10.5	32.2	42.5	3.3	25.0	29.6	10.3	13.6		4.6	7.9	69.7
Actuated g/C Ratio	0.15	0.46	0.61	0.05	0.36	0.42	0.15	0.20		0.07	0.11	1.00
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	752	1635	1056	84	1269	763	262	336		117	211	1583
v/s Ratio Prot	c0.09	0.14	0.01	0.02	c0.24	0.00	0.07	0.02		0.02	0.02	
v/s Ratio Perm			0.02			0.01						c0.37
v/c Ratio	0.61	0.31	0.04	0.48	0.67	0.03	0.48	0.09		0.26	0.14	0.37
Uniform Delay, d1	27.7	11.7	5.5	32.4	18.9	11.7	27.2	23.0		30.9	27.8	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	1.5	0.1	0.0	4.2	1.4	0.0	1.4	0.1		1.2	0.3	0.7
Delay (s)	29.2	11.9	5.5	36.6	20.3	11.7	28.6	23.1		32.1	28.2	0.7
Level of Service	C	B	A	D	C	B	C	C		C	C	A
Approach Delay (s)		19.1			20.5			27.0			3.4	
Approach LOS		B			C			C			A	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	69.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



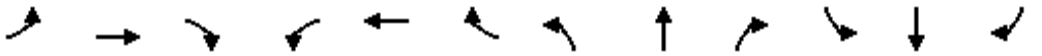
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	700	1080	50	330	760	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.88	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	2787	1770	5085	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	2787	1770	5085	3433	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	700	1080	50	330	760	75
RTOR Reduction (vph)	0	0	0	0	0	34
Lane Group Flow (vph)	700	1080	50	330	760	41
Turn Type		Free	Prot			Perm
Protected Phases	4		3	8	2	
Permitted Phases		Free				2
Actuated Green, G (s)	17.1	75.0	5.2	26.3	40.7	40.7
Effective Green, g (s)	17.1	75.0	5.2	26.3	40.7	40.7
Actuated g/C Ratio	0.23	1.00	0.07	0.35	0.54	0.54
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1159	2787	123	1783	1863	859
v/s Ratio Prot	c0.14		0.03	0.06	0.22	
v/s Ratio Perm		c0.39				0.03
v/c Ratio	0.60	0.39	0.41	0.19	0.41	0.05
Uniform Delay, d1	25.9	0.0	33.4	16.9	10.1	8.1
Progression Factor	0.96	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.3	2.2	0.1	0.7	0.1
Delay (s)	25.6	0.3	35.6	17.0	10.7	8.2
Level of Service	C	A	D	B	B	A
Approach Delay (s)	10.3			19.4	10.5	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	11.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	48.5%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



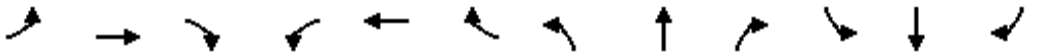
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	50	70	1740	20	50	1225
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	5085	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	5085	1583	1770	5085
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	70	1740	20	50	1225
RTOR Reduction (vph)	0	64	0	5	0	0
Lane Group Flow (vph)	50	6	1740	15	50	1225
Turn Type		Over		Perm	Prot	
Protected Phases	8	1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	4.5	5.7	45.5	45.5	5.7	55.2
Effective Green, g (s)	4.5	5.7	45.5	45.5	5.7	55.2
Actuated g/C Ratio	0.07	0.08	0.67	0.67	0.08	0.82
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	118	133	3418	1064	149	4146
v/s Ratio Prot	c0.03	0.00	c0.34		0.03	c0.24
v/s Ratio Perm				0.01		
v/c Ratio	0.42	0.04	0.51	0.01	0.34	0.30
Uniform Delay, d1	30.4	28.5	5.5	3.7	29.2	1.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.4	0.1	0.1	0.0	1.3	0.0
Delay (s)	32.8	28.6	5.7	3.7	30.6	1.6
Level of Service	C	C	A	A	C	A
Approach Delay (s)	30.4		5.6			2.7
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	25	75	50	25	50	200	1675	50	75	1150	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt		1.00	0.85		0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1817	1583		1728		1770	5085	1583	1770	5085	1583
Flt Permitted		0.79	1.00		0.85		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1479	1583		1493		1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	25	25	75	50	25	50	200	1675	50	75	1150	20
RTOR Reduction (vph)	0	0	0	0	29	0	0	0	12	0	0	7
Lane Group Flow (vph)	0	50	75	0	96	0	200	1675	38	75	1150	13
Turn Type	Perm		Free	Perm			Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8					2			6
Actuated Green, G (s)		10.8	90.0		10.8		15.4	59.2	59.2	8.0	51.8	51.8
Effective Green, g (s)		10.8	90.0		10.8		15.4	59.2	59.2	8.0	51.8	51.8
Actuated g/C Ratio		0.12	1.00		0.12		0.17	0.66	0.66	0.09	0.58	0.58
Clearance Time (s)		4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		177	1583		179		303	3345	1041	157	2927	911
v/s Ratio Prot							c0.11	c0.33		0.04	0.23	
v/s Ratio Perm		0.03	0.05		c0.06				0.02			0.01
v/c Ratio		0.28	0.05		0.54		0.66	0.50	0.04	0.48	0.39	0.01
Uniform Delay, d1		36.1	0.0		37.2		34.9	7.9	5.4	39.0	10.5	8.2
Progression Factor		1.00	1.00		1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2		0.9	0.1		3.1		5.3	0.5	0.1	2.3	0.4	0.0
Delay (s)		36.9	0.1		40.3		40.2	8.4	5.5	41.3	10.9	8.2
Level of Service		D	A		D		D	A	A	D	B	A
Approach Delay (s)		14.8			40.3			11.6			12.7	
Approach LOS		B			D			B			B	

Intersection Summary			
HCM Average Control Delay	13.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	60.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	20	75	100	40	210	200	1700	10	125	1150	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5069	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5069	
Peak-hour factor, PHF	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. Flow (vph)	25	20	75	100	40	210	200	1700	10	125	1150	25
RTOR Reduction (vph)	0	0	51	0	0	182	0	0	3	0	2	0
Lane Group Flow (vph)	25	20	24	100	40	28	200	1700	7	125	1173	0
Confl. Peds. (#/hr)				210								
Turn Type	Prot		pt+ov	Prot		Over	Prot		Perm	Prot		
Protected Phases	7	4	4 5	3	8	1	5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	2.7	6.3	22.2	7.5	11.1	9.4	11.9	31.4	31.4	9.4	28.9	
Effective Green, g (s)	2.7	6.3	22.2	7.5	11.1	9.4	11.9	31.4	31.4	9.4	28.9	
Actuated g/C Ratio	0.04	0.09	0.31	0.11	0.16	0.13	0.17	0.44	0.44	0.13	0.41	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	68	166	498	188	293	211	298	2262	704	236	2075	
v/s Ratio Prot	0.01	0.01	0.01	c0.06	c0.02	0.02	c0.11	c0.33		0.07	0.23	
v/s Ratio Perm									0.00			
v/c Ratio	0.37	0.12	0.05	0.53	0.14	0.13	0.67	0.75	0.01	0.53	0.57	
Uniform Delay, d1	33.1	29.6	16.8	29.9	25.6	27.0	27.5	16.3	10.9	28.5	16.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	3.3	0.3	0.0	2.9	0.2	0.3	5.8	1.4	0.0	2.1	0.4	
Delay (s)	36.5	29.9	16.9	32.8	25.8	27.3	33.4	17.8	10.9	30.7	16.4	
Level of Service	D	C	B	C	C	C	C	B	B	C	B	
Approach Delay (s)		23.1			28.7			19.4			17.8	
Approach LOS		C			C			B			B	

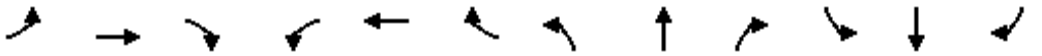
Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



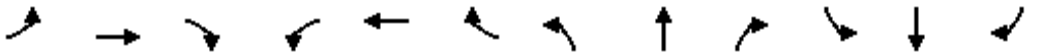
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	200	400	1500	170	270	1015
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.91	1.00	0.94	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	5085	1583	4990	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	5085	1583	4990	5085
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	400	1500	170	270	1015
RTOR Reduction (vph)	0	331	0	0	0	0
Lane Group Flow (vph)	200	69	1500	170	270	1015
Turn Type		Over		Free	Prot	
Protected Phases	8	1	2		1	6
Permitted Phases				Free		
Actuated Green, G (s)	12.0	10.2	24.9	59.1	10.2	39.1
Effective Green, g (s)	12.0	10.2	24.9	59.1	10.2	39.1
Actuated g/C Ratio	0.20	0.17	0.42	1.00	0.17	0.66
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	359	273	2142	1583	861	3364
v/s Ratio Prot	c0.11	0.04	c0.29		0.05	c0.20
v/s Ratio Perm				0.11		
v/c Ratio	0.56	0.25	0.70	0.11	0.31	0.30
Uniform Delay, d1	21.2	21.2	14.0	0.0	21.4	4.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.9	0.5	1.1	0.1	0.2	0.1
Delay (s)	23.0	21.6	15.1	0.1	21.6	4.3
Level of Service	C	C	B	A	C	A
Approach Delay (s)	22.1		13.6			7.9
Approach LOS	C		B			A

Intersection Summary			
HCM Average Control Delay	13.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	59.1	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



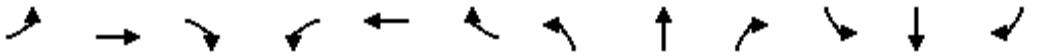
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	220	10	50	70	10	460	40	990	30	430	525	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1630		1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1630		1770	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	220	10	50	70	10	460	40	990	30	430	525	260
RTOR Reduction (vph)	0	45	0	0	0	0	0	0	9	0	0	0
Lane Group Flow (vph)	220	15	0	70	10	460	40	990	21	430	525	260
Turn Type	Prot			Prot		Free	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						Free			2			Free
Actuated Green, G (s)	15.9	9.6		7.8	1.5	90.0	5.2	38.0	38.0	18.6	51.4	90.0
Effective Green, g (s)	15.9	9.6		7.8	1.5	90.0	5.2	38.0	38.0	18.6	51.4	90.0
Actuated g/C Ratio	0.18	0.11		0.09	0.02	1.00	0.06	0.42	0.42	0.21	0.57	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	606	174		153	31	1583	102	1494	668	709	2021	1583
v/s Ratio Prot	c0.06	0.01		c0.04	0.01		0.02	c0.28		c0.13	0.15	
v/s Ratio Perm						c0.29			0.01			0.16
v/c Ratio	0.36	0.09		0.46	0.32	0.29	0.39	0.66	0.03	0.61	0.26	0.16
Uniform Delay, d1	32.6	36.3		39.1	43.7	0.0	40.9	20.9	15.2	32.4	9.7	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	0.2		2.2	6.0	0.5	2.5	2.3	0.1	1.5	0.3	0.2
Delay (s)	33.0	36.5		41.3	49.7	0.5	43.4	23.2	15.3	33.9	10.0	0.2
Level of Service	C	D		D	D	A	D	C	B	C	B	A
Approach Delay (s)		33.7			6.7			23.7			16.4	
Approach LOS		C			A			C			B	

Intersection Summary			
HCM Average Control Delay	18.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



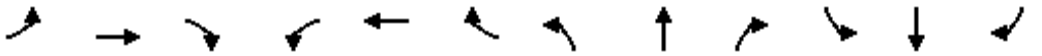
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	1530	70	80	1700	20	150	25	190	30	25	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.93	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	1863	1583	1770	1739	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770	1863	1583	1770	1739	
Peak-hour factor, PHF	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. Flow (vph)	10	1530	70	80	1700	20	150	25	190	30	25	20
RTOR Reduction (vph)	0	0	28	0	0	6	0	0	168	0	19	0
Lane Group Flow (vph)	10	1530	42	80	1700	14	150	25	22	30	26	0
Turn Type	Prot		pm+ov	Prot		Over	Prot		Over	Prot		
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	
Permitted Phases			4									
Actuated Green, G (s)	0.6	32.5	43.6	8.4	40.3	5.7	11.1	10.1	8.4	5.7	4.7	
Effective Green, g (s)	0.6	32.5	43.6	8.4	40.3	5.7	11.1	10.1	8.4	5.7	4.7	
Actuated g/C Ratio	0.01	0.45	0.60	0.12	0.55	0.08	0.15	0.14	0.12	0.08	0.06	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	15	2273	1036	205	2819	124	270	259	183	139	112	
v/s Ratio Prot	0.01	c0.30	0.01	c0.05	c0.33	0.01	c0.08	0.01	0.01	0.02	c0.02	
v/s Ratio Perm			0.02									
v/c Ratio	0.67	0.67	0.04	0.39	0.60	0.11	0.56	0.10	0.12	0.22	0.23	
Uniform Delay, d1	36.0	15.9	6.0	29.8	10.8	31.1	28.5	27.3	28.8	31.4	32.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	75.9	0.8	0.0	1.2	0.4	0.4	2.5	0.2	0.3	0.8	1.1	
Delay (s)	111.8	16.7	6.0	31.0	11.2	31.5	31.0	27.5	29.1	32.2	33.4	
Level of Service	F	B	A	C	B	C	C	C	C	C	C	
Approach Delay (s)		16.8			12.3			29.8			32.9	
Approach LOS		B			B			C			C	

Intersection Summary			
HCM Average Control Delay	16.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	72.7	Sum of lost time (s)	20.0
Intersection Capacity Utilization	61.2%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



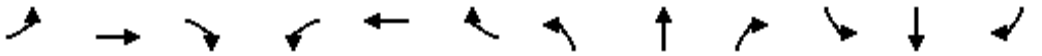
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	400	10	10	530	30	20	80	10	30	40	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3526		1770	3511		1770	1832		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.91	1.00		0.91	1.00	1.00
Satd. Flow (perm)	1770	3526		1770	3511		1693	1832		1693	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	70	400	10	10	530	30	20	80	10	30	40	80
RTOR Reduction (vph)	0	2	0	0	5	0	0	9	0	0	0	71
Lane Group Flow (vph)	70	408	0	10	555	0	20	81	0	30	40	9
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	2.4	20.2		0.6	18.4		4.4	4.4		4.4	4.4	4.4
Effective Green, g (s)	2.4	20.2		0.6	18.4		4.4	4.4		4.4	4.4	4.4
Actuated g/C Ratio	0.06	0.54		0.02	0.49		0.12	0.12		0.12	0.12	0.12
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	114	1915		29	1737		200	217		200	220	187
v/s Ratio Prot	c0.04	0.12		0.01	c0.16			c0.04			0.02	
v/s Ratio Perm							0.01			0.02		0.01
v/c Ratio	0.61	0.21		0.34	0.32		0.10	0.37		0.15	0.18	0.05
Uniform Delay, d1	16.9	4.4		18.1	5.6		14.6	15.1		14.7	14.8	14.5
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.4	0.1		7.0	0.1		0.2	1.1		0.3	0.4	0.1
Delay (s)	26.4	4.4		25.1	5.7		14.9	16.2		15.1	15.2	14.7
Level of Service	C	A		C	A		B	B		B	B	B
Approach Delay (s)		7.6			6.1			16.0			14.9	
Approach LOS		A			A			B			B	

Intersection Summary			
HCM Average Control Delay	8.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	37.2	Sum of lost time (s)	12.0
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



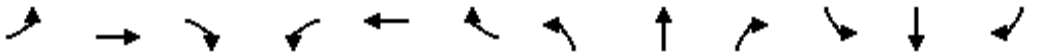
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	200	50	50	400	150	25	25	25	190	75	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.96		1.00	0.92		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3433		1770	3394		1770	1723		1770	1793	
Flt Permitted	0.95	1.00		0.60	1.00		0.82	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3433		1112	3394		1521	1723		1770	1793	
Peak-hour factor, PHF	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. Flow (vph)	50	200	50	50	400	150	25	25	25	190	75	25
RTOR Reduction (vph)	0	31	0	0	62	0	0	22	0	0	19	0
Lane Group Flow (vph)	50	219	0	50	488	0	25	28	0	190	81	0
Turn Type	Prot			Perm			Perm			Split		
Protected Phases	7	4			8			2		6	6	
Permitted Phases				8			2					
Actuated Green, G (s)	1.5	17.5		12.0	12.0		4.9	4.9		10.5	10.5	
Effective Green, g (s)	1.5	17.5		12.0	12.0		4.9	4.9		10.5	10.5	
Actuated g/C Ratio	0.03	0.39		0.27	0.27		0.11	0.11		0.23	0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	59	1338		297	907		166	188		414	419	
v/s Ratio Prot	c0.03	0.06			c0.14			0.02		c0.11	0.05	
v/s Ratio Perm				0.04			c0.02					
v/c Ratio	0.85	0.16		0.17	0.54		0.15	0.15		0.46	0.19	
Uniform Delay, d1	21.6	8.9		12.6	14.1		18.1	18.1		14.8	13.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	64.8	0.1		0.3	0.6		0.4	0.4		0.8	0.2	
Delay (s)	86.4	9.0		12.9	14.7		18.5	18.5		15.6	14.0	
Level of Service	F	A		B	B		B	B		B	B	
Approach Delay (s)		21.9			14.5			18.5			15.0	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	16.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	44.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	46.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



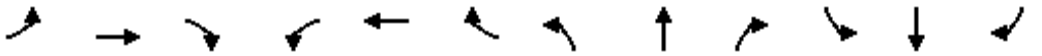
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	215	40	260	80	160	25	625	1325	25	25	900	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	3433	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583	1770	1863	1583	3433	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	215	40	260	80	160	25	625	1325	25	25	900	390
RTOR Reduction (vph)	0	0	0	0	0	21	0	0	9	0	0	0
Lane Group Flow (vph)	215	40	260	80	160	4	625	1325	16	25	900	390
Turn Type	Prot		Free	Prot		Perm	Prot		pm+ov	Prot		Free
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			Free			8			2			Free
Actuated Green, G (s)	9.7	13.5	90.0	10.4	14.2	14.2	20.9	47.9	58.3	2.2	29.2	90.0
Effective Green, g (s)	9.7	13.5	90.0	10.4	14.2	14.2	20.9	47.9	58.3	2.2	29.2	90.0
Actuated g/C Ratio	0.11	0.15	1.00	0.12	0.16	0.16	0.23	0.53	0.65	0.02	0.32	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	370	279	1583	205	294	250	797	2706	1096	43	1650	1583
v/s Ratio Prot	c0.06	0.02		0.05	c0.09		c0.18	0.26	0.00	0.01	c0.18	
v/s Ratio Perm			0.16			0.00			0.01			c0.25
v/c Ratio	0.58	0.14	0.16	0.39	0.54	0.02	0.78	0.49	0.01	0.58	0.55	0.25
Uniform Delay, d1	38.2	33.2	0.0	36.9	34.9	32.0	32.4	13.3	5.6	43.4	25.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.93	1.34	1.00
Incremental Delay, d2	2.3	0.2	0.2	1.2	2.1	0.0	5.1	0.6	0.0	13.5	0.9	0.3
Delay (s)	40.5	33.5	0.2	38.1	37.0	32.0	37.5	14.0	5.6	53.8	34.3	0.3
Level of Service	D	C	A	D	D	C	D	B	A	D	C	A
Approach Delay (s)		19.6			36.8			21.3			24.6	
Approach LOS		B			D			C			C	

Intersection Summary			
HCM Average Control Delay	23.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	63.1%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



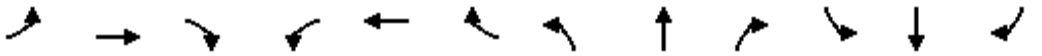
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	725	100	225	25	200	425	400	1500	25	500	1200	1150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.94	1.00	1.00	1.00	1.00	1.00	0.97	0.86	1.00	0.97	0.91	0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	1863	1583	1770	1863	1583	3433	6408	1583	3433	5085	2787
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	1863	1583	1770	1863	1583	3433	6408	1583	3433	5085	2787
Peak-hour factor, PHF	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. Flow (vph)	725	100	225	25	200	425	400	1500	25	500	1200	1150
RTOR Reduction (vph)	0	0	152	0	0	0	0	0	7	0	0	0
Lane Group Flow (vph)	725	100	73	25	200	425	400	1500	18	500	1200	1150
Turn Type	Split		pt+ov	Split		Free	Prot		pt+ov	Prot		Free
Protected Phases	4	4	4 5	8	8		5	2	2 8	1	6	
Permitted Phases						Free						Free
Actuated Green, G (s)	15.9	15.9	29.2	13.8	13.8	90.0	13.3	28.3	42.1	16.0	31.0	90.0
Effective Green, g (s)	15.9	15.9	29.2	13.8	13.8	90.0	13.3	28.3	42.1	16.0	31.0	90.0
Actuated g/C Ratio	0.18	0.18	0.32	0.15	0.15	1.00	0.15	0.31	0.47	0.18	0.34	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	882	329	514	271	286	1583	507	2015	740	610	1752	2787
v/s Ratio Prot	c0.15	0.05	0.05	0.01	c0.11		0.12	0.23	0.01	c0.15	c0.24	
v/s Ratio Perm						0.27						c0.41
v/c Ratio	0.82	0.30	0.14	0.09	0.70	0.27	0.79	0.74	0.02	0.82	0.68	0.41
Uniform Delay, d1	35.7	32.2	21.5	32.7	36.1	0.0	37.0	27.6	12.9	35.6	25.3	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.34	1.25	1.48	1.00	1.00	1.00
Incremental Delay, d2	6.2	0.5	0.1	0.1	7.3	0.4	6.4	2.0	0.0	8.5	2.2	0.5
Delay (s)	41.9	32.8	21.7	32.9	43.4	0.4	56.0	36.7	19.1	44.1	27.5	0.5
Level of Service	D	C	C	C	D	A	E	D	B	D	C	A
Approach Delay (s)		36.7			14.9			40.5			19.5	
Approach LOS		D			B			D			B	

Intersection Summary			
HCM Average Control Delay	28.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	73.6%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



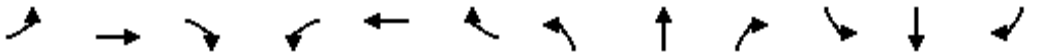
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	610	20	240	410	440	110	170	750	420	150	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		0.94	0.95	1.00	1.00	1.00	0.88	0.97	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5061		4990	3539	1583	1770	1863	2787	3433	1863	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5061		4990	3539	1583	1770	1863	2787	3433	1863	
Peak-hour factor, PHF	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. Flow (vph)	25	610	20	240	410	440	110	170	750	420	150	0
RTOR Reduction (vph)	0	5	0	0	0	0	0	0	37	0	0	0
Lane Group Flow (vph)	25	625	0	240	410	440	110	170	713	420	150	0
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						Free			2			
Actuated Green, G (s)	2.4	16.9		13.5	28.0	75.0	7.7	15.5	29.0	13.1	20.9	
Effective Green, g (s)	2.4	16.9		13.5	28.0	75.0	7.7	15.5	29.0	13.1	20.9	
Actuated g/C Ratio	0.03	0.23		0.18	0.37	1.00	0.10	0.21	0.39	0.17	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	57	1140		898	1321	1583	182	385	1226	600	519	
v/s Ratio Prot	0.01	c0.12		0.05	0.12		0.06	0.09	c0.10	c0.12	0.08	
v/s Ratio Perm						0.28			0.15			
v/c Ratio	0.44	0.55		0.27	0.31	0.28	0.60	0.44	0.58	0.70	0.29	
Uniform Delay, d1	35.6	25.7		26.5	16.7	0.0	32.2	26.0	18.2	29.1	21.2	
Progression Factor	1.00	1.00		1.23	0.95	1.00	0.78	1.17	1.46	1.00	1.00	
Incremental Delay, d2	5.3	0.5		0.2	0.1	0.4	5.4	3.6	0.7	3.7	1.4	
Delay (s)	41.0	26.2		32.7	16.0	0.4	30.5	34.1	27.2	32.8	22.6	
Level of Service	D	C		C	B	A	C	C	C	C	C	
Approach Delay (s)		26.8			13.4			28.7			30.1	
Approach LOS		C			B			C			C	

Intersection Summary			
HCM Average Control Delay	23.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



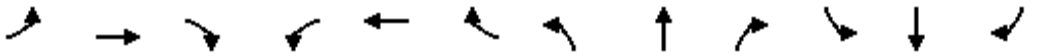
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	400	270	25	190	25	170	25	25	25	25	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.92		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3477		3433	1723		1770	1723	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3477		3433	1723		1770	1723	
Peak-hour factor, PHF	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. Flow (vph)	25	400	270	25	190	25	170	25	25	25	25	25
RTOR Reduction (vph)	0	0	0	0	11	0	0	16	0	0	20	0
Lane Group Flow (vph)	25	400	270	25	204	0	170	34	0	25	30	0
Turn Type	Prot		Free	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									
Actuated Green, G (s)	1.0	10.5	42.0	0.5	10.0		5.8	14.5		0.5	9.2	
Effective Green, g (s)	1.0	10.5	42.0	0.5	10.0		5.8	14.5		0.5	9.2	
Actuated g/C Ratio	0.02	0.25	1.00	0.01	0.24		0.14	0.35		0.01	0.22	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	42	885	1583	21	828		474	595		21	377	
v/s Ratio Prot	0.01	c0.11		0.01	0.06		c0.05	0.02		0.01	0.02	
v/s Ratio Perm			c0.17									
v/c Ratio	0.60	0.45	0.17	1.19	0.25		0.36	0.06		1.19	0.08	
Uniform Delay, d1	20.3	13.3	0.0	20.8	12.9		16.4	9.2		20.8	13.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.6	0.4	0.2	261.4	0.2		0.5	0.0		261.4	0.1	
Delay (s)	40.9	13.7	0.2	282.1	13.1		16.9	9.2		282.1	13.1	
Level of Service	D	B	A	F	B		B	A		F	B	
Approach Delay (s)		9.4			41.1			15.1			102.8	
Approach LOS		A			D			B			F	

Intersection Summary			
HCM Average Control Delay	22.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.24		
Actuated Cycle Length (s)	42.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



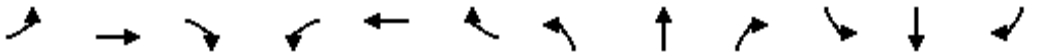
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	1960	0	590	0	1420	550	0	1640	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0		4.0	4.0		4.0	4.0
Lane Util. Factor				0.91	0.91	1.00		0.95	0.88		0.91	1.00
Frt				1.00	1.00	0.85		1.00	0.85		1.00	0.85
Flt Protected				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (prot)				3221	1610	1583		3539	2787		5085	1583
Flt Permitted				0.95	0.95	1.00		1.00	1.00		1.00	1.00
Satd. Flow (perm)				3221	1610	1583		3539	2787		5085	1583
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	1960	0	590	0	1420	550	0	1640	130
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	73
Lane Group Flow (vph)	0	0	0	1313	647	590	0	1420	550	0	1640	57
Turn Type				Split		Free			pm+ov			Perm
Protected Phases				8	8			2	8		6	
Permitted Phases						Free			2			6
Actuated Green, G (s)				34.0	34.0	75.0		33.0	67.0		33.0	33.0
Effective Green, g (s)				34.0	34.0	75.0		33.0	67.0		33.0	33.0
Actuated g/C Ratio				0.45	0.45	1.00		0.44	0.89		0.44	0.44
Clearance Time (s)				4.0	4.0			4.0	4.0		4.0	4.0
Vehicle Extension (s)				3.0	3.0			3.0	3.0		3.0	3.0
Lane Grp Cap (vph)				1460	730	1583		1557	2787		2237	697
v/s Ratio Prot				c0.41	0.40			c0.40	0.09		0.32	
v/s Ratio Perm						0.37			0.11			0.04
v/c Ratio				0.90	0.89	0.37		0.91	0.20		0.73	0.08
Uniform Delay, d1				18.9	18.7	0.0		19.6	0.5		17.4	12.2
Progression Factor				1.00	1.00	1.00		0.81	1.00		0.68	0.20
Incremental Delay, d2				7.7	12.5	0.7		8.8	0.0		1.7	0.2
Delay (s)				26.7	31.2	0.7		24.7	0.5		13.5	2.6
Level of Service				C	C	A		C	A		B	A
Approach Delay (s)		0.0			21.8			18.0			12.7	
Approach LOS		A			C			B			B	

Intersection Summary			
HCM Average Control Delay	18.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	0	940	0	0	0	0	1890	1760	0	2760	840
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0		4.0	4.0
Lane Util. Factor		1.00	1.00					0.91	0.88		0.91	1.00
Frt		1.00	0.85					1.00	0.85		1.00	0.85
Flt Protected		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (prot)		1770	1583					5085	2787		5085	1583
Flt Permitted		0.95	1.00					1.00	1.00		1.00	1.00
Satd. Flow (perm)		1770	1583					5085	2787		5085	1583
Peak-hour factor, PHF	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. Flow (vph)	80	0	940	0	0	0	0	1890	1760	0	2760	840
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	432	0	0	206
Lane Group Flow (vph)	0	80	940	0	0	0	0	1890	1328	0	2760	634
Turn Type	Prot		Free						Perm			Perm
Protected Phases	7	4						2			6	
Permitted Phases			Free						2			6
Actuated Green, G (s)		10.4	75.0					56.6	56.6		56.6	56.6
Effective Green, g (s)		10.4	75.0					56.6	56.6		56.6	56.6
Actuated g/C Ratio		0.14	1.00					0.75	0.75		0.75	0.75
Clearance Time (s)		4.0						4.0	4.0		4.0	4.0
Vehicle Extension (s)		3.0						3.0	3.0		3.0	3.0
Lane Grp Cap (vph)		245	1583					3837	2103		3837	1195
v/s Ratio Prot		0.05						0.37			c0.54	
v/s Ratio Perm			c0.59						0.48			0.40
v/c Ratio		0.33	0.59					0.49	0.63		0.72	0.53
Uniform Delay, d1		29.1	0.0					3.6	4.3		4.9	3.8
Progression Factor		1.00	1.00					1.00	1.00		0.85	2.80
Incremental Delay, d2		0.8	1.6					0.5	1.5		0.6	0.9
Delay (s)		29.9	1.6					4.0	5.8		4.9	11.5
Level of Service		C	A					A	A		A	B
Approach Delay (s)		3.9			0.0			4.9			6.4	
Approach LOS		A			A			A			A	

Intersection Summary			
HCM Average Control Delay	5.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



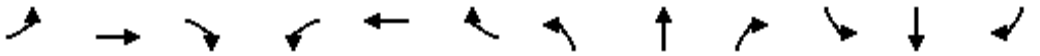
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	350	75	250	200	75	1350	225	275	60	90	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.91		0.94	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	4877		4990	1863	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	4877		4990	1863	1583	1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	50	350	75	250	200	75	1350	225	275	60	90	170
RTOR Reduction (vph)	0	0	62	0	54	0	0	0	219	0	0	154
Lane Group Flow (vph)	50	350	13	250	221	0	1350	225	56	60	90	16
Turn Type	Prot		Perm	Prot			Prot		Over	Prot		Over
Protected Phases	5	2		1	6		3	8	1	7	4	5
Permitted Phases			2									
Actuated Green, G (s)	7.6	13.2	13.2	16.0	21.6		26.3	28.9	16.0	4.4	7.0	7.6
Effective Green, g (s)	7.6	13.2	13.2	16.0	21.6		26.3	28.9	16.0	4.4	7.0	7.6
Actuated g/C Ratio	0.10	0.17	0.17	0.20	0.28		0.34	0.37	0.20	0.06	0.09	0.10
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	171	595	266	361	1342		1672	686	323	99	166	153
v/s Ratio Prot	0.03	c0.10		c0.14	0.05		c0.27	0.12	0.04	0.03	c0.05	0.01
v/s Ratio Perm			0.01									
v/c Ratio	0.29	0.59	0.05	0.69	0.16		0.81	0.33	0.17	0.61	0.54	0.11
Uniform Delay, d1	33.0	30.1	27.4	29.0	21.6		23.8	17.8	25.8	36.2	34.2	32.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0	1.5	0.1	5.7	0.1		3.0	0.3	0.3	10.1	3.6	0.3
Delay (s)	33.9	31.6	27.5	34.6	21.7		26.8	18.1	26.1	46.3	37.8	32.7
Level of Service	C	C	C	C	C		C	B	C	D	D	C
Approach Delay (s)		31.2			27.8			25.6			36.7	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	27.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	78.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	67.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



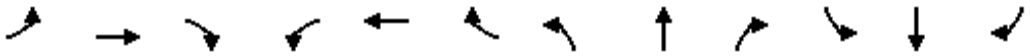
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1475	1515	0	1575	525	720
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.95	1.00		0.91	1.00	1.00
Frt	1.00	0.85		1.00	1.00	0.85
Flt Protected	1.00	1.00		1.00	0.95	1.00
Satd. Flow (prot)	3539	1583		5085	1770	1583
Flt Permitted	1.00	1.00		1.00	0.95	1.00
Satd. Flow (perm)	3539	1583		5085	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1475	1515	0	1575	525	720
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1475	1515	0	1575	525	720
Turn Type		Free				Free
Protected Phases	4			8	2	
Permitted Phases		Free				Free
Actuated Green, G (s)	43.9	90.0		43.9	38.1	90.0
Effective Green, g (s)	43.9	90.0		43.9	38.1	90.0
Actuated g/C Ratio	0.49	1.00		0.49	0.42	1.00
Clearance Time (s)	4.0			4.0	4.0	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	1726	1583		2480	749	1583
v/s Ratio Prot	0.42			0.31	0.30	
v/s Ratio Perm		c0.96				0.45
v/c Ratio	0.85	0.96		0.64	0.70	0.45
Uniform Delay, d1	20.2	0.0		17.1	21.3	0.0
Progression Factor	0.89	1.00		0.59	1.00	1.00
Incremental Delay, d2	3.0	11.0		0.3	5.4	0.9
Delay (s)	21.1	11.0		10.4	26.7	0.9
Level of Service	C	B		B	C	A
Approach Delay (s)	16.0			10.4	11.8	
Approach LOS	B			B	B	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	76.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



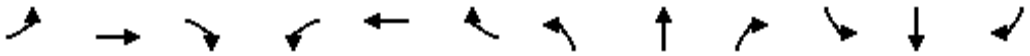
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	370	0	560	875	325	0	0	630	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Lane Util. Factor				0.95	0.95	1.00	0.97	1.00			0.95	
Frt				1.00	1.00	0.85	1.00	1.00			0.97	
Flt Protected				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (prot)				1681	1681	1583	3433	1863			3426	
Flt Permitted				0.95	0.95	1.00	0.95	1.00			1.00	
Satd. Flow (perm)				1681	1681	1583	3433	1863			3426	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	370	0	560	875	325	0	0	630	170
RTOR Reduction (vph)	0	0	0	0	0	453	0	0	0	0	33	0
Lane Group Flow (vph)	0	0	0	185	185	107	875	325	0	0	767	0
Turn Type				Split		Perm	Split					
Protected Phases				8	8		2	2			6	
Permitted Phases						8						
Actuated Green, G (s)				14.3	14.3	14.3	30.0	30.0			18.7	
Effective Green, g (s)				14.3	14.3	14.3	30.0	30.0			18.7	
Actuated g/C Ratio				0.19	0.19	0.19	0.40	0.40			0.25	
Clearance Time (s)				4.0	4.0	4.0	4.0	4.0			4.0	
Vehicle Extension (s)				3.0	3.0	3.0	3.0	3.0			3.0	
Lane Grp Cap (vph)				321	321	302	1373	745			854	
v/s Ratio Prot				c0.11	0.11		c0.25	0.17			c0.22	
v/s Ratio Perm						0.07						
v/c Ratio				0.58	0.58	0.35	0.64	0.44			0.90	
Uniform Delay, d1				27.6	27.6	26.3	18.1	16.4			27.2	
Progression Factor				1.00	1.00	1.00	0.30	0.31			1.03	
Incremental Delay, d2				2.5	2.5	0.7	1.7	1.4			11.8	
Delay (s)				30.1	30.1	27.1	7.1	6.4			39.8	
Level of Service				C	C	C	A	A			D	
Approach Delay (s)		0.0			28.3			6.9			39.8	
Approach LOS		A			C			A			D	

Intersection Summary			
HCM Average Control Delay	22.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	122.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



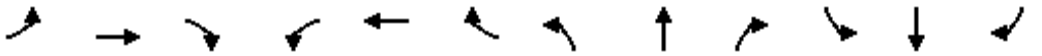
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	10	440	0	0	0	0	1100	540	350	650	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00	1.00					0.95	1.00	1.00	0.95	
Frt		1.00	0.85					1.00	0.85	1.00	1.00	
Flt Protected		0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1782	1583					3539	1583	1770	3539	
Flt Permitted		0.96	1.00					1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1782	1583					3539	1583	1770	3539	
Peak-hour factor, PHF	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. Flow (vph)	100	10	440	0	0	0	0	1100	540	350	650	0
RTOR Reduction (vph)	0	0	381	0	0	0	0	0	282	0	0	0
Lane Group Flow (vph)	0	110	59	0	0	0	0	1100	258	350	650	0
Turn Type	Split		Perm						Perm	Split		
Protected Phases	4	4						2		6	6	
Permitted Phases			4						2			
Actuated Green, G (s)		10.0	10.0					34.2	34.2	18.8	18.8	
Effective Green, g (s)		10.0	10.0					34.2	34.2	18.8	18.8	
Actuated g/C Ratio		0.13	0.13					0.46	0.46	0.25	0.25	
Clearance Time (s)		4.0	4.0					4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0	3.0					3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		238	211					1614	722	444	887	
v/s Ratio Prot		c0.06						c0.31		c0.20	0.18	
v/s Ratio Perm			0.04						0.16			
v/c Ratio		0.46	0.28					0.68	0.36	0.79	0.73	
Uniform Delay, d1		30.0	29.3					16.1	13.3	26.2	25.8	
Progression Factor		1.00	1.00					1.00	1.00	0.94	0.94	
Incremental Delay, d2		1.4	0.7					2.3	1.4	6.2	2.1	
Delay (s)		31.4	30.0					18.4	14.6	30.9	26.4	
Level of Service		C	C					B	B	C	C	
Approach Delay (s)		30.3			0.0			17.2			28.0	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM Average Control Delay	22.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	122.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



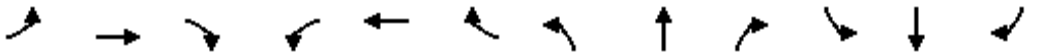
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	180	10	20	675	75	0	0	220	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	
Lane Util. Factor					1.00		0.97	1.00			1.00	
Frt					0.99		1.00	1.00			0.99	
Flt Protected					0.96		0.95	1.00			1.00	
Satd. Flow (prot)					1763		3433	1863			1842	
Flt Permitted					0.96		0.95	1.00			1.00	
Satd. Flow (perm)					1763		3433	1863			1842	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	180	10	20	675	75	0	0	220	20
RTOR Reduction (vph)	0	0	0	0	6	0	0	0	0	0	5	0
Lane Group Flow (vph)	0	0	0	0	204	0	675	75	0	0	235	0
Turn Type				Split			Split					
Protected Phases				8	8		2	2			6	
Permitted Phases												
Actuated Green, G (s)					13.8		34.7	34.7			14.5	
Effective Green, g (s)					13.8		34.7	34.7			14.5	
Actuated g/C Ratio					0.18		0.46	0.46			0.19	
Clearance Time (s)					4.0		4.0	4.0			4.0	
Vehicle Extension (s)					3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)					324		1588	862			356	
v/s Ratio Prot					c0.12		c0.20	0.04			c0.13	
v/s Ratio Perm												
v/c Ratio					0.63		0.43	0.09			0.66	
Uniform Delay, d1					28.2		13.5	11.3			28.0	
Progression Factor					1.00		0.31	0.35			1.02	
Incremental Delay, d2					4.0		0.8	0.2			4.5	
Delay (s)					32.2		5.0	4.2			33.1	
Level of Service					C		A	A			C	
Approach Delay (s)		0.0			32.2			4.9			33.1	
Approach LOS		A			C			A			C	

Intersection Summary			
HCM Average Control Delay	15.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



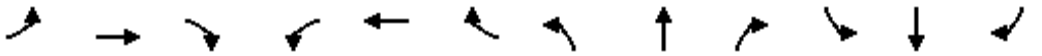
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	0	310	0	0	0	0	730	470	100	300	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0	4.0	4.0	4.0	
Lane Util. Factor		1.00						0.95	1.00	1.00	1.00	
Frt		0.87						1.00	0.85	1.00	1.00	
Flt Protected		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1622						3539	1583	1770	1863	
Flt Permitted		1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1622						3539	1583	1770	1863	
Peak-hour factor, PHF	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. Flow (vph)	20	0	310	0	0	0	0	730	470	100	300	0
RTOR Reduction (vph)	0	274	0	0	0	0	0	0	231	0	0	0
Lane Group Flow (vph)	0	56	0	0	0	0	0	730	239	100	300	0
Turn Type	Split								Perm	Split		
Protected Phases	4	4						2		6	6	
Permitted Phases									2			
Actuated Green, G (s)		8.7						38.1	38.1	16.2	16.2	
Effective Green, g (s)		8.7						38.1	38.1	16.2	16.2	
Actuated g/C Ratio		0.12						0.51	0.51	0.22	0.22	
Clearance Time (s)		4.0						4.0	4.0	4.0	4.0	
Vehicle Extension (s)		3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		188						1798	804	382	402	
v/s Ratio Prot		c0.03						c0.21		0.06	c0.16	
v/s Ratio Perm									0.15			
v/c Ratio		0.30						0.41	0.30	0.26	0.75	
Uniform Delay, d1		30.4						11.4	10.7	24.4	27.5	
Progression Factor		1.00						1.00	1.00	0.96	0.90	
Incremental Delay, d2		0.9						0.7	0.9	0.3	6.6	
Delay (s)		31.2						12.1	11.6	23.7	31.3	
Level of Service		C						B	B	C	C	
Approach Delay (s)		31.2			0.0			11.9			29.4	
Approach LOS		C			A			B			C	

Intersection Summary			
HCM Average Control Delay	18.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



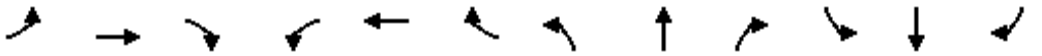
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	275	2450	900	0	1775	325	0	0	0	540	50	1270
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0				4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00		0.95	1.00				0.95	0.95	1.00
Frt	1.00	1.00	0.85		1.00	0.85				1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00	1.00				0.95	0.96	1.00
Satd. Flow (prot)	1770	5085	1583		3539	1583				1681	1699	1583
Flt Permitted	0.95	1.00	1.00		1.00	1.00				0.95	0.96	1.00
Satd. Flow (perm)	1770	5085	1583		3539	1583				1681	1699	1583
Peak-hour factor, PHF	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. Flow (vph)	275	2450	900	0	1775	325	0	0	0	540	50	1270
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	275	2450	900	0	1775	325	0	0	0	292	298	1270
Turn Type	Prot		Free			Free				Prot		Free
Protected Phases	5	2			6					7	4	
Permitted Phases			Free			Free						Free
Actuated Green, G (s)	15.0	66.0	90.0		47.0	90.0				16.0	16.0	90.0
Effective Green, g (s)	15.0	66.0	90.0		47.0	90.0				16.0	16.0	90.0
Actuated g/C Ratio	0.17	0.73	1.00		0.52	1.00				0.18	0.18	1.00
Clearance Time (s)	4.0	4.0			4.0					4.0	4.0	
Vehicle Extension (s)	3.0	3.0			3.0					3.0	3.0	
Lane Grp Cap (vph)	295	3729	1583		1848	1583				299	302	1583
v/s Ratio Prot	0.16	0.48			c0.50					0.17	0.18	
v/s Ratio Perm			0.57			0.21						c0.80
v/c Ratio	0.93	0.66	0.57		0.96	0.21				0.98	0.99	0.80
Uniform Delay, d1	37.0	6.2	0.0		20.6	0.0				36.8	36.9	0.0
Progression Factor	1.00	1.00	1.00		1.02	1.00				1.00	1.00	1.00
Incremental Delay, d2	34.8	0.9	1.5		11.1	0.2				45.2	47.7	4.4
Delay (s)	71.8	7.1	1.5		32.2	0.2				82.0	84.6	4.4
Level of Service	E	A	A		C	A				F	F	A
Approach Delay (s)		10.6			27.2			0.0			29.4	
Approach LOS		B			C			A			C	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	90.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



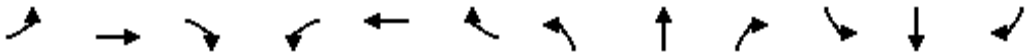
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	70	0	10	300	2010	0	0	200	520
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0		4.0	4.0			4.0	4.0
Lane Util. Factor					1.00		1.00	0.91			1.00	1.00
Frt					0.98		1.00	1.00			1.00	0.85
Flt Protected					0.96		0.95	1.00			1.00	1.00
Satd. Flow (prot)					1755		1770	5085			1863	1583
Flt Permitted					0.96		0.95	1.00			1.00	1.00
Satd. Flow (perm)					1755		1770	5085			1863	1583
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	70	0	10	300	2010	0	0	200	520
RTOR Reduction (vph)	0	0	0	0	9	0	0	0	0	0	0	283
Lane Group Flow (vph)	0	0	0	0	71	0	300	2010	0	0	200	237
Turn Type				Split			Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases												6
Actuated Green, G (s)					5.5		15.2	46.5			27.3	27.3
Effective Green, g (s)					5.5		15.2	46.5			27.3	27.3
Actuated g/C Ratio					0.09		0.25	0.78			0.46	0.46
Clearance Time (s)					4.0		4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0		3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					161		448	3941			848	720
v/s Ratio Prot					c0.04		c0.17	c0.40			0.11	
v/s Ratio Perm												0.15
v/c Ratio					0.44		0.67	0.51			0.24	0.33
Uniform Delay, d1					25.8		20.1	2.5			10.0	10.5
Progression Factor					1.00		1.00	1.04			1.00	1.00
Incremental Delay, d2					1.9		2.7	0.3			0.7	1.2
Delay (s)					27.7		22.9	3.0			10.6	11.7
Level of Service					C		C	A			B	B
Approach Delay (s)		0.0			27.7			5.6			11.4	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM Average Control Delay	7.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



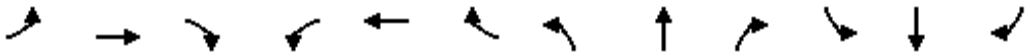
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	910	0	310	0	0	0	0	1400	1060	10	260	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0	4.0	4.0	
Lane Util. Factor	0.94	1.00						0.95	1.00	1.00	0.95	
Frt	1.00	0.85						1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	4990	1583						3539	1583	1770	3539	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	4990	1583						3539	1583	1770	3539	
Peak-hour factor, PHF	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. Flow (vph)	910	0	310	0	0	0	0	1400	1060	10	260	0
RTOR Reduction (vph)	0	230	0	0	0	0	0	0	497	0	0	0
Lane Group Flow (vph)	910	80	0	0	0	0	0	1400	563	10	260	0
Turn Type	Split								Perm	Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	15.5	15.5						31.7	31.7	0.8	36.5	
Effective Green, g (s)	15.5	15.5						31.7	31.7	0.8	36.5	
Actuated g/C Ratio	0.26	0.26						0.53	0.53	0.01	0.61	
Clearance Time (s)	4.0	4.0						4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	1289	409						1870	836	24	2153	
v/s Ratio Prot	c0.18	0.05						c0.40		c0.01	0.07	
v/s Ratio Perm									0.36			
v/c Ratio	0.71	0.20						0.75	0.67	0.42	0.12	
Uniform Delay, d1	20.2	17.4						11.0	10.4	29.4	5.0	
Progression Factor	1.00	1.00						1.00	1.00	0.83	1.28	
Incremental Delay, d2	1.8	0.2						2.8	4.3	11.2	0.1	
Delay (s)	22.0	17.6						13.8	14.7	35.4	6.5	
Level of Service	C	B						B	B	D	A	
Approach Delay (s)		20.9			0.0			14.2			7.5	
Approach LOS		C			A			B			A	

Intersection Summary			
HCM Average Control Delay	15.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



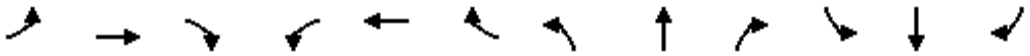
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized						Yes			Yes			
Volume (veh/h)	30	520	0	0	480	200	20	0	280	0	0	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	520	0	0	480	200	20	0	280	0	0	0
Approach Volume (veh/h)		550			480			20			0	
Crossing Volume (veh/h)		0			50			550			500	
High Capacity (veh/h)		1385			1332			897			933	
High v/c (veh/h)		0.40			0.36			0.02			0.00	
Low Capacity (veh/h)		1161			1113			722			754	
Low v/c (veh/h)		0.47			0.43			0.03			0.00	

Intersection Summary				
Maximum v/c High	0.40			
Maximum v/c Low	0.47			
Intersection Capacity Utilization	77.0%	ICU Level of Service	D	



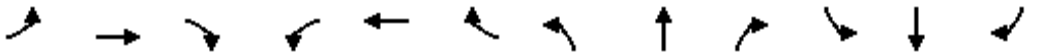
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized			Yes									
Volume (veh/h)	0	350	270	430	70	0	0	0	0	200	0	100
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	350	270	430	70	0	0	0	0	200	0	100
Approach Volume (veh/h)		350			500			0			300	
Crossing Volume (veh/h)		630			0			550			500	
High Capacity (veh/h)		841			1385			897			933	
High v/c (veh/h)		0.42			0.36			0.00			0.32	
Low Capacity (veh/h)		673			1161			722			754	
Low v/c (veh/h)		0.52			0.43			0.00			0.40	

Intersection Summary					
Maximum v/c High	0.42				
Maximum v/c Low	0.52				
Intersection Capacity Utilization	67.0%	ICU Level of Service		C	



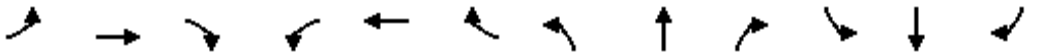
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	10	0	125	150	1260	0	0	1000	350
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor					1.00	1.00	1.00	0.95			0.95	1.00
Frt					1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1770	1583	1770	3539			3539	1583
Flt Permitted					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1770	1583	1770	3539			3539	1583
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	10	0	125	150	1260	0	0	1000	350
RTOR Reduction (vph)	0	0	0	0	0	58	0	0	0	0	0	153
Lane Group Flow (vph)	0	0	0	0	10	67	150	1260	0	0	1000	197
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)					7.0	7.0	7.2	45.0			33.8	33.8
Effective Green, g (s)					7.0	7.0	7.2	45.0			33.8	33.8
Actuated g/C Ratio					0.12	0.12	0.12	0.75			0.56	0.56
Clearance Time (s)					4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					207	185	212	2654			1994	892
v/s Ratio Prot					0.01		c0.08	0.36			c0.28	
v/s Ratio Perm						c0.04						0.12
v/c Ratio					0.05	0.36	0.71	0.47			0.50	0.22
Uniform Delay, d1					23.5	24.4	25.4	2.9			8.0	6.5
Progression Factor					1.00	1.00	0.99	1.53			1.69	4.40
Incremental Delay, d2					0.1	1.2	9.4	0.6			0.6	0.4
Delay (s)					23.6	25.6	34.5	5.0			14.1	29.1
Level of Service					C	C	C	A			B	C
Approach Delay (s)		0.0			25.5			8.2			18.0	
Approach LOS		A			C			A			B	

Intersection Summary			
HCM Average Control Delay	13.6	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



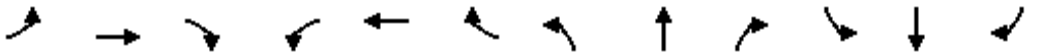
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	350	0	270	0	0	0	0	780	20	350	1125	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Lane Util. Factor	0.95	0.95	1.00					0.95		1.00	0.95	
Frt	1.00	1.00	0.85					1.00		1.00	1.00	
Flt Protected	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (prot)	1681	1681	1583					3526		1770	3539	
Flt Permitted	0.95	0.95	1.00					1.00		0.95	1.00	
Satd. Flow (perm)	1681	1681	1583					3526		1770	3539	
Peak-hour factor, PHF	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. Flow (vph)	350	0	270	0	0	0	0	780	20	350	1125	0
RTOR Reduction (vph)	0	0	72	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	175	175	198	0	0	0	0	797	0	350	1125	0
Turn Type	Split		Perm							Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	12.3	12.3	12.3					21.2		14.5	39.7	
Effective Green, g (s)	12.3	12.3	12.3					21.2		14.5	39.7	
Actuated g/C Ratio	0.20	0.20	0.20					0.35		0.24	0.66	
Clearance Time (s)	4.0	4.0	4.0					4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0					3.0		3.0	3.0	
Lane Grp Cap (vph)	345	345	325					1246		428	2342	
v/s Ratio Prot	0.10	0.10						c0.23		c0.20	0.32	
v/s Ratio Perm			c0.13									
v/c Ratio	0.51	0.51	0.61					0.64		0.82	0.48	
Uniform Delay, d1	21.2	21.2	21.7					16.2		21.5	5.0	
Progression Factor	1.00	1.00	1.00					1.00		1.18	1.72	
Incremental Delay, d2	1.2	1.2	3.4					2.5		11.1	0.7	
Delay (s)	22.3	22.3	25.0					18.7		36.6	9.3	
Level of Service	C	C	C					B		D	A	
Approach Delay (s)		23.5			0.0			18.7			15.8	
Approach LOS		C			A			B			B	

Intersection Summary			
HCM Average Control Delay	18.3	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	61.3%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



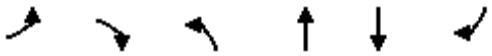
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	70	0	10	50	320	0	0	350	230
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0	4.0	4.0			4.0	4.0
Lane Util. Factor					1.00	1.00	1.00	1.00			0.95	1.00
Frt					1.00	0.85	1.00	1.00			1.00	0.85
Flt Protected					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (prot)					1770	1583	1770	1863			3539	1583
Flt Permitted					0.95	1.00	0.95	1.00			1.00	1.00
Satd. Flow (perm)					1770	1583	1770	1863			3539	1583
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	70	0	10	50	320	0	0	350	230
RTOR Reduction (vph)	0	0	0	0	0	9	0	0	0	0	0	77
Lane Group Flow (vph)	0	0	0	0	70	1	50	320	0	0	350	153
Turn Type				Split		Perm	Prot					Perm
Protected Phases				8	8		5	2			6	
Permitted Phases						8						6
Actuated Green, G (s)					5.6	5.6	5.1	54.4			45.3	45.3
Effective Green, g (s)					5.6	5.6	5.1	54.4			45.3	45.3
Actuated g/C Ratio					0.08	0.08	0.08	0.80			0.67	0.67
Clearance Time (s)					4.0	4.0	4.0	4.0			4.0	4.0
Vehicle Extension (s)					3.0	3.0	3.0	3.0			3.0	3.0
Lane Grp Cap (vph)					146	130	133	1490			2358	1055
v/s Ratio Prot					c0.04		c0.03	c0.17			0.10	
v/s Ratio Perm						0.00						0.10
v/c Ratio					0.48	0.01	0.38	0.21			0.15	0.15
Uniform Delay, d1					29.8	28.6	29.9	1.6			4.2	4.2
Progression Factor					1.00	1.00	1.00	1.00			1.00	1.00
Incremental Delay, d2					2.5	0.0	1.8	0.3			0.1	0.3
Delay (s)					32.3	28.7	31.7	2.0			4.3	4.5
Level of Service					C	C	C	A			A	A
Approach Delay (s)		0.0			31.8			6.0			4.4	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	7.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	0	70	0	0	0	0	180	330	160	260	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0						4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00						0.95	1.00	1.00	1.00	
Frt	1.00	0.85						1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1583						3539	1583	1770	1863	
Flt Permitted	0.95	1.00						1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1583						3539	1583	1770	1863	
Peak-hour factor, PHF	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. Flow (vph)	190	0	70	0	0	0	0	180	330	160	260	0
RTOR Reduction (vph)	0	56	0	0	0	0	0	0	178	0	0	0
Lane Group Flow (vph)	190	14	0	0	0	0	0	180	152	160	260	0
Turn Type	Split								Perm	Prot		
Protected Phases	4	4						2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	11.6	11.6						27.6	27.6	8.8	40.4	
Effective Green, g (s)	11.6	11.6						27.6	27.6	8.8	40.4	
Actuated g/C Ratio	0.19	0.19						0.46	0.46	0.15	0.67	
Clearance Time (s)	4.0	4.0						4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0						3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	342	306						1628	728	260	1254	
v/s Ratio Prot	c0.11	0.01						0.05		c0.09	c0.14	
v/s Ratio Perm									0.10			
v/c Ratio	0.56	0.04						0.11	0.21	0.62	0.21	
Uniform Delay, d1	21.9	19.7						9.2	9.7	24.0	3.7	
Progression Factor	1.00	1.00						1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.0	0.1						0.1	0.7	4.3	0.4	
Delay (s)	23.8	19.7						9.4	10.3	28.3	4.1	
Level of Service	C	B						A	B	C	A	
Approach Delay (s)		22.7			0.0			10.0			13.3	
Approach LOS		C			A			A			B	

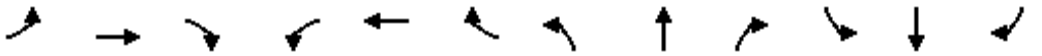
Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	0	50	30	50	40	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	50	30	50	40	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	150	40	40			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	150	40	40			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	95	98			
cM capacity (veh/h)	826	1031	1570			

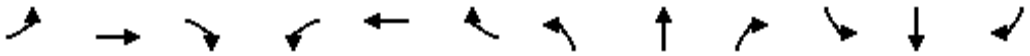
Direction, Lane #	EB 1	NB 1	SB 1
Volume Total	50	80	40
Volume Left	0	30	0
Volume Right	50	0	0
cSH	1031	1570	1700
Volume to Capacity	0.05	0.02	0.02
Queue Length 95th (ft)	4	1	0
Control Delay (s)	8.7	2.8	0.0
Lane LOS	A	A	
Approach Delay (s)	8.7	2.8	0.0
Approach LOS	A		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	21.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	950	550	75	375	60	450	150	125	50	75	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00		0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.93		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	1824		3433	1736		1770	1751	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	1824		3433	1736		1770	1751	
Peak-hour factor, PHF	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. Flow (vph)	50	950	550	75	375	60	450	150	125	50	75	50
RTOR Reduction (vph)	0	0	0	0	7	0	0	42	0	0	35	0
Lane Group Flow (vph)	50	950	550	75	428	0	450	233	0	50	90	0
Turn Type	Prot		Free	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									
Actuated Green, G (s)	5.1	25.4	75.0	7.1	27.4		12.4	22.7		3.8	14.1	
Effective Green, g (s)	5.1	25.4	75.0	7.1	27.4		12.4	22.7		3.8	14.1	
Actuated g/C Ratio	0.07	0.34	1.00	0.09	0.37		0.17	0.30		0.05	0.19	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	120	1199	1583	168	666		568	525		90	329	
v/s Ratio Prot	0.03	c0.27		0.04	0.23		c0.13	c0.13		0.03	0.05	
v/s Ratio Perm			c0.35									
v/c Ratio	0.42	0.79	0.35	0.45	0.64		0.79	0.44		0.56	0.27	
Uniform Delay, d1	33.5	22.4	0.0	32.1	19.7		30.1	21.1		34.8	26.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.10	0.69		1.00	1.00	
Incremental Delay, d2	2.3	3.7	0.6	1.9	2.1		6.1	2.2		7.2	2.1	
Delay (s)	35.9	26.1	0.6	34.0	21.9		39.3	16.8		42.0	28.1	
Level of Service	D	C	A	C	C		D	B		D	C	
Approach Delay (s)		17.4			23.7			30.7			32.1	
Approach LOS		B			C			C			C	

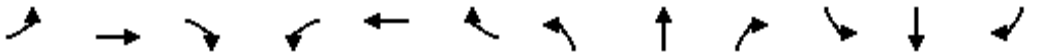
Intersection Summary			
HCM Average Control Delay	22.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	25	420	150	40	10	25	50	25	20	25	50	25
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	25	420	150	40	10	25	50	25	20	25	50	25
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	35			570			698	660	495	680	722	22
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	35			570			698	660	495	680	722	22
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			83	93	97	92	85	98
cM capacity (veh/h)	1576			1002			294	362	575	320	333	1054

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	595	75	95	100
Volume Left	25	40	50	25
Volume Right	150	25	20	25
cSH	1576	1002	347	397
Volume to Capacity	0.02	0.04	0.27	0.25
Queue Length 95th (ft)	1	3	27	25
Control Delay (s)	0.5	4.8	19.2	17.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.5	4.8	19.2	17.1
Approach LOS			C	C

Intersection Summary				
Average Delay	4.8			
Intersection Capacity Utilization	49.5%	ICU Level of Service	A	
Analysis Period (min)	15			



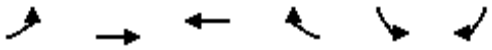
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	320	30	80	25	25	30	730	1290	25	630	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00		0.97	1.00		1.00	1.00	0.88	1.00	1.00	
Frt	1.00	0.99		1.00	0.92		1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1839		3433	1723		1770	1863	2787	1770	1850	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.24	1.00	
Satd. Flow (perm)	1770	1839		3433	1723		1770	1863	2787	438	1850	
Peak-hour factor, PHF	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. Flow (vph)	110	320	30	80	25	25	30	730	1290	25	630	30
RTOR Reduction (vph)	0	5	0	0	21	0	0	0	0	0	2	0
Lane Group Flow (vph)	110	345	0	80	29	0	30	730	1290	25	658	0
Turn Type	Prot			Prot			Prot		Free	Perm		
Protected Phases	7	4		3	8		5	2			6	
Permitted Phases									Free	6		
Actuated Green, G (s)	10.1	18.1		4.2	12.2		1.6	40.7	75.0	35.1	35.1	
Effective Green, g (s)	10.1	18.1		4.2	12.2		1.6	40.7	75.0	35.1	35.1	
Actuated g/C Ratio	0.13	0.24		0.06	0.16		0.02	0.54	1.00	0.47	0.47	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	238	444		192	280		38	1011	2787	205	866	
v/s Ratio Prot	0.06	c0.19		0.02	0.02		0.02	c0.39			0.36	
v/s Ratio Perm									c0.46	0.06		
v/c Ratio	0.46	0.78		0.42	0.10		0.79	0.72	0.46	0.12	0.76	
Uniform Delay, d1	29.9	26.6		34.2	26.7		36.5	12.9	0.0	11.3	16.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	8.4		1.5	0.2		67.6	4.5	0.6	1.2	6.2	
Delay (s)	31.4	34.9		35.7	26.9		104.1	17.4	0.6	12.5	22.7	
Level of Service	C	C		D	C		F	B	A	B	C	
Approach Delay (s)		34.1			32.3			8.1			22.3	
Approach LOS		C			C			A			C	

Intersection Summary			
HCM Average Control Delay	15.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	0.0
Intersection Capacity Utilization	70.4%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



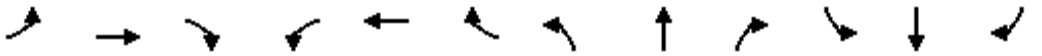
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	400	420	850	330	220	1020
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.97	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	1863	1583	3433	1863	1770	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	1863	1583	3433	1863	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	400	420	850	330	220	1020
RTOR Reduction (vph)	0	314	0	0	0	0
Lane Group Flow (vph)	400	106	850	330	220	1020
Turn Type		Over	Prot			Free
Protected Phases	4	2	3	8	2	
Permitted Phases						Free
Actuated Green, G (s)	15.4	15.1	17.5	36.9	15.1	60.0
Effective Green, g (s)	15.4	15.1	17.5	36.9	15.1	60.0
Actuated g/C Ratio	0.26	0.25	0.29	0.62	0.25	1.00
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	478	398	1001	1146	445	1583
v/s Ratio Prot	c0.21	0.07	c0.25	0.18	0.12	
v/s Ratio Perm						c0.64
v/c Ratio	0.84	0.27	0.85	0.29	0.49	0.64
Uniform Delay, d1	21.1	18.0	20.0	5.4	19.2	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.1	1.6	6.8	0.1	3.9	2.0
Delay (s)	33.2	19.6	26.8	5.5	23.1	2.0
Level of Service	C	B	C	A	C	A
Approach Delay (s)	26.2			20.9	5.8	
Approach LOS	C			C	A	

Intersection Summary			
HCM Average Control Delay	16.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



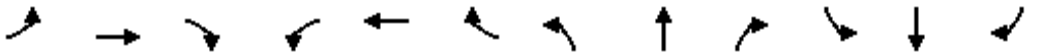
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	140	1070	1160	500	90	140
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt	1.00	1.00	1.00	0.85	1.00	0.85
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	3539	3539	1583	1770	1583
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	3539	3539	1583	1770	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	140	1070	1160	500	90	140
RTOR Reduction (vph)	0	0	0	83	0	114
Lane Group Flow (vph)	140	1070	1160	417	90	26
Turn Type	Prot			pm+ov		Perm
Protected Phases	7	4	8	6	6	
Permitted Phases				8		6
Actuated Green, G (s)	5.1	30.5	21.4	30.2	8.8	8.8
Effective Green, g (s)	5.1	30.5	21.4	30.2	8.8	8.8
Actuated g/C Ratio	0.11	0.64	0.45	0.64	0.19	0.19
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	191	2282	1601	1145	329	295
v/s Ratio Prot	c0.08	0.30	c0.33	c0.07	0.05	
v/s Ratio Perm				0.20		0.02
v/c Ratio	0.73	0.47	0.72	0.36	0.27	0.09
Uniform Delay, d1	20.4	4.3	10.5	4.0	16.5	15.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	13.5	0.2	1.7	0.2	0.5	0.1
Delay (s)	34.0	4.4	12.2	4.2	17.0	16.1
Level of Service	C	A	B	A	B	B
Approach Delay (s)		7.8	9.8		16.4	
Approach LOS		A	A		B	

Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	47.3	Sum of lost time (s)	8.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



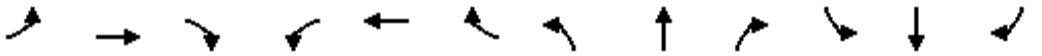
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	30	120	25	20	240	40	1330	25	470	680	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00	1.00		1.00	1.00	1.00	0.91		0.97	0.95	
Frt		1.00	0.85		1.00	0.85	1.00	1.00		1.00	1.00	
Flt Protected		0.97	1.00		0.97	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1806	1583		1812	1583	1770	5071		3433	3524	
Flt Permitted		0.78	1.00		0.81	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1459	1583		1512	1583	1770	5071		3433	3524	
Peak-hour factor, PHF	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. Flow (vph)	50	30	120	25	20	240	40	1330	25	470	680	20
RTOR Reduction (vph)	0	0	96	0	0	2	0	2	0	0	2	0
Lane Group Flow (vph)	0	80	24	0	45	238	40	1353	0	470	698	0
Turn Type	Perm		pm+ov	Perm		pm+ov	Prot			Prot		
Protected Phases		4	5		8	1	5	2		1	6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)		9.2	15.3		9.2	25.5	6.1	37.5		16.3	47.7	
Effective Green, g (s)		9.2	15.3		9.2	25.5	6.1	37.5		16.3	47.7	
Actuated g/C Ratio		0.12	0.20		0.12	0.34	0.08	0.50		0.22	0.64	
Clearance Time (s)		4.0	4.0		4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		179	407		185	623	144	2536		746	2241	
v/s Ratio Prot			0.00			0.08	0.02	c0.27		c0.14	0.20	
v/s Ratio Perm		c0.05	0.01		0.03	0.07						
v/c Ratio		0.45	0.06		0.24	0.38	0.28	0.53		0.63	0.31	
Uniform Delay, d1		30.5	24.1		29.8	18.8	32.4	12.8		26.6	6.2	
Progression Factor		1.00	1.00		1.00	1.00	0.56	1.72		1.00	1.00	
Incremental Delay, d2		1.8	0.1		0.7	0.4	0.9	0.7		1.7	0.4	
Delay (s)		32.3	24.1		30.4	19.2	19.1	22.7		28.4	6.6	
Level of Service		C	C		C	B	B	C		C	A	
Approach Delay (s)		27.4			20.9			22.6			15.3	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM Average Control Delay	20.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



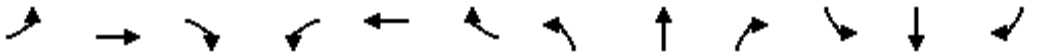
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	1000	975	180	900	160	575	850	175	450	750	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.95		0.94	0.95	1.00	0.94	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	3459		4990	3539	1583	4990	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	3459		4990	3539	1583	4990	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	125	1000	975	180	900	160	575	850	175	450	750	250
RTOR Reduction (vph)	0	0	0	0	16	0	0	0	7	0	0	0
Lane Group Flow (vph)	125	1000	975	180	1044	0	575	850	168	450	750	250
Turn Type	Prot		Free	Prot			Prot		pm+ov	Prot		Free
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			Free						2			Free
Actuated Green, G (s)	7.0	23.6	90.0	11.4	28.0		12.9	26.7	38.1	12.3	26.1	90.0
Effective Green, g (s)	7.0	23.6	90.0	11.4	28.0		12.9	26.7	38.1	12.3	26.1	90.0
Actuated g/C Ratio	0.08	0.26	1.00	0.13	0.31		0.14	0.30	0.42	0.14	0.29	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	138	1333	1583	435	1076		715	1050	670	682	1026	1583
v/s Ratio Prot	0.07	0.20		0.05	c0.30		c0.12	c0.24	0.03	0.09	0.21	
v/s Ratio Perm			c0.62						0.07			0.16
v/c Ratio	0.91	0.75	0.62	0.41	0.97		0.80	0.81	0.25	0.66	0.73	0.16
Uniform Delay, d1	41.2	30.5	0.0	36.2	30.6		37.3	29.3	16.7	36.9	28.8	0.0
Progression Factor	1.04	0.59	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	38.3	1.7	1.3	0.6	20.5		6.5	6.8	0.2	2.3	4.6	0.2
Delay (s)	81.3	19.8	1.3	36.9	51.1		43.9	36.0	16.9	39.2	33.4	0.2
Level of Service	F	B	A	D	D		D	D	B	D	C	A
Approach Delay (s)		14.8			49.1			36.8			29.5	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM Average Control Delay	30.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	82.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



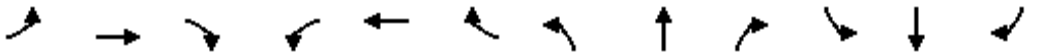
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	260	690	550	140	390	60	580	1140	170	140	800	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.5	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3468		3433	3470		1770	3480	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3468		3433	3470		1770	3480	
Peak-hour factor, PHF	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. Flow (vph)	260	690	550	140	390	60	580	1140	170	140	800	100
RTOR Reduction (vph)	0	0	49	0	10	0	0	10	0	0	8	0
Lane Group Flow (vph)	260	690	501	140	440	0	580	1300	0	140	892	0
Turn Type	Prot		pm+ov	Prot			Prot			Prot		
Protected Phases	7	4	5	3	8		5	2		1	6	
Permitted Phases			4									
Actuated Green, G (s)	17.6	27.8	48.4	12.3	22.5		20.6	44.8		9.5	33.7	
Effective Green, g (s)	18.1	28.3	48.4	12.8	23.0		21.1	45.8		10.0	34.7	
Actuated g/C Ratio	0.16	0.25	0.43	0.11	0.20		0.19	0.41		0.09	0.31	
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	5.0		4.5	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	284	887	742	201	707		642	1408		157	1070	
v/s Ratio Prot	c0.15	c0.19	0.12	0.08	0.13		c0.17	c0.37		0.08	0.26	
v/s Ratio Perm			0.19									
v/c Ratio	0.92	0.78	0.68	0.70	0.62		0.90	0.92		0.89	0.83	
Uniform Delay, d1	46.6	39.4	25.9	48.2	41.0		44.9	31.9		50.9	36.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	31.9	4.3	2.4	10.0	1.7		16.1	10.4		41.9	5.7	
Delay (s)	78.6	43.7	28.4	58.2	42.7		61.0	42.2		92.8	42.1	
Level of Service	E	D	C	E	D		E	D		F	D	
Approach Delay (s)		44.1			46.4			48.0			48.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	46.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	112.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	85.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



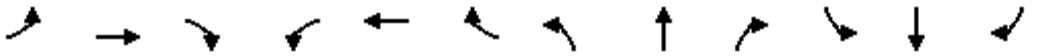
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	320	1390	120	20	180	90	110	610	60	50	580	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frt	1.00	0.99		1.00	0.95		1.00	0.99		1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3497		1770	3362		1770	3492		1770	3419	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3497		1770	3362		1770	3492		1770	3419	
Peak-hour factor, PHF	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. Flow (vph)	320	1390	120	20	180	90	110	610	60	50	580	170
RTOR Reduction (vph)	0	7	0	0	66	0	0	8	0	0	30	0
Lane Group Flow (vph)	320	1503	0	20	204	0	110	662	0	50	720	0
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	18.2	39.4		1.5	22.7		6.1	25.1		3.1	22.1	
Effective Green, g (s)	18.2	39.4		1.5	22.7		6.1	25.1		3.1	22.1	
Actuated g/C Ratio	0.21	0.46		0.02	0.27		0.07	0.29		0.04	0.26	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	379	1619		31	897		127	1030		64	888	
v/s Ratio Prot	c0.18	c0.43		0.01	0.06		c0.06	c0.19		0.03	c0.21	
v/s Ratio Perm												
v/c Ratio	0.84	0.93		0.65	0.23		0.87	0.64		0.78	0.81	
Uniform Delay, d1	32.1	21.5		41.5	24.4		39.1	26.1		40.7	29.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	15.7	9.7		37.9	0.1		42.0	1.4		45.0	5.7	
Delay (s)	47.8	31.2		79.4	24.5		81.0	27.5		85.6	35.2	
Level of Service	D	C		E	C		F	C		F	D	
Approach Delay (s)		34.1			28.3			35.0			38.3	
Approach LOS		C			C			D			D	

Intersection Summary			
HCM Average Control Delay	34.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	85.1	Sum of lost time (s)	20.0
Intersection Capacity Utilization	86.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



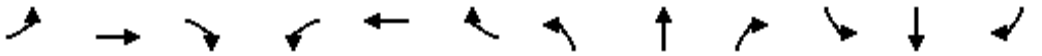
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	690	980	310	50	250	25	220	1280	70	25	260	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	3491		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	3491		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	690	980	310	50	250	25	220	1280	70	25	260	50
RTOR Reduction (vph)	0	0	87	0	8	0	0	0	28	0	0	38
Lane Group Flow (vph)	690	980	223	50	267	0	220	1280	42	25	260	12
Turn Type	Prot		pt+ov	Prot			Prot		Perm	Prot		Perm
Protected Phases	7	4	4 5	3	8		5	2		1	6	
Permitted Phases									2			6
Actuated Green, G (s)	18.8	30.1	48.8	3.1	14.4		14.7	33.0	33.0	1.4	19.7	19.7
Effective Green, g (s)	18.8	30.1	48.8	3.1	14.4		14.7	33.0	33.0	1.4	19.7	19.7
Actuated g/C Ratio	0.22	0.36	0.58	0.04	0.17		0.18	0.39	0.39	0.02	0.24	0.24
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	772	1274	924	66	601		311	1397	625	30	834	373
v/s Ratio Prot	c0.20	c0.28	0.14	0.03	0.08		c0.12	c0.36		0.01	0.07	
v/s Ratio Perm									0.03			0.01
v/c Ratio	0.89	0.77	0.24	0.76	0.44		0.71	0.92	0.07	0.83	0.31	0.03
Uniform Delay, d1	31.4	23.7	8.4	39.9	31.0		32.4	24.0	15.7	41.0	26.4	24.6
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.8	2.9	0.1	38.4	0.5		7.2	9.6	0.0	95.9	0.2	0.0
Delay (s)	44.2	26.5	8.6	78.3	31.5		39.6	33.6	15.8	136.8	26.6	24.6
Level of Service	D	C	A	E	C		D	C	B	F	C	C
Approach Delay (s)		29.9			38.7			33.6			34.5	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	32.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	83.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	1500	975	520	1170	140	770	560	750	400	575	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.91	1.00	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	5085	1583	3433	5085	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	70	1500	975	520	1170	140	770	560	750	400	575	75
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	70	1500	975	520	1170	140	770	560	750	400	575	75
Turn Type	Prot		Free	Prot		Free	Prot		Free	Prot		Free
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			Free			Free			Free			Free
Actuated Green, G (s)	7.2	24.0	90.0	13.0	29.8	90.0	19.6	22.4	90.0	14.6	17.4	90.0
Effective Green, g (s)	7.2	24.0	90.0	13.0	29.8	90.0	19.6	22.4	90.0	14.6	17.4	90.0
Actuated g/C Ratio	0.08	0.27	1.00	0.14	0.33	1.00	0.22	0.25	1.00	0.16	0.19	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	142	1356	1583	496	1684	1583	748	881	1583	557	684	1583
v/s Ratio Prot	0.04	c0.29		c0.15	0.23		c0.22	0.16		0.12	c0.16	
v/s Ratio Perm			c0.62			0.09			0.47			0.05
v/c Ratio	0.49	1.11	0.62	1.05	0.69	0.09	1.03	0.64	0.47	0.72	0.84	0.05
Uniform Delay, d1	39.7	33.0	0.0	38.5	26.1	0.0	35.2	30.2	0.0	35.7	35.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.89	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.7	59.0	1.8	53.7	2.4	0.1	34.2	1.0	0.7	4.4	9.2	0.1
Delay (s)	42.3	92.0	1.8	92.2	28.5	0.1	66.4	27.7	0.7	40.2	44.1	0.1
Level of Service	D	F	A	F	C	A	E	C	A	D	D	A
Approach Delay (s)		56.1			44.4			32.3			39.5	
Approach LOS		E			D			C			D	

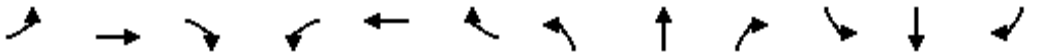
Intersection Summary			
HCM Average Control Delay	44.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	870	1990	500	250	1470	600	210	1550	200	530	1370	540
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00	0.97	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	5085	1583	3433	5085	1583	3433	5085	1583	3433	5085	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Growth Factor (vph)	100%	100%	80%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Adj. Flow (vph)	870	1990	400	250	1470	600	210	1550	200	530	1370	540
RTOR Reduction (vph)	0	0	1	0	0	1	0	0	1	0	0	4
Lane Group Flow (vph)	870	1990	399	250	1470	599	210	1550	199	530	1370	536
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2	7	1	6	3	7	4	1	3	8	5
Permitted Phases			2			6			4			8
Actuated Green, G (s)	25.0	50.0	60.4	8.0	33.0	48.0	10.4	31.0	39.0	15.0	35.6	60.6
Effective Green, g (s)	25.0	50.0	60.4	8.0	33.0	48.0	10.4	31.0	39.0	15.0	35.6	60.6
Actuated g/C Ratio	0.21	0.42	0.50	0.07	0.28	0.40	0.09	0.26	0.32	0.12	0.30	0.50
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	715	2119	797	229	1398	633	298	1314	514	429	1509	799
v/s Ratio Prot	c0.25	0.39	0.04	0.07	c0.29	0.12	0.06	c0.30	0.03	c0.15	c0.27	0.14
v/s Ratio Perm			0.21			0.26			0.10			0.20
v/c Ratio	1.22	0.94	0.50	1.09	1.05	0.95	0.70	1.18	0.39	1.24	0.91	0.67
Uniform Delay, d1	47.5	33.5	19.8	56.0	43.5	34.8	53.3	44.5	31.3	52.5	40.6	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	110.1	8.8	0.5	86.1	38.9	23.2	7.4	89.0	0.5	124.7	8.2	2.2
Delay (s)	157.6	42.3	20.3	142.1	82.4	58.0	60.7	133.5	31.7	177.2	48.9	24.4
Level of Service	F	D	C	F	F	E	E	F	C	F	D	C
Approach Delay (s)		70.4			82.5			115.3			71.3	
Approach LOS		E			F			F			E	

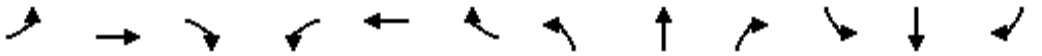
Intersection Summary			
HCM Average Control Delay	82.3	HCM Level of Service	F
HCM Volume to Capacity ratio	1.12		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	111.6%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



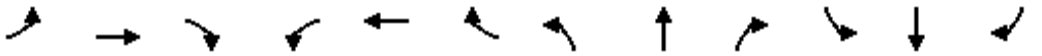
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	580	1650	280	390	1090	260	530	1160	370	290	1150	400
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	2.0	4.0	4.0	3.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	3433	3539	1583	3433	3539	1583	3433	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	580	1650	280	390	1090	260	530	1160	370	290	1150	400
RTOR Reduction (vph)	0	0	2	0	0	3	0	0	2	0	0	5
Lane Group Flow (vph)	580	1650	279	390	1090	257	530	1160	368	290	1150	395
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov	Prot		pm+ov
Protected Phases	5	2	3	1	6	7	3	8	1	7	4	5
Permitted Phases			2			6			8			4
Actuated Green, G (s)	18.0	45.0	58.0	10.0	37.0	47.0	13.0	34.0	44.0	10.0	30.0	48.0
Effective Green, g (s)	19.0	47.0	60.0	11.0	39.0	51.0	14.0	36.0	48.0	10.0	32.0	50.0
Actuated g/C Ratio	0.16	0.39	0.50	0.09	0.32	0.42	0.12	0.30	0.40	0.08	0.27	0.42
Clearance Time (s)	5.0	6.0	5.0	5.0	6.0	4.0	5.0	6.0	5.0	4.0	6.0	5.0
Vehicle Extension (s)	2.0	2.5	2.0	2.0	2.5	3.0	2.0	2.0	2.0	3.0	2.0	2.0
Lane Grp Cap (vph)	544	1386	792	315	1150	673	401	1062	633	286	944	660
v/s Ratio Prot	c0.17	c0.47	0.04	c0.11	0.31	0.04	c0.15	0.33	0.06	0.08	c0.32	0.09
v/s Ratio Perm			0.13			0.12			0.17			0.15
v/c Ratio	1.07	1.19	0.35	1.24	0.95	0.38	1.32	1.09	0.58	1.01	1.22	0.60
Uniform Delay, d1	50.5	36.5	18.2	54.5	39.5	23.7	53.0	42.0	28.1	55.0	44.0	27.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	57.4	93.2	0.1	131.4	16.6	0.4	161.3	56.3	0.9	56.8	107.9	1.0
Delay (s)	107.9	129.7	18.3	185.9	56.1	24.0	214.3	98.3	29.0	111.8	151.9	28.2
Level of Service	F	F	B	F	E	C	F	F	C	F	F	C
Approach Delay (s)		112.2			80.4			115.7			118.7	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	107.8	HCM Level of Service	F
HCM Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	117.0%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	275	1290	140	40	1000	370	90	525	30	130	190	360
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95		1.00	0.95	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99		1.00	0.90	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3539	1583	1770	3511		1770	3192	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3539	1583	1770	3511		1770	3192	
Peak-hour factor, PHF	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. Flow (vph)	275	1290	140	40	1000	370	90	525	30	130	190	360
RTOR Reduction (vph)	0	0	60	0	0	52	0	5	0	0	262	0
Lane Group Flow (vph)	275	1290	80	40	1000	318	90	550	0	130	288	0
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases			4			8						
Actuated Green, G (s)	16.0	42.4	49.3	2.3	28.7	37.4	6.9	18.0		8.7	19.8	
Effective Green, g (s)	16.0	42.4	49.3	2.3	28.7	37.4	6.9	18.0		8.7	19.8	
Actuated g/C Ratio	0.18	0.49	0.56	0.03	0.33	0.43	0.08	0.21		0.10	0.23	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	324	1717	965	47	1162	750	140	723		176	723	
v/s Ratio Prot	c0.16	0.36	0.01	0.02	c0.28	0.04	0.05	c0.16		c0.07	0.09	
v/s Ratio Perm			0.04			0.16						
v/c Ratio	0.85	0.75	0.08	0.85	0.86	0.42	0.64	0.76		0.74	0.40	
Uniform Delay, d1	34.5	18.2	8.7	42.4	27.5	17.5	39.1	32.7		38.2	28.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2	18.3	1.9	0.0	77.3	6.7	0.4	9.7	4.7		14.9	0.4	
Delay (s)	52.8	20.1	8.8	119.6	34.2	17.9	48.7	37.4		53.2	29.1	
Level of Service	D	C	A	F	C	B	D	D		D	C	
Approach Delay (s)		24.5			32.3			39.0			33.7	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	87.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	490	870	90	290	510	40	90	1060	510	10	460	810
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	3539	1583	1770	3539	1583	1770	3539	1583	1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	3539	1583	1770	3539	1583	1770	3539	1583	1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	490	870	90	290	510	40	90	1060	510	10	460	810
RTOR Reduction (vph)	0	0	57	0	0	17	0	0	0	0	0	0
Lane Group Flow (vph)	490	870	33	290	510	23	90	1060	510	10	460	810
Turn Type	Prot		pt+ov	Prot		pt+ov	Prot		Free	Prot		Free
Protected Phases	7	4	4 5	3	8	8 1	5	2		1	6	
Permitted Phases									Free			Free
Actuated Green, G (s)	16.5	23.2	32.2	15.8	22.5	28.8	5.0	29.6	86.9	2.3	26.9	86.9
Effective Green, g (s)	16.5	23.2	32.2	15.8	22.5	28.8	5.0	29.6	86.9	2.3	26.9	86.9
Actuated g/C Ratio	0.19	0.27	0.37	0.18	0.26	0.33	0.06	0.34	1.00	0.03	0.31	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	652	945	587	322	916	525	102	1205	1583	47	577	1583
v/s Ratio Prot	0.14	c0.25	0.02	c0.16	0.14	0.01	c0.05	c0.30		0.01	0.25	
v/s Ratio Perm									0.32			c0.51
v/c Ratio	0.75	0.92	0.06	0.90	0.56	0.04	0.88	0.88	0.32	0.21	0.80	0.51
Uniform Delay, d1	33.3	31.0	17.6	34.8	27.9	19.7	40.7	27.0	0.0	41.4	27.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.9	13.9	0.0	26.7	0.7	0.0	53.3	7.6	0.5	2.3	7.5	1.2
Delay (s)	38.1	44.8	17.6	61.4	28.6	19.7	94.0	34.6	0.5	43.7	35.0	1.2
Level of Service	D	D	B	E	C	B	F	C	A	D	D	A
Approach Delay (s)		40.9			39.5			27.3			13.7	
Approach LOS		D			D			C			B	

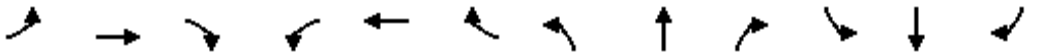
Intersection Summary			
HCM Average Control Delay	29.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	86.9	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	40	130	310	20	50	470
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	40	130	310	20	50	470
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	880	310			330	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	880	310			330	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	87	82			96	
cM capacity (veh/h)	305	730			1229	

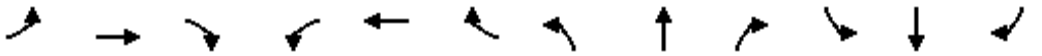
Direction, Lane #	WB 1	WB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	40	130	310	20	50	470
Volume Left	40	0	0	0	50	0
Volume Right	0	130	0	20	0	0
cSH	305	730	1700	1700	1229	1700
Volume to Capacity	0.13	0.18	0.18	0.01	0.04	0.28
Queue Length 95th (ft)	11	16	0	0	3	0
Control Delay (s)	18.6	11.0	0.0	0.0	8.1	0.0
Lane LOS	C	B			A	
Approach Delay (s)	12.8		0.0		0.8	
Approach LOS	B					

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	34.7%	ICU Level of Service	A
Analysis Period (min)	15		



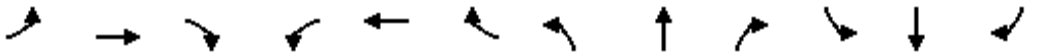
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	200	1000	150	50	450	150	50	125	50	200	200	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3470		1770	1863	1583	1770	1783		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3470		1770	1863	1583	1770	1783		1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	200	1000	150	50	450	150	50	125	50	200	200	125
RTOR Reduction (vph)	0	14	0	0	0	105	0	21	0	0	0	91
Lane Group Flow (vph)	200	1136	0	50	450	45	50	154	0	200	200	34
Turn Type	Prot			Prot		Perm	Prot			Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						8						6
Actuated Green, G (s)	9.9	28.5		2.3	20.9	20.9	3.4	12.6		9.9	19.1	19.1
Effective Green, g (s)	9.9	28.5		2.3	20.9	20.9	3.4	12.6		9.9	19.1	19.1
Actuated g/C Ratio	0.14	0.41		0.03	0.30	0.30	0.05	0.18		0.14	0.28	0.28
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	253	1427		59	562	477	87	324		253	513	436
v/s Ratio Prot	c0.11	c0.33		0.03	0.24		0.03	c0.09		c0.11	0.11	
v/s Ratio Perm						0.03						0.02
v/c Ratio	0.79	0.80		0.85	0.80	0.09	0.57	0.47		0.79	0.39	0.08
Uniform Delay, d1	28.7	17.9		33.3	22.3	17.4	32.2	25.4		28.7	20.4	18.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.4	3.2		64.8	8.0	0.1	8.9	1.1		15.4	0.5	0.1
Delay (s)	44.1	21.0		98.2	30.3	17.5	41.1	26.5		44.1	20.9	18.7
Level of Service	D	C		F	C	B	D	C		D	C	B
Approach Delay (s)		24.4			32.6			29.7			29.2	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	27.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	69.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	69.8%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



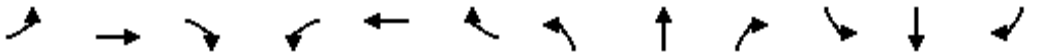
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	810	25	225	550	125	25	1900	300	260	2325	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3523		1770	3441		1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3523		1770	3441		1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	30	810	25	225	550	125	25	1900	300	260	2325	20
RTOR Reduction (vph)	0	2	0	0	16	0	0	0	18	0	0	4
Lane Group Flow (vph)	30	833	0	225	659	0	25	1900	282	260	2325	16
Turn Type	Prot			Prot			Prot		pm+ov	Prot		pm+ov
Protected Phases	7	4		3	8		5	2	3	1	6	7
Permitted Phases									2			6
Actuated Green, G (s)	3.6	28.6		15.0	40.0		2.4	46.6	61.6	17.0	61.2	64.8
Effective Green, g (s)	3.6	28.6		15.0	40.0		2.4	46.6	61.6	17.0	61.2	64.8
Actuated g/C Ratio	0.03	0.23		0.12	0.32		0.02	0.38	0.50	0.14	0.50	0.53
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	52	818		216	1117		34	1923	843	244	2526	884
v/s Ratio Prot	0.02	c0.24		c0.13	0.19		0.01	c0.37	0.04	c0.15	0.46	0.00
v/s Ratio Perm									0.14			0.01
v/c Ratio	0.58	1.02		1.04	0.59		0.74	0.99	0.33	1.07	0.92	0.02
Uniform Delay, d1	59.0	47.3		54.1	34.8		60.1	38.0	18.5	53.1	28.7	14.0
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	14.6	36.3		72.6	0.8		57.7	17.6	0.2	76.0	6.1	0.0
Delay (s)	73.6	83.6		126.7	35.6		117.8	55.6	18.7	129.1	34.9	14.0
Level of Service	E	F		F	D		F	E	B	F	C	B
Approach Delay (s)		83.3			58.4			51.3			44.1	
Approach LOS		F			E			D			D	

Intersection Summary			
HCM Average Control Delay	53.6	HCM Level of Service	D
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	123.2	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.1%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



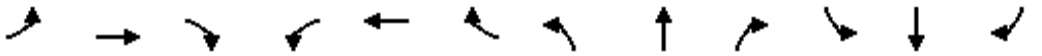
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	480	460	260	70	510	690	70	990	230	960	1100	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	0.97	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	3433	3539	1583	1770	1863	1583	1770	3539	1583	3433	5037	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	3433	3539	1583	1770	1863	1583	1770	3539	1583	3433	5037	
Peak-hour factor, PHF	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. Flow (vph)	480	460	260	70	510	690	70	990	230	960	1100	75
RTOR Reduction (vph)	0	0	171	0	0	0	0	0	143	0	7	0
Lane Group Flow (vph)	480	460	89	70	510	690	70	990	87	960	1168	0
Turn Type	Prot		Perm	Prot		Free	Prot		Perm	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			Free			2			
Actuated Green, G (s)	20.9	40.1	40.1	8.6	27.8	117.5	12.3	29.8	29.8	23.0	40.5	
Effective Green, g (s)	20.9	40.1	40.1	8.6	27.8	117.5	12.3	29.8	29.8	23.0	40.5	
Actuated g/C Ratio	0.18	0.34	0.34	0.07	0.24	1.00	0.10	0.25	0.25	0.20	0.34	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	611	1208	540	130	441	1583	185	898	401	672	1736	
v/s Ratio Prot	c0.14	0.13		0.04	c0.27		0.04	c0.28		c0.28	0.23	
v/s Ratio Perm			0.06			0.44			0.05			
v/c Ratio	0.79	0.38	0.16	0.54	1.16	0.44	0.38	1.10	0.22	1.43	0.67	
Uniform Delay, d1	46.2	29.3	27.0	52.5	44.8	0.0	49.0	43.8	34.6	47.2	32.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.6	0.2	0.1	4.2	93.2	0.9	1.3	62.1	0.3	201.4	1.0	
Delay (s)	52.7	29.5	27.2	56.8	138.0	0.9	50.3	106.0	34.9	248.7	33.9	
Level of Service	D	C	C	E	F	A	D	F	C	F	C	
Approach Delay (s)		38.3			59.0			90.3			130.5	
Approach LOS		D			E			F			F	

Intersection Summary			
HCM Average Control Delay	87.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	117.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	108.6%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



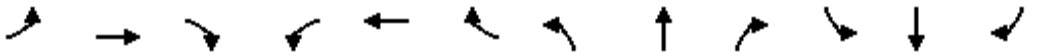
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	825	325	125	775	200	375	725	100	380	800	210
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	1770	3430		1770	3539	1583	1770	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	1770	3430		1770	3539	1583	1770	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	250	825	325	125	775	200	375	725	100	380	800	210
RTOR Reduction (vph)	0	0	28	0	25	0	0	0	73	0	0	179
Lane Group Flow (vph)	250	825	297	125	950	0	375	725	27	380	800	31
Turn Type	Prot		pm+ov	Prot			Prot		Over	Prot		Over
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases			4									
Actuated Green, G (s)	12.0	27.0	45.0	8.0	23.0		18.0	20.0	8.0	19.0	21.0	12.0
Effective Green, g (s)	12.0	27.0	45.0	8.0	23.0		18.0	20.0	8.0	19.0	21.0	12.0
Actuated g/C Ratio	0.13	0.30	0.50	0.09	0.26		0.20	0.22	0.09	0.21	0.23	0.13
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	236	1062	862	157	877		354	786	141	374	826	211
v/s Ratio Prot	c0.14	c0.23	0.07	0.07	c0.28		0.21	0.20	0.02	c0.21	c0.23	0.02
v/s Ratio Perm			0.12									
v/c Ratio	1.06	0.78	0.34	0.80	1.08		1.06	0.92	0.19	1.02	0.97	0.15
Uniform Delay, d1	39.0	28.8	13.6	40.2	33.5		36.0	34.2	38.0	35.5	34.2	34.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	75.1	3.6	0.2	23.7	55.4		64.4	16.2	0.7	50.7	23.6	0.3
Delay (s)	114.1	32.4	13.8	63.9	88.9		100.4	50.5	38.7	86.2	57.7	34.8
Level of Service	F	C	B	E	F		F	D	D	F	E	C
Approach Delay (s)		42.7			86.0			65.1			62.0	
Approach LOS		D			F			E			E	

Intersection Summary			
HCM Average Control Delay	62.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



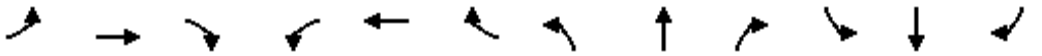
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	290	400	425	100	250	30	340	475	175	40	500	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		0.97	0.95		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1833		3433	3396		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1833		3433	3396		1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	290	400	425	100	250	30	340	475	175	40	500	300
RTOR Reduction (vph)	0	0	216	0	5	0	0	40	0	0	0	63
Lane Group Flow (vph)	290	400	209	100	275	0	340	610	0	40	500	237
Turn Type	Prot		Perm	Prot			Prot			Prot		pm+ov
Protected Phases	7	4		3	8		5	2		1	6	7
Permitted Phases			4									6
Actuated Green, G (s)	16.7	26.9	26.9	6.1	16.3		10.8	35.2		3.4	27.8	44.5
Effective Green, g (s)	16.7	26.9	26.9	6.1	16.3		10.8	35.2		3.4	27.8	44.5
Actuated g/C Ratio	0.19	0.31	0.31	0.07	0.19		0.12	0.40		0.04	0.32	0.51
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	337	572	486	123	341		423	1365		69	591	876
v/s Ratio Prot	c0.16	0.21		0.06	c0.15		c0.10	0.18		0.02	c0.27	0.05
v/s Ratio Perm			0.13									0.10
v/c Ratio	0.86	0.70	0.43	0.81	0.81		0.80	0.45		0.58	0.85	0.27
Uniform Delay, d1	34.3	26.8	24.2	40.2	34.1		37.4	19.1		41.4	27.9	12.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	19.5	3.7	0.6	32.1	13.0		10.6	0.2		11.3	10.8	0.2
Delay (s)	53.8	30.5	24.8	72.3	47.2		48.0	19.3		52.7	38.7	12.5
Level of Service	D	C	C	E	D		D	B		D	D	B
Approach Delay (s)		34.4			53.8			29.2			30.0	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM Average Control Delay	33.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	87.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



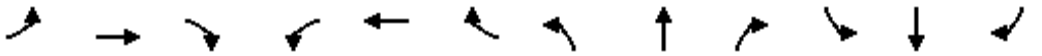
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	325	250	30	260	140	100	2310	75	300	2790	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	25	325	250	30	260	140	100	2310	75	300	2790	25
RTOR Reduction (vph)	0	0	95	0	0	113	0	0	13	0	0	4
Lane Group Flow (vph)	25	325	155	30	260	27	100	2310	62	300	2790	21
Turn Type	Prot		Perm	Prot		Perm	Prot		Perm	Prot		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	2.4	22.9	22.9	2.4	22.9	22.9	8.6	56.7	56.7	22.0	70.1	70.1
Effective Green, g (s)	2.4	22.9	22.9	2.4	22.9	22.9	8.6	56.7	56.7	22.0	70.1	70.1
Actuated g/C Ratio	0.02	0.19	0.19	0.02	0.19	0.19	0.07	0.47	0.47	0.18	0.58	0.58
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	35	356	302	35	356	302	127	2403	748	325	2970	925
v/s Ratio Prot	0.01	c0.17		c0.02	0.14		0.06	0.45		c0.17	c0.55	
v/s Ratio Perm			0.10			0.02			0.04			0.01
v/c Ratio	0.71	0.91	0.51	0.86	0.73	0.09	0.79	0.96	0.08	0.92	0.94	0.02
Uniform Delay, d1	58.5	47.6	43.6	58.6	45.6	40.0	54.8	30.6	17.4	48.2	23.0	10.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.24	0.50	0.09
Incremental Delay, d2	51.0	26.9	1.5	94.8	7.5	0.1	26.7	11.3	0.2	24.0	5.5	0.0
Delay (s)	109.5	74.5	45.0	153.4	53.2	40.1	81.5	41.9	17.6	83.7	17.0	1.0
Level of Service	F	E	D	F	D	D	F	D	B	F	B	A
Approach Delay (s)		63.7			55.9			42.7			23.3	
Approach LOS		E			E			D			C	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



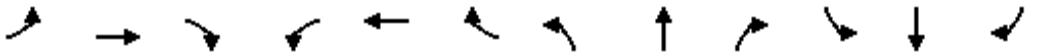
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	450	50	60	320	350	30	575	75	225	500	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	1.00
Frt	1.00	0.98		1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	1835		1770	1863	1583	1770	3478		1770	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	1835		1770	1863	1583	1770	3478		1770	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	250	450	50	60	320	350	30	575	75	225	500	250
RTOR Reduction (vph)	0	5	0	0	0	44	0	13	0	0	0	119
Lane Group Flow (vph)	250	495	0	60	320	306	30	637	0	225	500	131
Turn Type	Prot			Prot		pm+ov	Prot			Prot		pm+ov
Protected Phases	7	4		3	8	1	5	2		1	6	7
Permitted Phases						8						6
Actuated Green, G (s)	11.1	25.0		3.1	17.0	27.1	1.9	19.4		10.1	27.6	38.7
Effective Green, g (s)	11.1	25.0		3.1	17.0	27.1	1.9	19.4		10.1	27.6	38.7
Actuated g/C Ratio	0.15	0.34		0.04	0.23	0.37	0.03	0.26		0.14	0.38	0.53
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	267	623		75	430	669	46	917		243	1327	918
v/s Ratio Prot	c0.14	c0.27		0.03	0.17	0.06	0.02	c0.18		c0.13	0.14	0.02
v/s Ratio Perm						0.13						0.06
v/c Ratio	0.94	0.79		0.80	0.74	0.46	0.65	0.69		0.93	0.38	0.14
Uniform Delay, d1	30.9	22.0		34.9	26.3	17.7	35.5	24.4		31.4	16.7	8.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	37.9	6.9		43.9	6.9	0.5	28.5	2.3		37.8	0.2	0.1
Delay (s)	68.8	28.9		78.8	33.1	18.2	64.1	26.7		69.2	16.9	9.0
Level of Service	E	C		E	C	B	E	C		E	B	A
Approach Delay (s)		42.2			29.7			28.4			27.0	
Approach LOS		D			C			C			C	

Intersection Summary			
HCM Average Control Delay	31.6	HCM Level of Service	C
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	73.6	Sum of lost time (s)	12.0
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	475	20	75	450	125	20	650	70	150	725	175
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		0.97	0.95	1.00	1.00	0.95	1.00	1.00	0.95	
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3518		3433	3539	1583	1770	3539	1583	1770	3436	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3518		3433	3539	1583	1770	3539	1583	1770	3436	
Peak-hour factor, PHF	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. Flow (vph)	250	475	20	75	450	125	20	650	70	150	725	175
RTOR Reduction (vph)	0	3	0	0	0	108	0	0	58	0	22	0
Lane Group Flow (vph)	250	492	0	75	450	17	20	650	12	150	878	0
Turn Type	Prot			Prot		Over	Prot		Over	Prot		
Protected Phases	7	4		3	8	1	5	2	3	1	6	
Permitted Phases												
Actuated Green, G (s)	14.9	26.6		4.5	16.2	10.6	1.4	21.7	4.5	10.6	30.9	
Effective Green, g (s)	14.9	26.6		4.5	16.2	10.6	1.4	21.7	4.5	10.6	30.9	
Actuated g/C Ratio	0.19	0.34		0.06	0.20	0.13	0.02	0.27	0.06	0.13	0.39	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	332	1179		195	722	211	31	967	90	236	1337	
v/s Ratio Prot	c0.14	0.14		0.02	c0.13	0.01	0.01	0.18	0.01	c0.08	c0.26	
v/s Ratio Perm												
v/c Ratio	0.75	0.42		0.38	0.62	0.08	0.65	0.67	0.14	0.64	0.66	
Uniform Delay, d1	30.5	20.4		36.1	28.8	30.1	38.8	25.7	35.6	32.6	19.9	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	9.3	0.2		1.3	1.7	0.2	37.9	1.9	0.7	5.5	1.2	
Delay (s)	39.8	20.6		37.4	30.5	30.3	76.6	27.5	36.3	38.1	21.1	
Level of Service	D	C		D	C	C	E	C	D	D	C	
Approach Delay (s)		27.1			31.3			29.7			23.5	
Approach LOS		C			C			C			C	

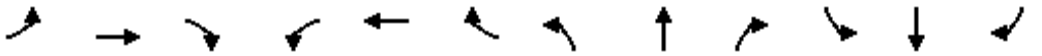
Intersection Summary			
HCM Average Control Delay	27.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	79.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	320	70	20	170	70	80	270	40	270	340	260
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	0.96		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1203	1267	1077	1203	1211		1203	1242		1203	1267	1077
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1203	1267	1077	1203	1211		1203	1242		1203	1267	1077
Peak-hour factor, PHF	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. Flow (vph)	120	320	70	20	170	70	80	270	40	270	340	260
RTOR Reduction (vph)	0	0	42	0	16	0	0	6	0	0	0	124
Lane Group Flow (vph)	120	320	28	20	224	0	80	304	0	270	340	136
Heavy Vehicles (%)	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%
Turn Type	Prot		pm+ov	Prot			Prot			Prot		pm+ov
Protected Phases	7	4	5	3	8		5	2		1	6	7
Permitted Phases			4									6
Actuated Green, G (s)	10.0	29.0	36.1	1.6	20.6		7.1	24.1		21.0	38.0	48.0
Effective Green, g (s)	10.0	29.0	36.1	1.6	20.6		7.1	24.1		21.0	38.0	48.0
Actuated g/C Ratio	0.11	0.32	0.39	0.02	0.22		0.08	0.26		0.23	0.41	0.52
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	131	401	471	21	272		93	326		275	525	611
v/s Ratio Prot	c0.10	c0.25	0.00	0.02	0.18		0.07	c0.24		c0.22	0.27	0.02
v/s Ratio Perm			0.02									0.10
v/c Ratio	0.92	0.80	0.06	0.95	0.82		0.86	0.93		0.98	0.65	0.22
Uniform Delay, d1	40.4	28.7	17.3	45.0	33.8		41.8	33.0		35.2	21.5	11.8
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	53.3	10.6	0.1	173.4	17.8		51.0	32.7		49.0	2.8	0.2
Delay (s)	93.7	39.3	17.3	218.4	51.7		92.8	65.7		84.1	24.2	12.0
Level of Service	F	D	B	F	D		F	E		F	C	B
Approach Delay (s)		49.0			64.5			71.3			39.2	
Approach LOS		D			E			E			D	

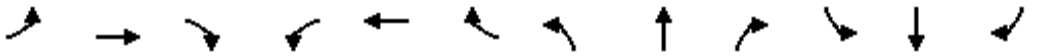
Intersection Summary			
HCM Average Control Delay	51.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.89		
Actuated Cycle Length (s)	91.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	65.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



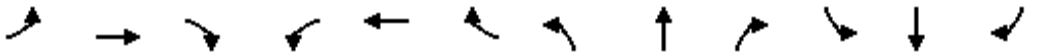
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	830	25	700	540	140	25	490	820	200	400	160
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.95		0.97	0.95		1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00		1.00	0.97		1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	3524		3433	3430		1770	1863	1583	1770	1783	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	3524		3433	3430		1770	1863	1583	1770	1783	
Peak-hour factor, PHF	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. Flow (vph)	250	830	25	700	540	140	25	490	820	200	400	160
RTOR Reduction (vph)	0	2	0	0	26	0	0	0	0	0	15	0
Lane Group Flow (vph)	250	853	0	700	654	0	25	490	820	200	545	0
Turn Type	Prot			Prot			Prot		Free	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases									Free			
Actuated Green, G (s)	15.2	22.0		21.1	27.9		1.6	24.4	91.5	8.0	30.8	
Effective Green, g (s)	15.2	22.0		21.1	27.9		1.6	24.4	91.5	8.0	30.8	
Actuated g/C Ratio	0.17	0.24		0.23	0.30		0.02	0.27	1.00	0.09	0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	294	847		792	1046		31	497	1583	155	600	
v/s Ratio Prot	0.14	c0.24		c0.20	0.19		0.01	c0.26		c0.11	0.31	
v/s Ratio Perm									0.52			
v/c Ratio	0.85	1.01		0.88	0.63		0.81	0.99	0.52	1.29	0.91	
Uniform Delay, d1	37.0	34.8		34.0	27.3		44.8	33.4	0.0	41.8	29.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	20.3	32.6		11.5	1.2		83.8	36.4	1.2	170.3	17.6	
Delay (s)	57.4	67.3		45.5	28.5		128.6	69.8	1.2	212.0	46.6	
Level of Service	E	E		D	C		F	E	A	F	D	
Approach Delay (s)		65.1			37.1			28.8			90.1	
Approach LOS		E			D			C			F	

Intersection Summary			
HCM Average Control Delay	50.2	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	91.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



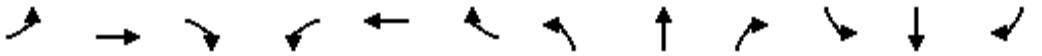
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	560	1240	30	30	770	90	20	40	50	110	50	590
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Lane Util. Factor	0.97	0.95		1.00	0.95			1.00			1.00	1.00
Frt	1.00	1.00		1.00	0.98			0.94			1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.97	1.00
Satd. Flow (prot)	3433	3527		1770	3484			1733			1801	1583
Flt Permitted	0.95	1.00		0.95	1.00			0.99			0.97	1.00
Satd. Flow (perm)	3433	3527		1770	3484			1733			1801	1583
Peak-hour factor, PHF	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. Flow (vph)	560	1240	30	30	770	90	20	40	50	110	50	590
RTOR Reduction (vph)	0	2	0	0	9	0	0	35	0	0	0	488
Lane Group Flow (vph)	560	1268	0	30	851	0	0	75	0	0	160	102
Turn Type	Prot			Prot			Split			Split		Over
Protected Phases	7	4		3	8		2	2		6	6	7
Permitted Phases												
Actuated Green, G (s)	15.1	36.6		2.3	23.8			7.5			25.1	15.1
Effective Green, g (s)	15.1	36.6		2.3	23.8			7.5			25.1	15.1
Actuated g/C Ratio	0.17	0.42		0.03	0.27			0.09			0.29	0.17
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	3.0
Lane Grp Cap (vph)	592	1475		47	948			149			517	273
v/s Ratio Prot	c0.16	c0.36		0.02	0.24			c0.04			c0.09	0.06
v/s Ratio Perm												
v/c Ratio	0.95	0.86		0.64	0.90			0.51			0.31	0.37
Uniform Delay, d1	35.8	23.1		42.2	30.7			38.2			24.4	32.0
Progression Factor	1.00	1.00		1.00	1.00			1.00			1.00	1.00
Incremental Delay, d2	24.1	5.3		25.1	11.0			2.7			0.3	0.9
Delay (s)	59.9	28.4		67.3	41.7			40.9			24.8	32.9
Level of Service	E	C		E	D			D			C	C
Approach Delay (s)		38.0			42.6			40.9			31.1	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	37.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	87.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	77.0%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			



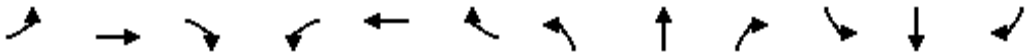
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	175	350	75	40	1525	120	100	25	50	75	25	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.91		1.00	0.91		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.90		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	4951		1770	5030		1770	1676		1770	1863	1583
Flt Permitted	0.11	1.00		0.49	1.00		0.74	1.00		0.71	1.00	1.00
Satd. Flow (perm)	211	4951		922	5030		1380	1676		1319	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	175	350	75	40	1525	120	100	25	50	75	25	300
RTOR Reduction (vph)	0	27	0	0	14	0	0	38	0	0	0	27
Lane Group Flow (vph)	175	398	0	40	1631	0	100	37	0	75	25	273
Turn Type	Perm			Perm			Perm			Perm		Perm
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		4
Actuated Green, G (s)	38.1	38.1		38.1	38.1		13.9	13.9		13.9	13.9	13.9
Effective Green, g (s)	38.1	38.1		38.1	38.1		13.9	13.9		13.9	13.9	13.9
Actuated g/C Ratio	0.64	0.64		0.64	0.64		0.23	0.23		0.23	0.23	0.23
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	134	3144		585	3194		320	388		306	432	367
v/s Ratio Prot		0.08			0.32			0.02			0.01	
v/s Ratio Perm	c0.83			0.04			0.07			0.06		c0.17
v/c Ratio	1.31	0.13		0.07	0.51		0.31	0.09		0.25	0.06	0.74
Uniform Delay, d1	11.0	4.3		4.2	5.9		19.1	18.1		18.8	18.0	21.4
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	181.2	0.1		0.2	0.6		0.6	0.1		0.4	0.1	8.0
Delay (s)	192.2	4.4		4.4	6.5		19.7	18.2		19.2	18.0	29.4
Level of Service	F	A		A	A		B	B		B	B	C
Approach Delay (s)		59.2			6.5			19.0			26.7	
Approach LOS		E			A			B			C	

Intersection Summary			
HCM Average Control Delay	21.1	HCM Level of Service	C
HCM Volume to Capacity ratio	1.16		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	66.3%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



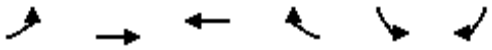
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	110	90	820	320	90	130	670	1150	200	90	630	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.88	1.00	1.00	1.00	0.94	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	2787	1770	1863	1583	4990	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1863	2787	1770	1863	1583	4990	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	110	90	820	320	90	130	670	1150	200	90	630	80
RTOR Reduction (vph)	0	0	612	0	0	115	0	0	159	0	0	60
Lane Group Flow (vph)	110	90	208	320	90	15	670	1150	41	90	630	20
Turn Type	Prot		Over	Prot		Over	Prot		Over	Prot		Perm
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	
Permitted Phases												6
Actuated Green, G (s)	7.7	7.9	16.5	15.5	15.7	8.8	16.5	26.8	15.5	8.8	19.1	19.1
Effective Green, g (s)	7.7	7.9	16.5	15.5	15.7	8.8	16.5	26.8	15.5	8.8	19.1	19.1
Actuated g/C Ratio	0.10	0.11	0.22	0.21	0.21	0.12	0.22	0.36	0.21	0.12	0.25	0.25
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	182	196	613	366	390	186	1098	1817	327	208	1295	403
v/s Ratio Prot	0.06	c0.05	0.07	c0.18	0.05	0.01	c0.13	c0.23	0.03	0.05	0.12	
v/s Ratio Perm												0.01
v/c Ratio	0.60	0.46	0.34	0.87	0.23	0.08	0.61	0.63	0.13	0.43	0.49	0.05
Uniform Delay, d1	32.2	31.5	24.7	28.8	24.6	29.5	26.4	20.0	24.2	30.8	23.8	21.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.14	1.42	0.41	0.86	1.46	2.85
Incremental Delay, d2	5.6	1.7	0.3	20.0	0.3	0.2	0.6	1.1	0.1	1.4	1.3	0.2
Delay (s)	37.8	33.2	25.0	48.8	24.9	29.7	30.6	29.5	10.1	27.7	36.1	60.4
Level of Service	D	C	C	D	C	C	C	C	B	C	D	E
Approach Delay (s)		27.1			40.2			28.0			37.6	
Approach LOS		C			D			C			D	

Intersection Summary			
HCM Average Control Delay	31.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



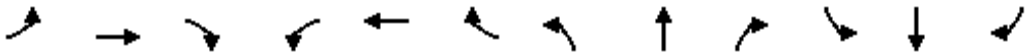
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Right Turn Channelized						Yes						
Volume (veh/h)	0	0	0	0	0	325	0	200	0	0	450	50
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	0	0	0	0	0	325	0	200	0	0	450	50
Approach Volume (veh/h)		0			0			200			500	
Crossing Volume (veh/h)		450			200			0			0	
High Capacity (veh/h)		971			1184			1385			1385	
High v/c (veh/h)		0.00			0.00			0.14			0.36	
Low Capacity (veh/h)		788			979			1161			1161	
Low v/c (veh/h)		0.00			0.00			0.17			0.43	

Intersection Summary					
Maximum v/c High	0.36				
Maximum v/c Low	0.43				
Intersection Capacity Utilization	53.5%	ICU Level of Service		A	



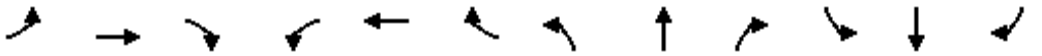
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Right Turn Channelized						
Volume (veh/h)	200	0	0	0	450	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	200	0	0	0	450	0
Approach Volume (veh/h)		200	0		450	
Crossing Volume (veh/h)		450	200		0	
High Capacity (veh/h)		971	1184		1385	
High v/c (veh/h)		0.21	0.00		0.33	
Low Capacity (veh/h)		788	979		1161	
Low v/c (veh/h)		0.25	0.00		0.39	

Intersection Summary			
Maximum v/c High	0.33		
Maximum v/c Low	0.39		
Intersection Capacity Utilization	53.5%	ICU Level of Service	A



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	150	100	50	180	20	150	900	75	100	1100	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frt	1.00	0.94		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	1751		1770	1835		1770	3498		1770	3495	
Flt Permitted	0.55	1.00		0.38	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1016	1751		711	1835		1770	3498		1770	3495	
Peak-hour factor, PHF	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. Flow (vph)	30	150	100	50	180	20	150	900	75	100	1100	100
RTOR Reduction (vph)	0	34	0	0	5	0	0	7	0	0	8	0
Lane Group Flow (vph)	30	216	0	50	195	0	150	968	0	100	1192	0
Turn Type	pm+pt			pm+pt			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)	15.1	13.7		16.5	14.4		8.2	29.9		5.3	27.0	
Effective Green, g (s)	15.1	13.7		16.5	14.4		8.2	29.9		5.3	27.0	
Actuated g/C Ratio	0.23	0.20		0.25	0.21		0.12	0.45		0.08	0.40	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	245	358		208	394		217	1561		140	1408	
v/s Ratio Prot	0.00	c0.12		c0.01	0.11		c0.08	c0.28		0.06	c0.34	
v/s Ratio Perm	0.03			0.05								
v/c Ratio	0.12	0.60		0.24	0.49		0.69	0.62		0.71	0.85	
Uniform Delay, d1	20.5	24.2		19.8	23.1		28.2	14.2		30.1	18.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2	2.9		0.6	1.0		9.1	0.7		15.9	4.9	
Delay (s)	20.7	27.0		20.4	24.1		37.3	14.9		46.0	23.0	
Level of Service	C	C		C	C		D	B		D	C	
Approach Delay (s)		26.4			23.3			17.9			24.8	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	22.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	72.6%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



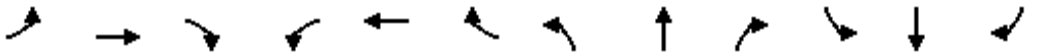
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	25	25	250	25	125	25	260	140	120	580	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	0.95	1.00	0.97	1.00		1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	3539	1583	3433	1630		1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	3539	1583	3433	1630		1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	25	25	25	250	25	125	25	260	140	120	580	25
RTOR Reduction (vph)	0	0	24	0	97	0	0	0	107	0	0	24
Lane Group Flow (vph)	25	25	1	250	53	0	25	260	33	120	580	1
Turn Type	Prot		Over	Prot			Prot		Over	Prot		Over
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases												
Actuated Green, G (s)	1.4	0.9	1.4	10.2	9.7		1.4	13.4	10.2	3.0	15.0	1.4
Effective Green, g (s)	1.4	0.9	1.4	10.2	9.7		1.4	13.4	10.2	3.0	15.0	1.4
Actuated g/C Ratio	0.03	0.02	0.03	0.23	0.22		0.03	0.31	0.23	0.07	0.34	0.03
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	57	73	51	805	363		57	1090	371	237	1220	51
v/s Ratio Prot	0.01	0.01	0.00	c0.07	c0.03		0.01	0.07	0.02	c0.03	c0.16	0.00
v/s Ratio Perm												
v/c Ratio	0.44	0.34	0.02	0.31	0.15		0.44	0.24	0.09	0.51	0.48	0.02
Uniform Delay, d1	20.7	21.0	20.4	13.7	13.6		20.7	11.2	13.0	19.5	11.2	20.4
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.3	2.8	0.1	0.2	0.2		5.3	0.1	0.1	1.7	0.3	0.1
Delay (s)	26.0	23.8	20.5	14.0	13.8		26.0	11.4	13.1	21.2	11.5	20.5
Level of Service	C	C	C	B	B		C	B	B	C	B	C
Approach Delay (s)		23.4			13.9			12.8			13.4	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM Average Control Delay	13.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	43.5	Sum of lost time (s)	8.0
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	200	490	400	40	300	320
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	1863	1583	1770	1863
Flt Permitted	0.95	1.00	1.00	1.00	0.48	1.00
Satd. Flow (perm)	1770	1583	1863	1583	903	1863
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	200	490	400	40	300	320
RTOR Reduction (vph)	0	208	0	21	0	0
Lane Group Flow (vph)	200	282	400	19	300	320
Turn Type		custom		Perm	Perm	
Protected Phases			2			6
Permitted Phases	8	8		2	6	
Actuated Green, G (s)	10.5	10.5	16.2	16.2	16.2	16.2
Effective Green, g (s)	10.5	10.5	16.2	16.2	16.2	16.2
Actuated g/C Ratio	0.30	0.30	0.47	0.47	0.47	0.47
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	536	479	870	739	422	870
v/s Ratio Prot			0.21			0.17
v/s Ratio Perm	0.11	c0.18		0.01	c0.33	
v/c Ratio	0.37	0.59	0.46	0.03	0.71	0.37
Uniform Delay, d1	9.5	10.3	6.3	5.0	7.4	6.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.9	0.4	0.0	5.6	0.3
Delay (s)	10.0	12.1	6.7	5.0	13.0	6.2
Level of Service	A	B	A	A	B	A
Approach Delay (s)	11.5		6.5			9.5
Approach LOS	B		A			A

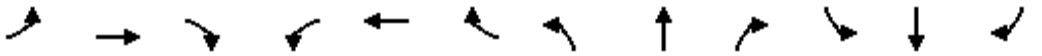
Intersection Summary			
HCM Average Control Delay	9.5	HCM Level of Service	A
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	34.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	150	740	660	710	800	130	440	160	790	170	200	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95		0.97	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	3433	3465		3433	1863	1583	1770	1816	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	3433	3465		3433	1863	1583	1770	1816	
Peak-hour factor, PHF	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. Flow (vph)	150	740	660	710	800	130	440	160	790	170	200	40
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0	7	0
Lane Group Flow (vph)	150	740	660	710	919	0	440	160	790	170	233	0
Turn Type	Prot		Free	Prot			Prot		Free	Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free						Free			
Actuated Green, G (s)	13.9	42.0	109.7	22.0	50.1		14.0	16.4	109.7	13.3	15.7	
Effective Green, g (s)	13.9	42.0	109.7	22.0	50.1		14.0	16.4	109.7	13.3	15.7	
Actuated g/C Ratio	0.13	0.38	1.00	0.20	0.46		0.13	0.15	1.00	0.12	0.14	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	224	713	1583	688	1582		438	279	1583	215	260	
v/s Ratio Prot	0.08	c0.40		c0.21	0.27		c0.13	0.09		0.10	c0.13	
v/s Ratio Perm			0.42						c0.50			
v/c Ratio	0.67	1.04	0.42	1.03	0.58		1.00	0.57	0.50	0.79	0.90	
Uniform Delay, d1	45.7	33.8	0.0	43.8	22.0		47.8	43.4	0.0	46.8	46.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	7.4	43.9	0.8	42.8	0.5		44.1	2.8	1.1	17.7	30.1	
Delay (s)	53.1	77.7	0.8	86.6	22.6		92.0	46.2	1.1	64.6	76.3	
Level of Service	D	E	A	F	C		F	D	A	E	E	
Approach Delay (s)		42.6			50.3			35.1			71.4	
Approach LOS		D			D			D			E	

Intersection Summary			
HCM Average Control Delay	45.4	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.0%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	775	675	225	175	800	250	125	280	140	300	175	625
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	0.94	0.95	1.00	1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	4990	3539	1583	1770	3539	1583	1770	1770		1770	1863	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	4990	3539	1583	1770	3539	1583	1770	1770		1770	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	775	675	225	175	800	250	125	280	140	300	175	625
RTOR Reduction (vph)	0	0	131	0	0	64	0	20	0	0	0	0
Lane Group Flow (vph)	775	675	94	175	800	186	125	400	0	300	175	625
Turn Type	Prot		pm+ov	Prot		pm+ov	Prot			Prot		Free
Protected Phases	7	4	5	3	8	1	5	2		1	6	
Permitted Phases			4			8						Free
Actuated Green, G (s)	18.2	25.4	36.9	12.8	20.0	35.0	11.5	19.1		15.0	22.6	88.3
Effective Green, g (s)	18.2	25.4	36.9	12.8	20.0	35.0	11.5	19.1		15.0	22.6	88.3
Actuated g/C Ratio	0.21	0.29	0.42	0.14	0.23	0.40	0.13	0.22		0.17	0.26	1.00
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1029	1018	733	257	802	699	231	383		301	477	1583
v/s Ratio Prot	c0.16	0.19	0.02	0.10	c0.23	0.05	0.07	c0.23		c0.17	0.09	
v/s Ratio Perm			0.04			0.07						c0.39
v/c Ratio	0.75	0.66	0.13	0.68	1.00	0.27	0.54	1.05		1.00	0.37	0.39
Uniform Delay, d1	32.9	27.7	15.8	35.8	34.1	18.0	35.9	34.6		36.6	27.0	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	3.2	1.6	0.1	7.2	30.9	0.2	2.6	58.3		50.6	0.5	0.7
Delay (s)	36.1	29.3	15.9	43.0	65.1	18.2	38.5	92.9		87.3	27.5	0.7
Level of Service	D	C	B	D	E	B	D	F		F	C	A
Approach Delay (s)		30.7			52.3			80.5			28.6	
Approach LOS		C			D			F			C	

Intersection Summary			
HCM Average Control Delay	42.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	88.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	90.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

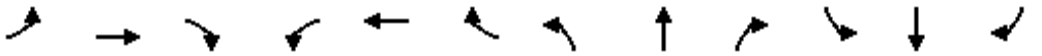
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Volume (vph)	1950	1175	125	1670	1310	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.91	0.88	1.00	0.91	0.97	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	5085	2787	1770	5085	3433	1583
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	5085	2787	1770	5085	3433	1583
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1950	1175	125	1670	1310	125
RTOR Reduction (vph)	0	0	0	0	0	75
Lane Group Flow (vph)	1950	1175	125	1670	1310	50
Turn Type		Free	Prot			Perm
Protected Phases	4		3	8	2	
Permitted Phases		Free				2
Actuated Green, G (s)	35.0	90.0	7.1	46.1	35.9	35.9
Effective Green, g (s)	35.0	90.0	7.1	46.1	35.9	35.9
Actuated g/C Ratio	0.39	1.00	0.08	0.51	0.40	0.40
Clearance Time (s)	4.0		4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	1978	2787	140	2605	1369	631
v/s Ratio Prot	c0.38		c0.07	0.33	c0.38	
v/s Ratio Perm		0.42				0.03
v/c Ratio	0.99	0.42	0.89	0.64	0.96	0.08
Uniform Delay, d1	27.3	0.0	41.1	15.9	26.3	16.8
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	16.8	0.5	45.4	0.5	16.0	0.2
Delay (s)	44.1	0.5	86.5	16.5	42.3	17.0
Level of Service	D	A	F	B	D	B
Approach Delay (s)	27.7			21.4	40.1	
Approach LOS	C			C	D	

Intersection Summary			
HCM Average Control Delay	28.7	HCM Level of Service	C
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



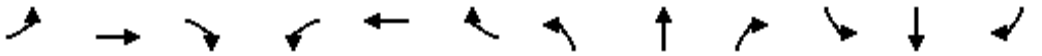
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	50	75	2150	70	100	2475
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.91	1.00	1.00	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	5085	1583	1770	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	5085	1583	1770	5085
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	50	75	2150	70	100	2475
RTOR Reduction (vph)	0	68	0	13	0	0
Lane Group Flow (vph)	50	7	2150	57	100	2475
Turn Type		Over		Perm	Prot	
Protected Phases	8	1	2		1	6
Permitted Phases				2		
Actuated Green, G (s)	4.9	7.6	54.2	54.2	7.6	65.8
Effective Green, g (s)	4.9	7.6	54.2	54.2	7.6	65.8
Actuated g/C Ratio	0.06	0.10	0.69	0.69	0.10	0.84
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	110	153	3502	1090	171	4251
v/s Ratio Prot	c0.03	0.00	c0.42		0.06	c0.49
v/s Ratio Perm				0.04		
v/c Ratio	0.45	0.05	0.61	0.05	0.58	0.58
Uniform Delay, d1	35.6	32.3	6.6	4.0	34.0	2.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	3.0	0.1	0.3	0.0	5.0	0.2
Delay (s)	38.6	32.4	6.9	4.0	39.1	2.3
Level of Service	D	C	A	A	D	A
Approach Delay (s)	34.9		6.8			3.7
Approach LOS	C		A			A

Intersection Summary			
HCM Average Control Delay	5.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	78.7	Sum of lost time (s)	12.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	25	590	50	50	50	240	2125	65	50	2450	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0		4.0		4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor		1.00	1.00		1.00		1.00	0.91	1.00	1.00	0.91	1.00
Frt		1.00	0.85		0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.98	1.00		0.98		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		1817	1583		1750		1770	5085	1583	1770	5085	1583
Flt Permitted		0.71	1.00		0.87		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		1317	1583		1553		1770	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	25	25	590	50	50	50	240	2125	65	50	2450	25
RTOR Reduction (vph)	0	0	0	0	15	0	0	0	11	0	0	4
Lane Group Flow (vph)	0	50	590	0	135	0	240	2125	54	50	2450	21
Turn Type	Perm		Free	Perm			Prot		Perm	Prot		Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8					2			6
Actuated Green, G (s)		14.3	120.0		14.3		20.1	87.3	87.3	6.4	73.6	73.6
Effective Green, g (s)		14.3	120.0		14.3		20.1	87.3	87.3	6.4	73.6	73.6
Actuated g/C Ratio		0.12	1.00		0.12		0.17	0.73	0.73	0.05	0.61	0.61
Clearance Time (s)		4.0			4.0		4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)		3.0			3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)		157	1583		185		296	3699	1152	94	3119	971
v/s Ratio Prot							c0.14	0.42		0.03	c0.48	
v/s Ratio Perm		0.04	0.37		c0.09				0.03			0.01
v/c Ratio		0.32	0.37		0.73		0.81	0.57	0.05	0.53	0.79	0.02
Uniform Delay, d1		48.4	0.0		51.0		48.1	7.7	4.6	55.3	17.3	9.1
Progression Factor		1.00	1.00		1.00		1.47	0.03	0.00	1.00	1.00	1.00
Incremental Delay, d2		1.2	0.7		13.4		7.0	0.3	0.0	5.7	2.1	0.0
Delay (s)		49.6	0.7		64.4		77.7	0.5	0.0	61.0	19.4	9.1
Level of Service		D	A		E		E	A	A	E	B	A
Approach Delay (s)		4.5			64.4			8.1			20.1	
Approach LOS		A			E			A			C	

Intersection Summary			
HCM Average Control Delay	14.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	85.8%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



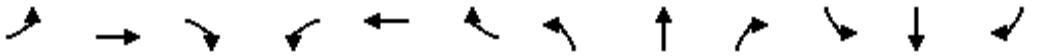
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	130	450	40	70	260	200	2190	60	360	2700	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	1.00	1.00	0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5078	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	1863	1583	1770	1863	1583	1770	5085	1583	1770	5078	
Peak-hour factor, PHF	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. Flow (vph)	50	130	450	40	70	260	200	2190	60	360	2700	25
RTOR Reduction (vph)	0	0	117	0	0	205	0	0	10	0	1	0
Lane Group Flow (vph)	50	130	333	40	70	55	200	2190	50	360	2724	0
Turn Type	Prot		pt+ov	Prot		Over	Prot		Perm	Prot		
Protected Phases	7	4	4 5	3	8	1	5	2		1	6	
Permitted Phases									2			
Actuated Green, G (s)	7.2	16.1	33.2	5.3	14.2	23.1	13.1	49.2	49.2	23.1	59.2	
Effective Green, g (s)	7.2	16.1	33.2	5.3	14.2	23.1	13.1	49.2	49.2	23.1	59.2	
Actuated g/C Ratio	0.07	0.15	0.30	0.05	0.13	0.21	0.12	0.45	0.45	0.21	0.54	
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	116	273	479	86	241	333	211	2281	710	373	2740	
v/s Ratio Prot	c0.03	0.07	c0.21	0.02	0.04	0.03	0.11	0.43		c0.20	c0.54	
v/s Ratio Perm									0.03			
v/c Ratio	0.43	0.48	0.69	0.47	0.29	0.16	0.95	0.96	0.07	0.97	0.99	
Uniform Delay, d1	49.3	42.9	33.8	50.8	43.2	35.4	48.0	29.3	17.2	42.9	25.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	2.6	1.3	4.3	3.9	0.7	0.2	46.8	11.0	0.0	37.1	15.7	
Delay (s)	51.8	44.2	38.1	54.8	43.9	35.6	94.8	40.3	17.3	80.0	40.8	
Level of Service	D	D	D	D	D	D	F	D	B	F	D	
Approach Delay (s)		40.5			39.3			44.2			45.4	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM Average Control Delay	44.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	109.7	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



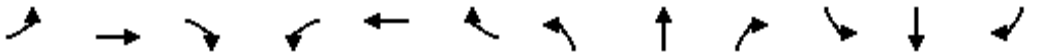
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (vph)	430	490	1950	460	810	2380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	0.91	1.00	0.94	0.91
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	5085	1583	4990	5085
Flt Permitted	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (perm)	1770	1583	5085	1583	4990	5085
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	430	490	1950	460	810	2380
RTOR Reduction (vph)	0	343	0	0	0	0
Lane Group Flow (vph)	430	147	1950	460	810	2380
Turn Type		Over		Free	Prot	
Protected Phases	8	1	2		1	6
Permitted Phases				Free		
Actuated Green, G (s)	19.0	13.0	31.0	75.0	13.0	48.0
Effective Green, g (s)	19.0	13.0	31.0	75.0	13.0	48.0
Actuated g/C Ratio	0.25	0.17	0.41	1.00	0.17	0.64
Clearance Time (s)	4.0	4.0	4.0		4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Lane Grp Cap (vph)	448	274	2102	1583	865	3254
v/s Ratio Prot	c0.24	0.09	c0.38		c0.16	0.47
v/s Ratio Perm				0.29		
v/c Ratio	0.96	0.54	0.93	0.29	0.94	0.73
Uniform Delay, d1	27.6	28.3	20.9	0.0	30.6	9.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	31.9	2.0	7.7	0.5	17.1	0.9
Delay (s)	59.6	30.3	28.7	0.5	47.6	10.0
Level of Service	E	C	C	A	D	B
Approach Delay (s)	44.0		23.3			19.6
Approach LOS	D		C			B

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	75.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	86.9%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



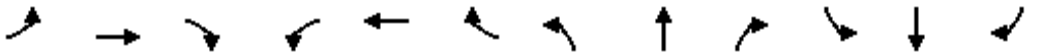
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	450	20	100	100	20	680	50	1280	60	760	1620	430
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00		1.00	1.00	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	0.88		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1630		1770	1863	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1630		1770	1863	1583	1770	3539	1583	3433	3539	1583
Peak-hour factor, PHF	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. Flow (vph)	450	20	100	100	20	680	50	1280	60	760	1620	430
RTOR Reduction (vph)	0	91	0	0	0	0	0	0	13	0	0	0
Lane Group Flow (vph)	450	29	0	100	20	680	50	1280	47	760	1620	430
Turn Type	Prot			Prot		Free	Prot		Perm	Prot		Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases						Free			2			Free
Actuated Green, G (s)	19.5	11.0		12.1	3.6	120.0	9.7	42.5	42.5	38.4	71.2	120.0
Effective Green, g (s)	19.5	11.0		12.1	3.6	120.0	9.7	42.5	42.5	38.4	71.2	120.0
Actuated g/C Ratio	0.16	0.09		0.10	0.03	1.00	0.08	0.35	0.35	0.32	0.59	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	558	149		178	56	1583	143	1253	561	1099	2100	1583
v/s Ratio Prot	c0.13	0.02		0.06	0.01		0.03	c0.36		c0.22	c0.46	
v/s Ratio Perm						c0.43			0.03			0.27
v/c Ratio	0.81	0.20		0.56	0.36	0.43	0.35	1.02	0.08	0.69	0.77	0.27
Uniform Delay, d1	48.4	50.4		51.4	57.1	0.0	52.2	38.7	25.8	35.6	18.3	0.0
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.04	0.91	0.88	1.00	1.00	1.00
Incremental Delay, d2	8.3	0.6		4.0	3.9	0.9	1.4	29.9	0.3	1.9	2.8	0.4
Delay (s)	56.8	51.1		55.4	60.9	0.9	55.6	65.1	22.8	37.5	21.1	0.4
Level of Service	E	D		E	E	A	E	E	C	D	C	A
Approach Delay (s)		55.6			9.2			62.9			22.4	
Approach LOS		E			A			E			C	

Intersection Summary			
HCM Average Control Delay	34.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			



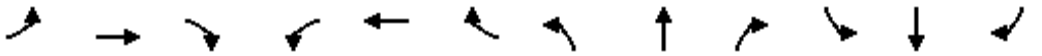
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	2600	460	250	2070	50	160	70	160	40	110	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5085	1583	1770	5085	1583	1770	1863	1583	1770	1803	
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5085	1583	1770	5085	1583	1770	1863	1583	1770	1803	
Peak-hour factor, PHF	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. Flow (vph)	100	2600	460	250	2070	50	160	70	160	40	110	30
RTOR Reduction (vph)	0	0	104	0	0	10	0	0	137	0	8	0
Lane Group Flow (vph)	100	2600	356	250	2070	40	160	70	23	40	132	0
Turn Type	Prot		pm+ov	Prot		Over	Prot		Over	Prot		
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	
Permitted Phases			4									
Actuated Green, G (s)	11.1	60.0	71.0	17.0	65.9	5.6	11.0	21.4	17.0	5.6	16.0	
Effective Green, g (s)	11.1	60.0	71.0	17.0	65.9	5.6	11.0	21.4	17.0	5.6	16.0	
Actuated g/C Ratio	0.09	0.50	0.59	0.14	0.55	0.05	0.09	0.18	0.14	0.05	0.13	
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	164	2543	989	251	2793	74	162	332	224	83	240	
v/s Ratio Prot	0.06	c0.51	0.03	c0.14	0.41	0.02	c0.09	0.04	0.01	0.02	c0.07	
v/s Ratio Perm			0.19									
v/c Ratio	0.61	1.02	0.36	1.00	0.74	0.53	0.99	0.21	0.10	0.48	0.55	
Uniform Delay, d1	52.4	30.0	12.7	51.5	20.6	55.9	54.4	42.1	44.8	55.8	48.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	6.3	23.8	0.2	55.3	1.1	7.2	66.4	1.4	0.2	4.4	8.8	
Delay (s)	58.7	53.8	12.9	106.8	21.7	63.1	120.8	43.5	45.0	60.1	57.5	
Level of Service	E	D	B	F	C	E	F	D	D	E	E	
Approach Delay (s)		48.0			31.5			75.9			58.0	
Approach LOS		D			C			E			E	

Intersection Summary			
HCM Average Control Delay	43.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



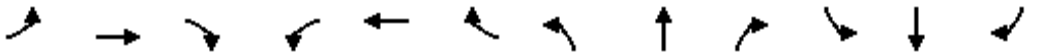
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	300	1090	40	30	600	80	20	80	30	210	120	250
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	0.98		1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3520		1770	3477		1770	1787		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.68	1.00		0.69	1.00	1.00
Satd. Flow (perm)	1770	3520		1770	3477		1266	1787		1278	1863	1583
Peak-hour factor, PHF	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. Flow (vph)	300	1090	40	30	600	80	20	80	30	210	120	250
RTOR Reduction (vph)	0	4	0	0	17	0	0	23	0	0	0	192
Lane Group Flow (vph)	300	1126	0	30	663	0	20	87	0	210	120	58
Turn Type	Prot			Prot			Perm			Perm		Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases							2			6		6
Actuated Green, G (s)	12.2	28.3		1.7	17.8		12.8	12.8		12.8	12.8	12.8
Effective Green, g (s)	12.2	28.3		1.7	17.8		12.8	12.8		12.8	12.8	12.8
Actuated g/C Ratio	0.22	0.52		0.03	0.32		0.23	0.23		0.23	0.23	0.23
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	394	1818		55	1129		296	417		299	435	370
v/s Ratio Prot	c0.17	c0.32		0.02	0.19			0.05			0.06	
v/s Ratio Perm							0.02			c0.16		0.04
v/c Ratio	0.76	0.62		0.55	0.59		0.07	0.21		0.70	0.28	0.16
Uniform Delay, d1	19.9	9.4		26.2	15.4		16.4	16.9		19.3	17.2	16.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	8.4	0.6		10.6	0.8		0.1	0.3		7.3	0.3	0.2
Delay (s)	28.4	10.1		36.8	16.2		16.4	17.2		26.5	17.5	16.9
Level of Service	C	B		D	B		B	B		C	B	B
Approach Delay (s)		13.9			17.1			17.1			20.5	
Approach LOS		B			B			B			C	

Intersection Summary			
HCM Average Control Delay	16.2	HCM Level of Service	B
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	54.8	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			



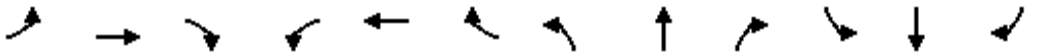
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	800	50	50	300	150	50	100	50	250	50	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.95		1.00	0.95		1.00	0.92	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3508		1770	3362		1770	1770		1770	1723	
Flt Permitted	0.95	1.00		0.30	1.00		0.50	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3508		567	3362		931	1770		1770	1723	
Peak-hour factor, PHF	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. Flow (vph)	50	800	50	50	300	150	50	100	50	250	50	50
RTOR Reduction (vph)	0	7	0	0	100	0	0	33	0	0	38	0
Lane Group Flow (vph)	50	843	0	50	350	0	50	117	0	250	62	0
Turn Type	Prot			Perm			Perm			Split		
Protected Phases	7	4			8			2		6	6	
Permitted Phases				8			2					
Actuated Green, G (s)	1.4	18.6		13.2	13.2		8.0	8.0		11.8	11.8	
Effective Green, g (s)	1.4	18.6		13.2	13.2		8.0	8.0		11.8	11.8	
Actuated g/C Ratio	0.03	0.37		0.26	0.26		0.16	0.16		0.23	0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	49	1295		149	881		148	281		414	403	
v/s Ratio Prot	0.03	c0.24			0.10			c0.07		c0.14	0.04	
v/s Ratio Perm				0.09			0.05					
v/c Ratio	1.02	0.65		0.34	0.40		0.34	0.42		0.60	0.15	
Uniform Delay, d1	24.5	13.2		15.1	15.3		18.8	19.1		17.2	15.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	134.5	1.2		1.3	0.3		1.4	1.0		2.5	0.2	
Delay (s)	159.0	14.4		16.4	15.6		20.2	20.1		19.7	15.5	
Level of Service	F	B		B	B		C	C		B	B	
Approach Delay (s)		22.4			15.7			20.1			18.5	
Approach LOS		C			B			C			B	

Intersection Summary			
HCM Average Control Delay	19.8	HCM Level of Service	B
HCM Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	50.4	Sum of lost time (s)	12.0
Intersection Capacity Utilization	62.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			



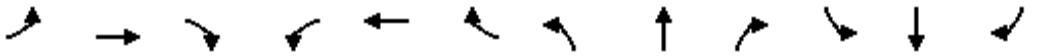
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	690	360	1010	90	300	50	640	1400	100	25	1675	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	1.00	0.97	0.91	1.00	1.00	0.91	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	3433	1863	1583	1770	1863	1583	3433	5085	1583	1770	5085	1583
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	3433	1863	1583	1770	1863	1583	3433	5085	1583	1770	5085	1583
Peak-hour factor, PHF	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. Flow (vph)	690	360	1010	90	300	50	640	1400	100	25	1675	380
RTOR Reduction (vph)	0	0	0	0	0	34	0	0	48	0	0	0
Lane Group Flow (vph)	690	360	1010	90	300	16	640	1400	52	25	1675	380
Turn Type	Prot		Free	Prot		Perm	Prot		pm+ov	Prot		Free
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases			Free			8			2			Free
Actuated Green, G (s)	16.0	25.0	90.0	6.9	15.9	15.9	15.1	40.1	47.0	2.0	27.0	90.0
Effective Green, g (s)	16.0	25.0	90.0	6.9	15.9	15.9	15.1	40.1	47.0	2.0	27.0	90.0
Actuated g/C Ratio	0.18	0.28	1.00	0.08	0.18	0.18	0.17	0.45	0.52	0.02	0.30	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	610	518	1583	136	329	280	576	2266	897	39	1526	1583
v/s Ratio Prot	c0.20	0.19		0.05	c0.16		c0.19	0.28	0.00	0.01	c0.33	
v/s Ratio Perm			0.64			0.01			0.03			0.24
v/c Ratio	1.13	0.69	0.64	0.66	0.91	0.06	1.11	0.62	0.06	0.64	1.10	0.24
Uniform Delay, d1	37.0	29.1	0.0	40.4	36.4	30.8	37.4	19.1	10.6	43.6	31.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.20	1.17	1.00
Incremental Delay, d2	78.2	4.0	2.0	11.5	28.3	0.1	71.8	1.3	0.0	19.8	50.9	0.2
Delay (s)	115.2	33.1	2.0	51.9	64.6	30.9	109.2	20.4	10.6	72.4	87.9	0.2
Level of Service	F	C	A	D	E	C	F	C	B	E	F	A
Approach Delay (s)		45.4			58.2			46.5			71.7	
Approach LOS		D			E			D			E	

Intersection Summary			
HCM Average Control Delay	54.7	HCM Level of Service	D
HCM Volume to Capacity ratio	1.07		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.4%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



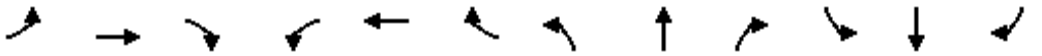
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1370	290	510	25	275	750	450	1510	25	580	1990	1130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	0.94	1.00	1.00	1.00	1.00	1.00	0.97	0.86	1.00	0.97	0.91	0.88
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	4990	1863	1583	1770	1863	1583	3433	6408	1583	3433	5085	2787
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	4990	1863	1583	1770	1863	1583	3433	6408	1583	3433	5085	2787
Peak-hour factor, PHF	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. Flow (vph)	1370	290	510	25	275	750	450	1510	25	580	1990	1130
RTOR Reduction (vph)	0	0	156	0	0	0	0	0	5	0	0	0
Lane Group Flow (vph)	1370	290	354	25	275	750	450	1510	20	580	1990	1130
Turn Type	Split		pt+ov	Split		Free	Prot		pt+ov	Prot		Free
Protected Phases	4	4	4 5	8	8		5	2	2 8	1	6	
Permitted Phases						Free						Free
Actuated Green, G (s)	30.0	30.0	45.0	16.0	16.0	120.0	15.0	34.9	50.9	23.1	43.0	120.0
Effective Green, g (s)	30.0	30.0	45.0	16.0	16.0	120.0	15.0	34.9	50.9	23.1	43.0	120.0
Actuated g/C Ratio	0.25	0.25	0.38	0.13	0.13	1.00	0.12	0.29	0.42	0.19	0.36	1.00
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	1248	466	594	236	248	1583	429	1864	671	661	1822	2787
v/s Ratio Prot	c0.27	0.16	0.22	0.01	c0.15		c0.13	0.24	0.01	0.17	c0.39	
v/s Ratio Perm						0.47						0.41
v/c Ratio	1.10	0.62	0.60	0.11	1.11	0.47	1.05	0.81	0.03	0.88	1.09	0.41
Uniform Delay, d1	45.0	40.0	30.2	45.7	52.0	0.0	52.5	39.5	20.1	47.1	38.5	0.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	56.6	2.6	1.6	0.2	89.5	1.0	56.9	3.9	0.0	12.6	51.0	0.4
Delay (s)	101.6	42.6	31.8	45.9	141.5	1.0	109.4	43.4	20.2	59.7	89.5	0.4
Level of Service	F	D	C	D	F	A	F	D	C	E	F	A
Approach Delay (s)		77.3			38.9			58.1			57.6	
Approach LOS		E			D			E			E	

Intersection Summary			
HCM Average Control Delay	60.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	105.2%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	1375	40	890	1250	840	150	300	1175	575	260	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Lane Util. Factor	1.00	0.91		0.94	0.95	1.00	1.00	1.00	0.88	0.97	1.00	
Frt	1.00	1.00		1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1770	5064		4990	3539	1583	1770	1863	2787	3433	1852	
Flt Permitted	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)	1770	5064		4990	3539	1583	1770	1863	2787	3433	1852	
Peak-hour factor, PHF	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. Flow (vph)	20	1375	40	890	1250	840	150	300	1175	575	260	10
RTOR Reduction (vph)	0	2	0	0	0	0	0	0	5	0	2	0
Lane Group Flow (vph)	20	1413	0	890	1250	840	150	300	1170	575	268	0
Turn Type	Prot			Prot		Free	Prot		pm+ov	Prot		
Protected Phases	7	4		3	8		5	2	3	1	6	
Permitted Phases						Free			2			
Actuated Green, G (s)	1.6	35.4		27.7	61.5	120.0	13.1	19.9	47.6	21.0	27.8	
Effective Green, g (s)	1.6	35.4		27.7	61.5	120.0	13.1	19.9	47.6	21.0	27.8	
Actuated g/C Ratio	0.01	0.30		0.23	0.51	1.00	0.11	0.17	0.40	0.18	0.23	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0	4.0	4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)	24	1494		1152	1814	1583	193	309	1198	601	429	
v/s Ratio Prot	0.01	c0.28		0.18	0.35		0.08	0.16	c0.23	c0.17	0.14	
v/s Ratio Perm						0.53			0.19			
v/c Ratio	0.83	0.95		0.77	0.69	0.53	0.78	0.97	0.98	0.96	0.63	
Uniform Delay, d1	59.1	41.4		43.2	22.0	0.0	52.0	49.8	35.7	49.0	41.4	
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	110.4	12.5		3.3	1.1	1.3	17.6	44.3	20.4	26.1	6.7	
Delay (s)	169.5	53.9		46.5	23.2	1.3	69.7	94.1	56.0	75.1	48.2	
Level of Service	F	D		D	C	A	E	F	E	E	D	
Approach Delay (s)		55.5			24.0			64.3			66.5	
Approach LOS		E			C			E			E	

Intersection Summary			
HCM Average Control Delay	45.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	400	1090	490	25	820	10	790	90	25	25	25	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95		0.97	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00		1.00	0.97		1.00	0.92	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3539	1583	1770	3533		3433	1802		1770	1710	
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3539	1583	1770	3533		3433	1802		1770	1710	
Peak-hour factor, PHF	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. Flow (vph)	400	1090	490	25	820	10	790	90	25	25	25	30
RTOR Reduction (vph)	0	0	0	0	1	0	0	12	0	0	27	0
Lane Group Flow (vph)	400	1090	490	25	829	0	790	103	0	25	28	0
Turn Type	Prot		Free	Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free									
Actuated Green, G (s)	19.0	39.9	85.9	1.6	22.5		19.0	26.8		1.6	9.4	
Effective Green, g (s)	19.0	39.9	85.9	1.6	22.5		19.0	26.8		1.6	9.4	
Actuated g/C Ratio	0.22	0.46	1.00	0.02	0.26		0.22	0.31		0.02	0.11	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	392	1644	1583	33	925		759	562		33	187	
v/s Ratio Prot	c0.23	0.31		0.01	c0.23		c0.23	0.06		0.01	0.02	
v/s Ratio Perm			c0.31									
v/c Ratio	1.02	0.66	0.31	0.76	0.90		1.04	0.18		0.76	0.15	
Uniform Delay, d1	33.4	17.8	0.0	42.0	30.6		33.4	21.6		42.0	34.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	50.7	1.0	0.5	65.1	11.2		43.8	0.2		65.1	0.4	
Delay (s)	84.2	18.8	0.5	107.1	41.8		77.2	21.7		107.1	35.0	
Level of Service	F	B	A	F	D		E	C		F	D	
Approach Delay (s)		27.5			43.7			70.2			57.5	
Approach LOS		C			D			E			E	

Intersection Summary			
HCM Average Control Delay	41.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	85.9	Sum of lost time (s)	12.0
Intersection Capacity Utilization	84.3%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

APPENDIX C

TRACY TRAVEL DEMAND MODEL ADJUSTMENTS:

4D VARIABLE DEFINITIONS AND ELASTICITIES

(SOURCE: FEHR & PEERS ASSOCIATES)

TABLE A-1
4D VARIABLE DEFINITIONS AND ELASTICITIES

Variable	Formulation	VT Elasticity
Density	$\text{Density} = \frac{(e + p)}{z}$ where : e = employees within 0.5 mile radius of parcel/TAZ p = population within 0.5 mile radius of parcel/TAZ z = area (in square miles) of residential and employment zoning within 0.5 mile radius of parcel/TAZ	- 0.04
Diversity	$\text{Diversity} = 1 - \left\lvert \frac{(b \cdot p) - e}{(b \cdot p) + e} \right\rvert$ where : b = regional employement / regional population p = population 0.5 mile radius of parcel/TAZ e = employment within 0.5 mile radius of parcel/TAZ	- 0.06
Design	$\text{Design} = 0.0195 \cdot \text{street density} + 1.18 \cdot \text{sidewalk completeness} + 3.63 \cdot \text{route directness}$ where : $\text{street density} = \frac{l}{a}$ $\text{sidewalk completeness} = \frac{s}{l}$ $\text{route directness} = \frac{d}{l}$ where : l = length of street (centerline) in miles a = area of neighborhood in square miles s = length of sidewalk in miles d = airline distance in miles $= \sqrt{(X_2 - X_1)^2 + (Y_2 - Y_1)^2}$	- 0.02

Source: *INDEX® 4D Method: A Quick-Response Method of Estimating Travel Impacts from Land-Use Changes*, Criterion Planners/Engineers and Fehr & Peers, U.S. EPA, October, 2001.

VT Elasticity means that a 100% increase in the variable listed would result in a reduction of trips by the indicated elasticity. For example, an increase of 100% in the density of a TAZ would result in a 4% reduction in trips for that TAZ.

APPENDIX D

TRACY TRAVEL DEMAND MODEL TRIP ASSIGNMENT:

PLANNING AREAS 2035 SELECT ZONE PLOTS

(SOURCE: FEHR & PEERS ASSOCIATES)

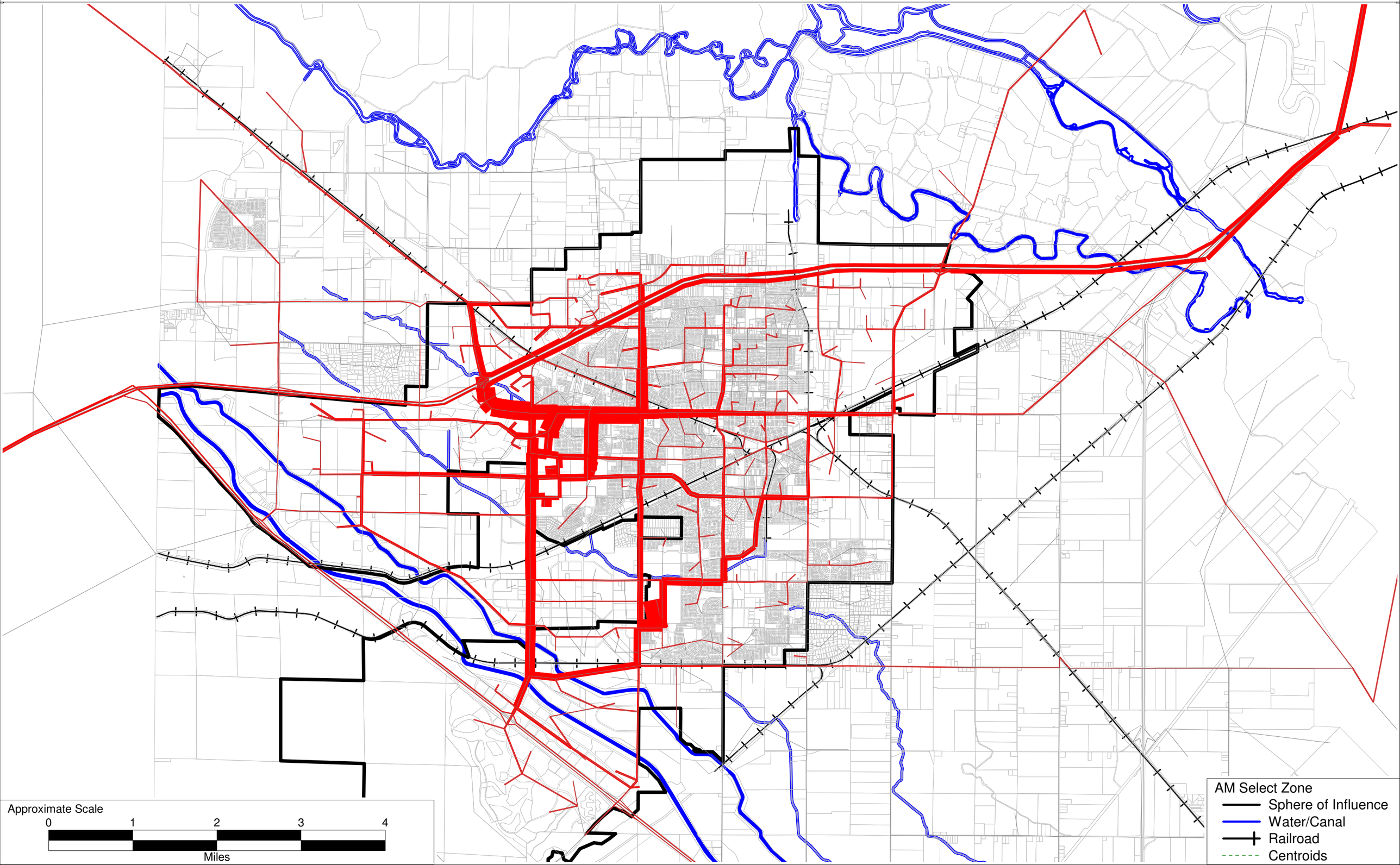
TABLE B-1
TRACY MODEL ESTIMATED PEAK HOUR VEHICLE TRIP GENERATION FOR PLANNING AREAS

Planning Area	2035		Buildout	
	AM Trips	PM Trips	AM Trips	PM Trips
Planning Area 1 (Westside Residential)	1,800	3,400	1,800	3,400
Planning Area 2 (Urban Reserve 1)	900	1,700	1,900	3,650
Planning Area 3 (Ellis)	1,150	2,150	1,150	2,150
Planning Area 4 (South Linne)	0	0	450	850
Planning Area 5 (Tracy Hills)	5,250	9,850	14,150	26,150
Planning Area 6 (Gateway)	3,850	7,100	9,300	17,450
Planning Area 7 (Cordes Ranch)	4,800	8,950	11,650	22,100
Planning Area 8 (Bright Triangle)	2,450	4,500	5,600	10,250
Planning Area 9 (Catellus)	1,650	3,100	4,750	8,950
Planning Area 10 (Filios)	1,900	3,450	1,900	3,450
Planning Area 11 (I-205 Expansion)	1,550	2,850	4,500	8,150
Planning Area 12 (West Side Industrial)	0	0	1,800	3,500
Planning Area 13 (East Side Industrial)	0	0	1,350	2,650
Planning Area 14 (Larch Clover)	1,000	1,800	24,750	45,050
Planning Area 15 (Chrisman)	900	1,650	1,950	3,650
Planning Area 16 (Rocha)	50	100	300	550
Planning Area 17 (Berg/Byron)	100	150	200	350
Planning Area 18 (Kagehiro)	150	250	150	250
Planning Area Totals	**27,500**	**51,000**	**87,650**	**162,550**
Existing (2006) Citywide Total for Comparison	***24,000***	***45,200***	***24,000***	***45,200***

Source: Fehr & Peers, March 2010. Tracy Travel Demand Model.

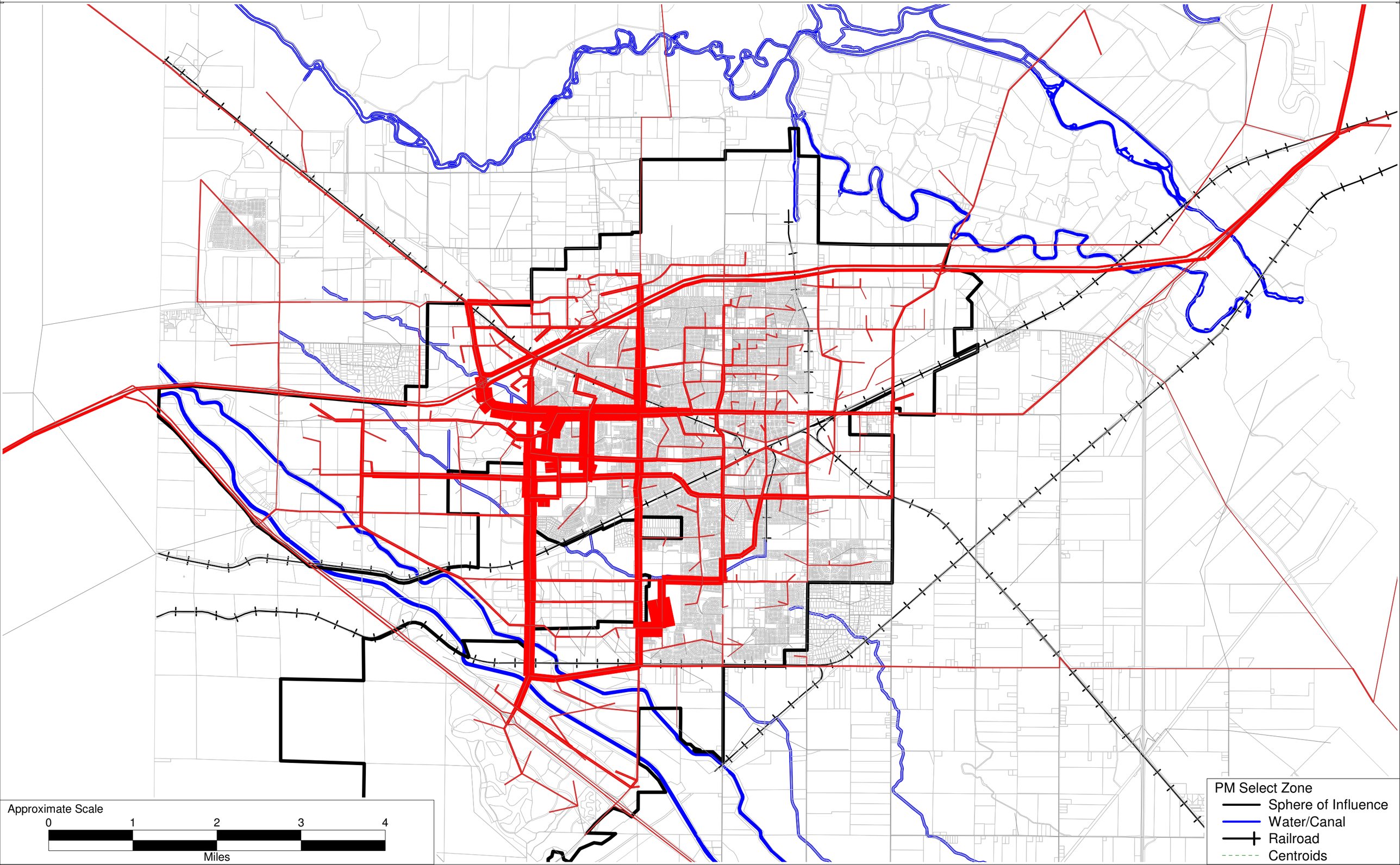
The following plots are relative to the number of trips the planning area produces. The width of the red bars indicates the relative percentage of that planning area's trips that are on the specified roadway.

2035 Westside Residential AM Select Zone



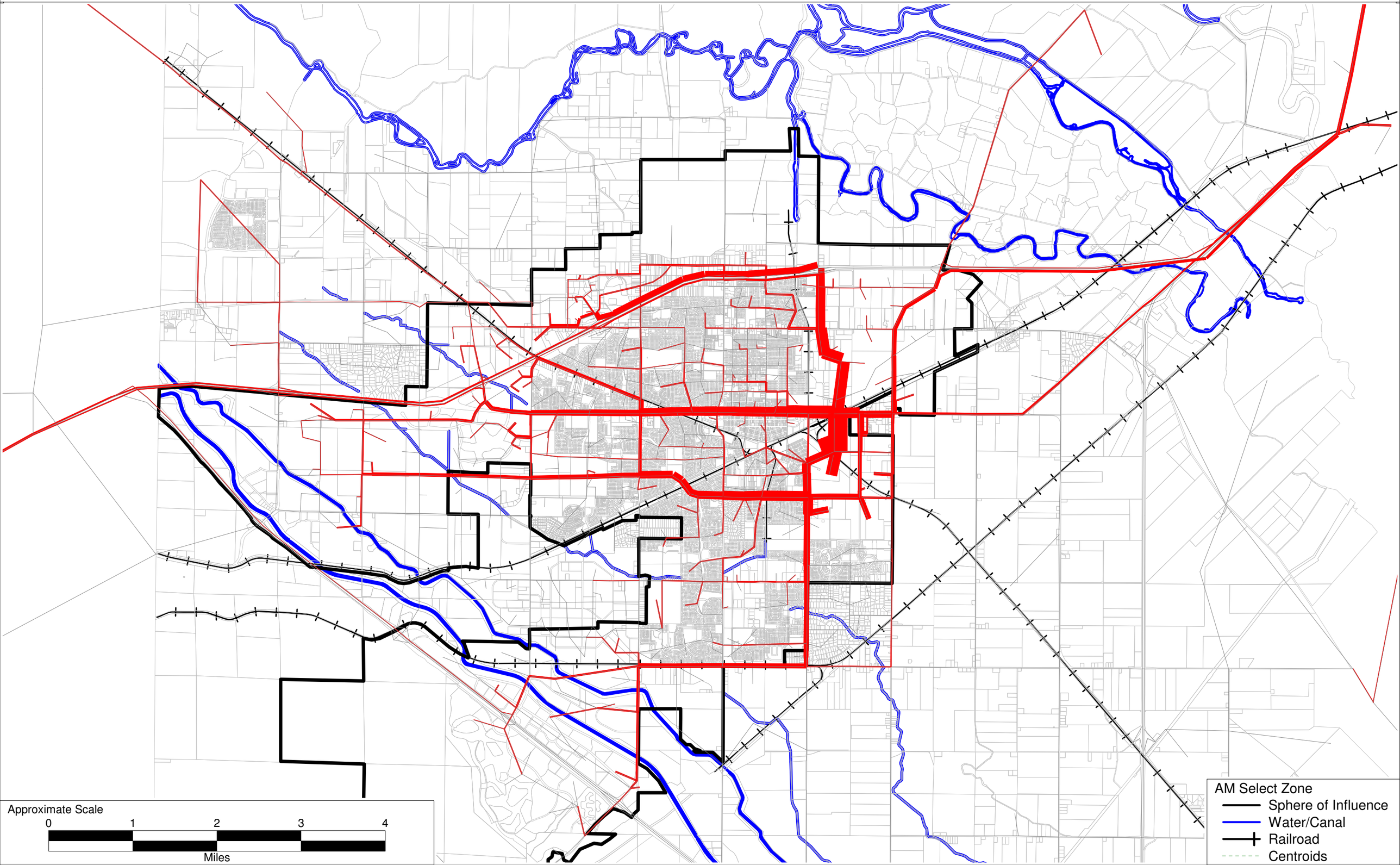
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2035 Westside Residential PM Select Zone



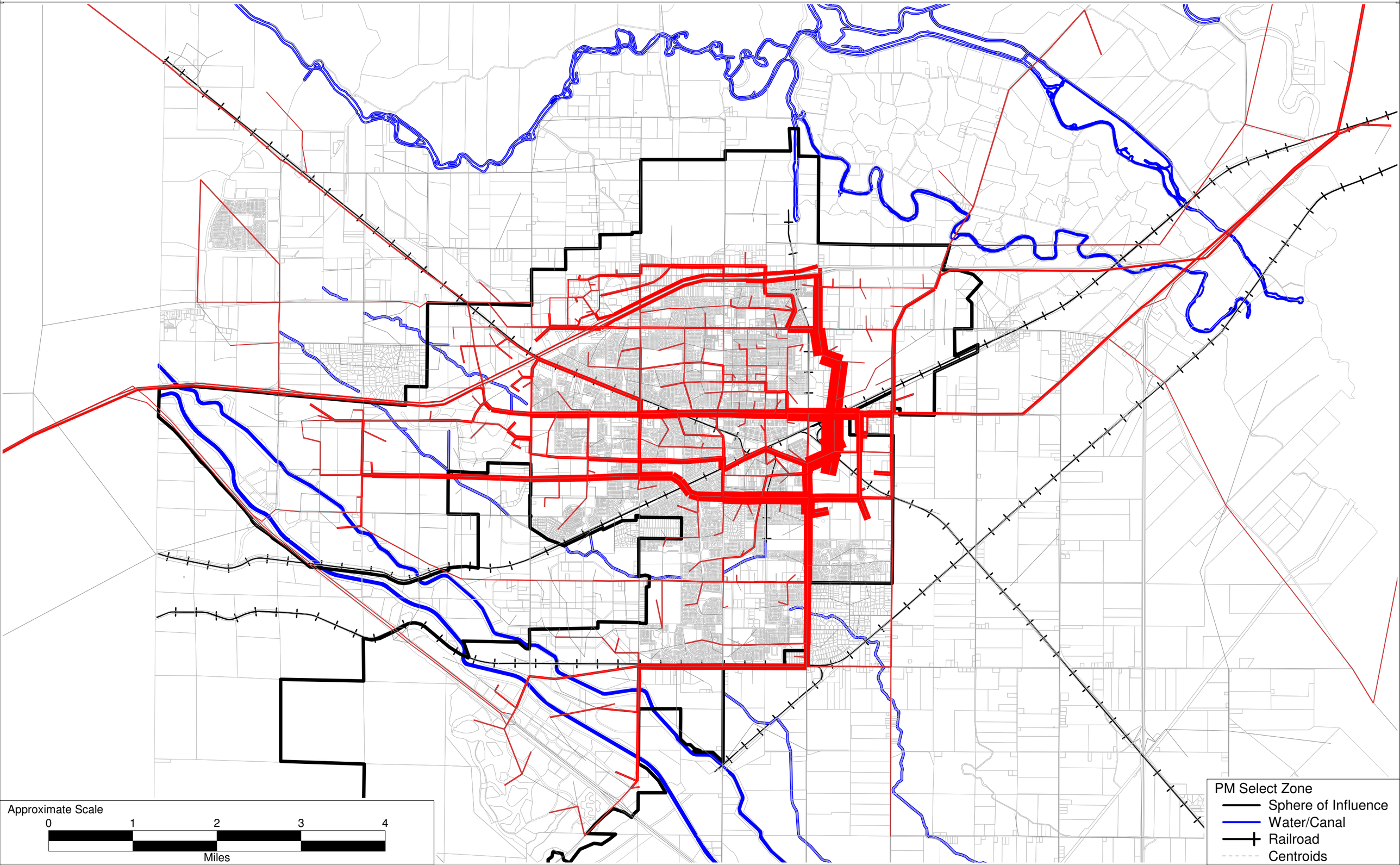
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2035 Urban Reserve 1 AM Select Zone



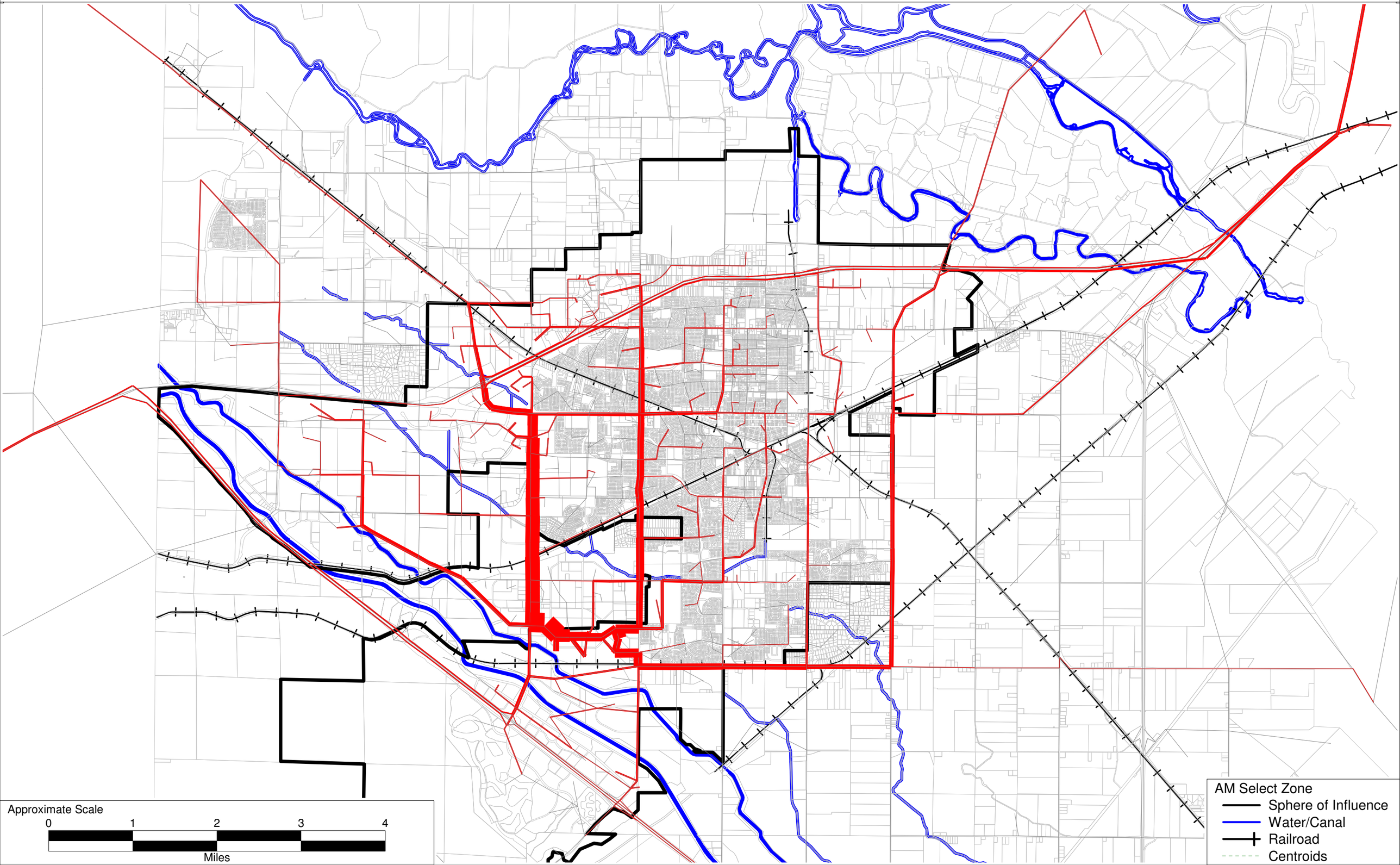
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2035 Urban Reserve 1 PM Select Zone



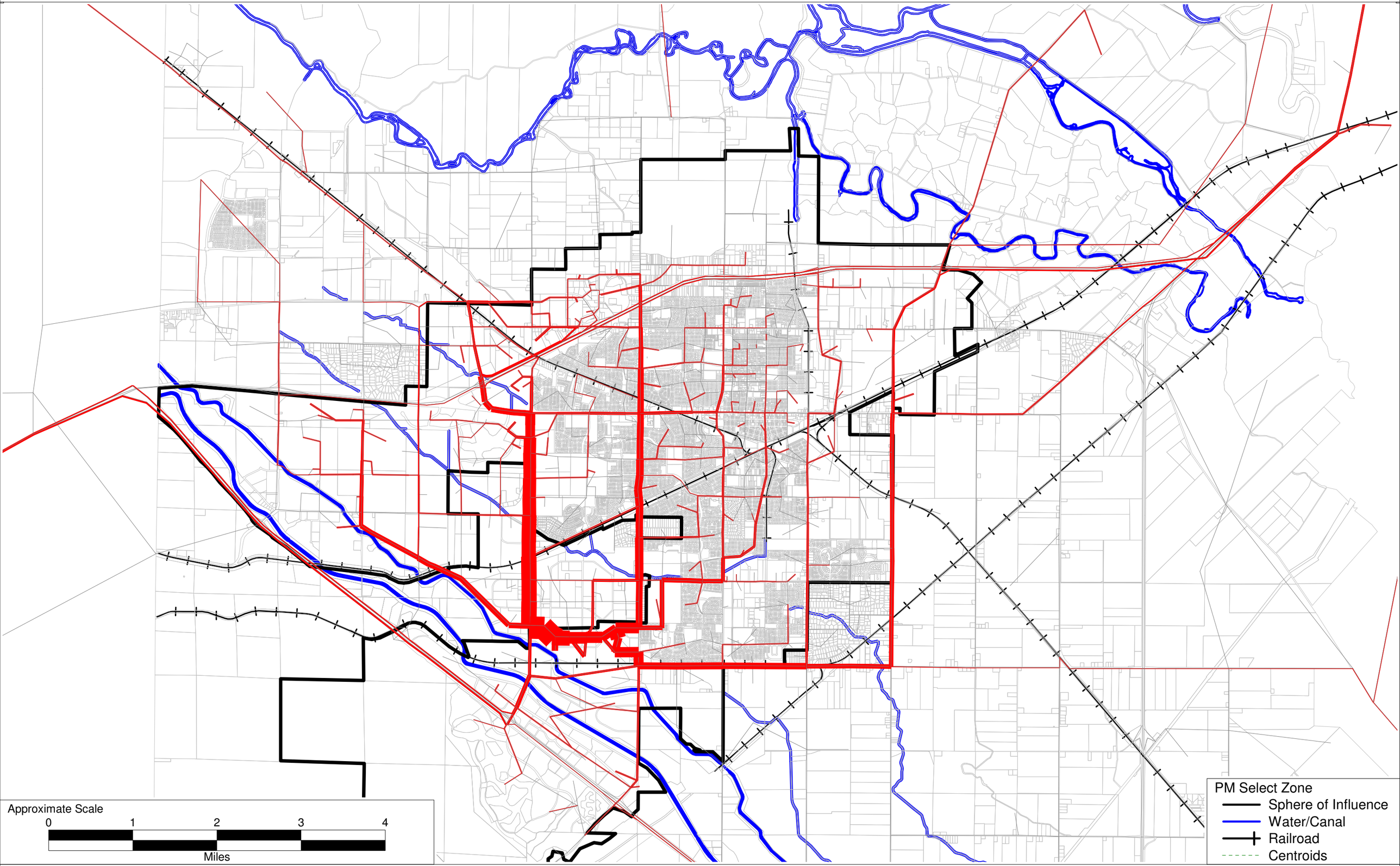
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2035 Ellis AM Select Zone



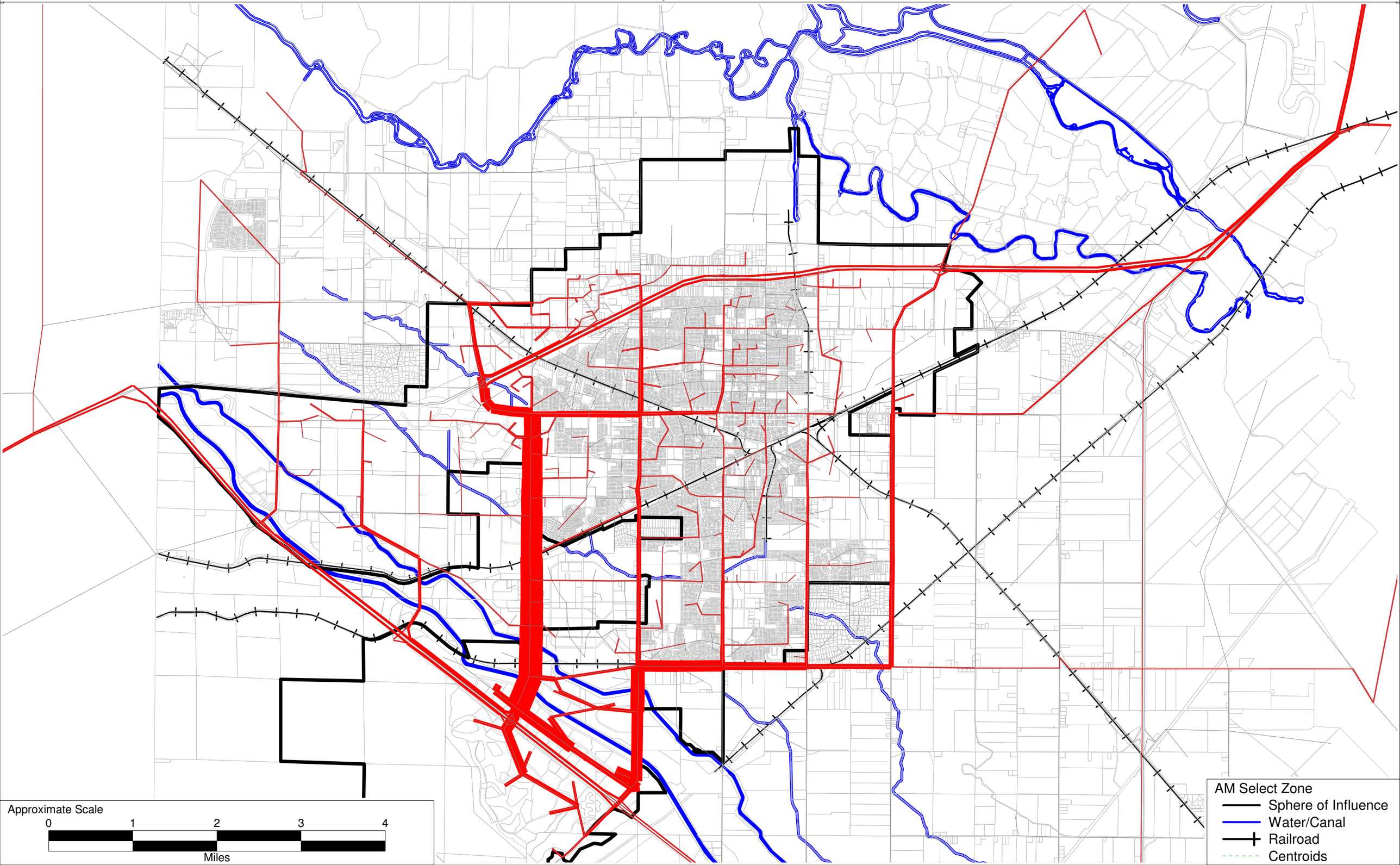
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2035 Ellis PM Select Zone



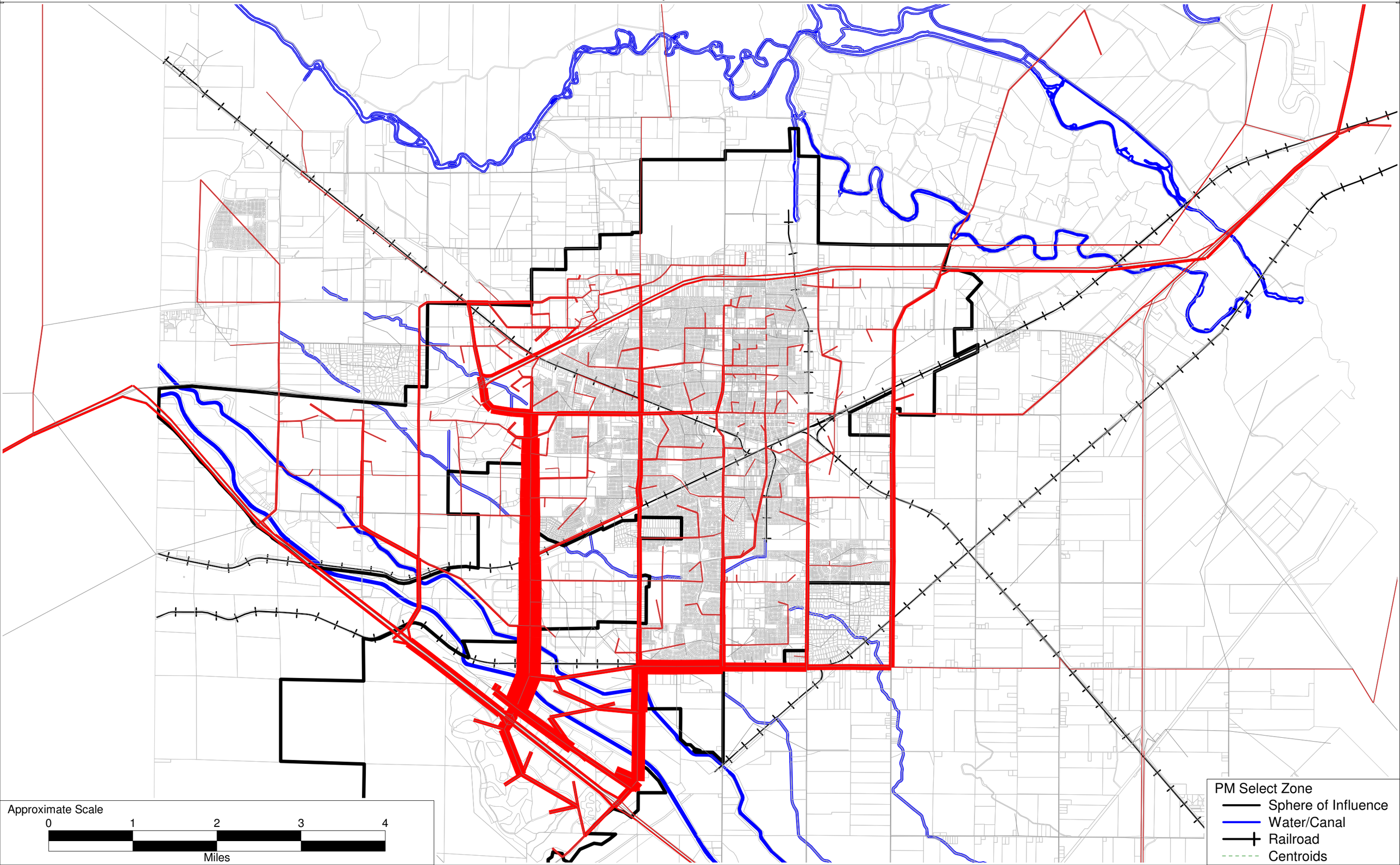
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2035 Tracy Hills AM Select Zone



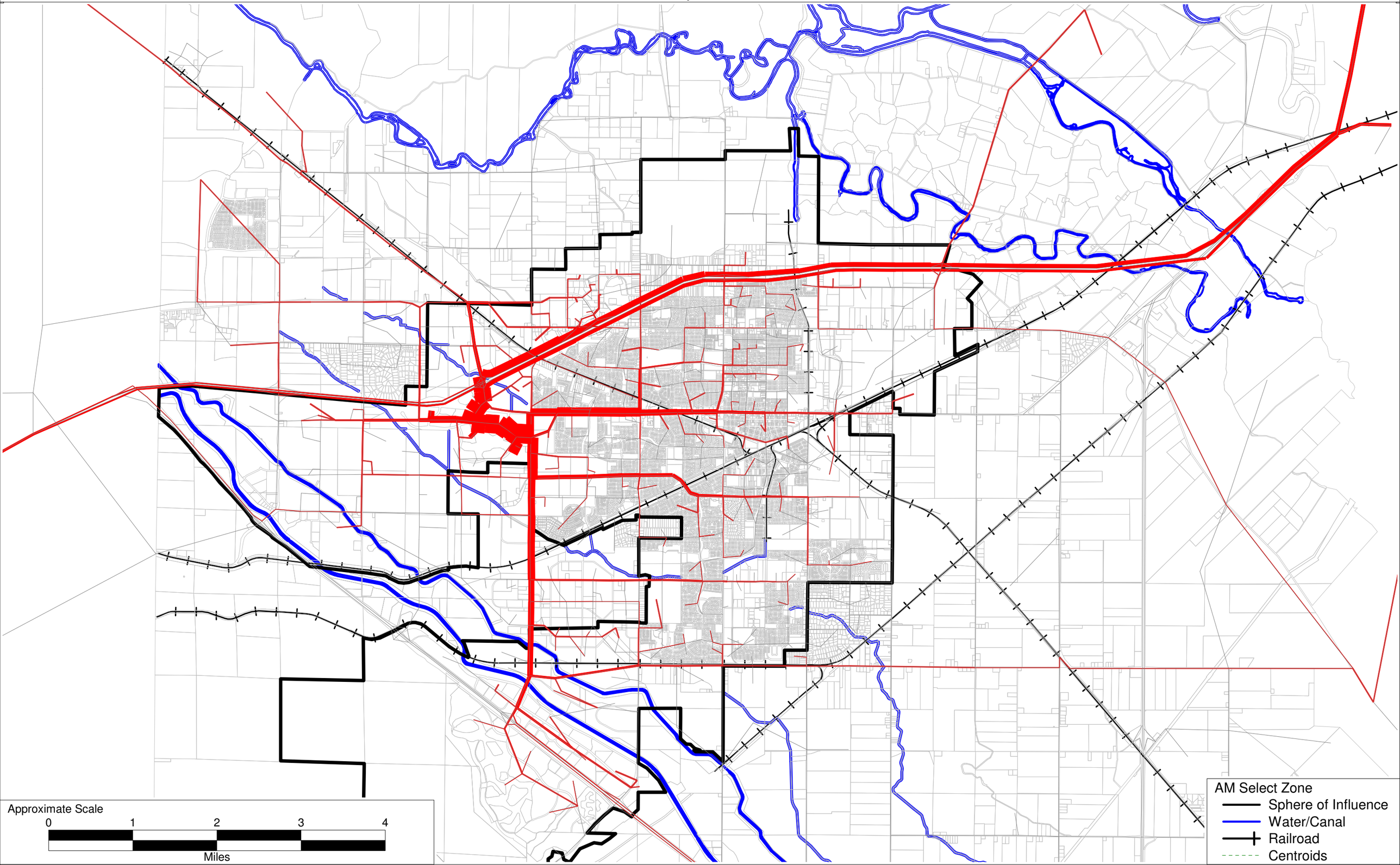
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2035 Tracy Hills PM Select Zone



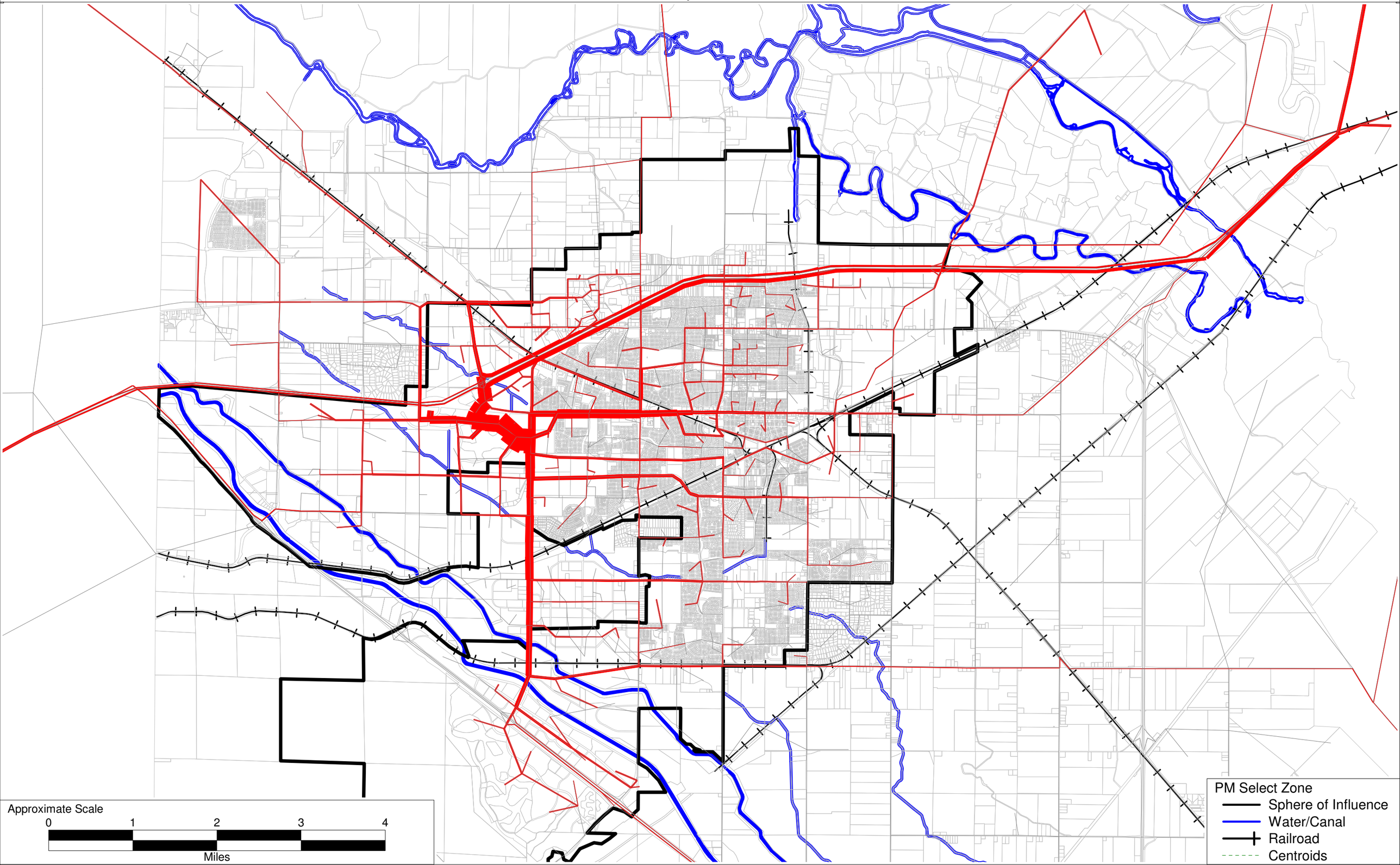
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2035 Gateway AM Select Zone



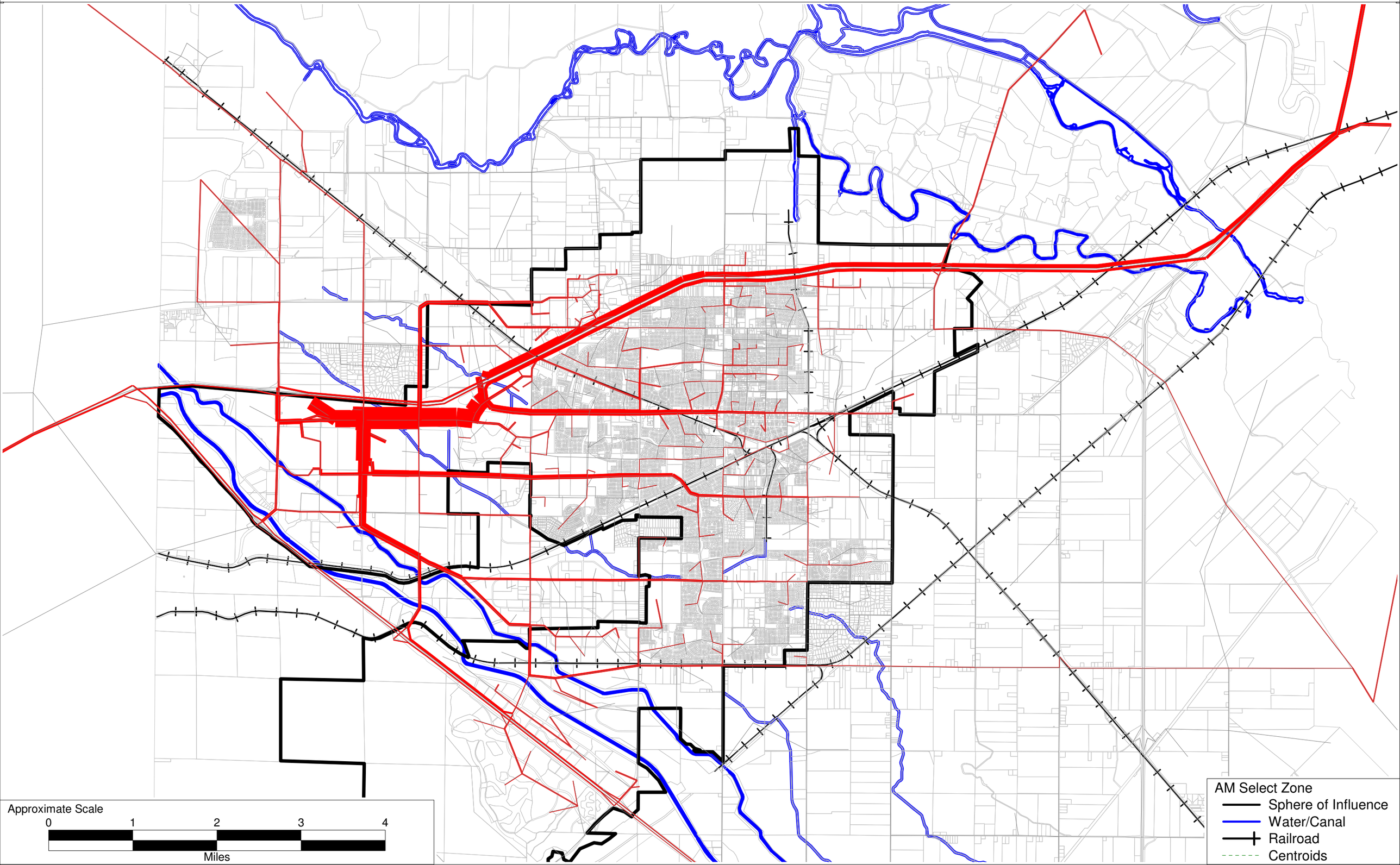
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2035 Gateway PM Select Zone



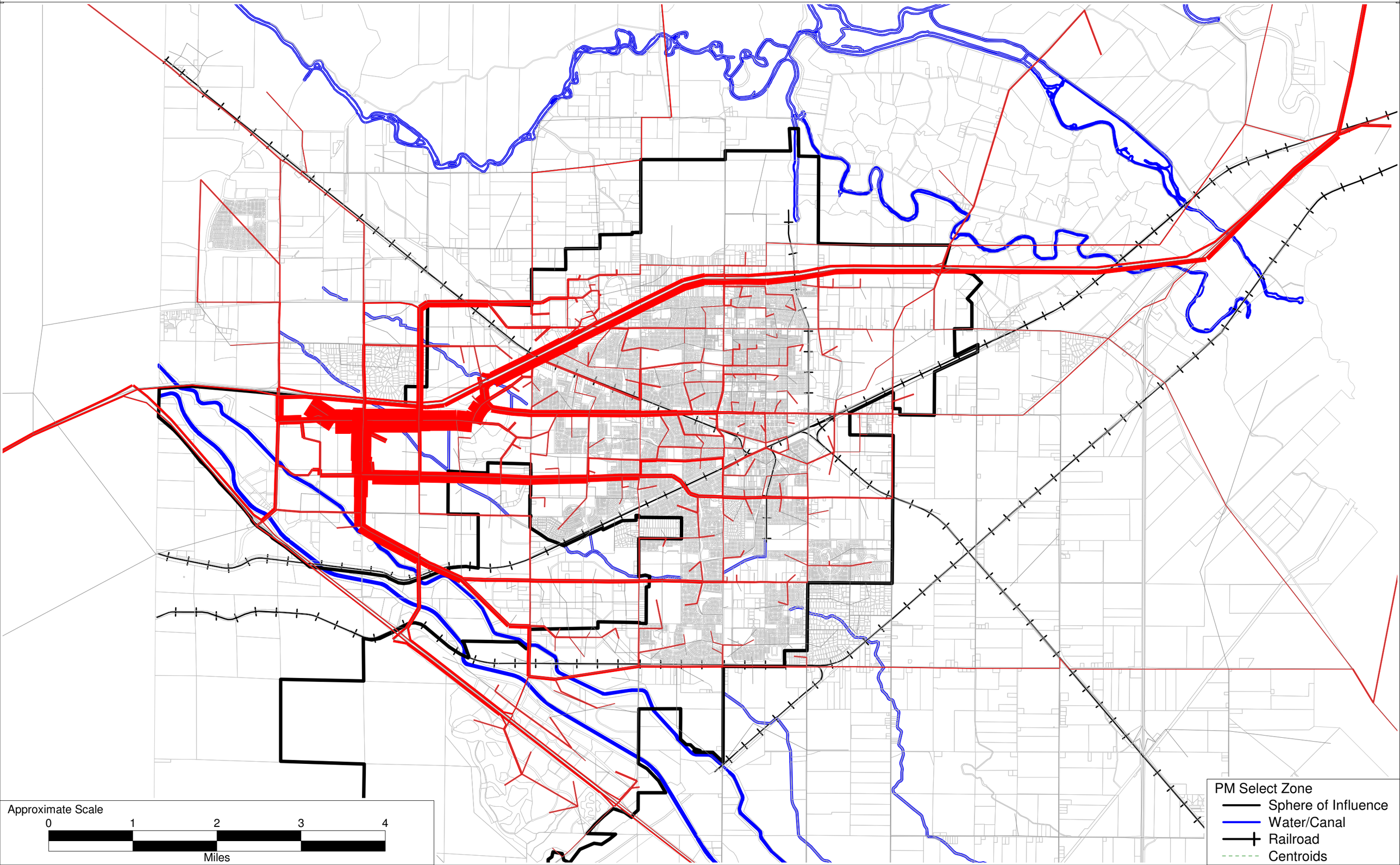
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2035 Cordes Ranch AM Select Zone



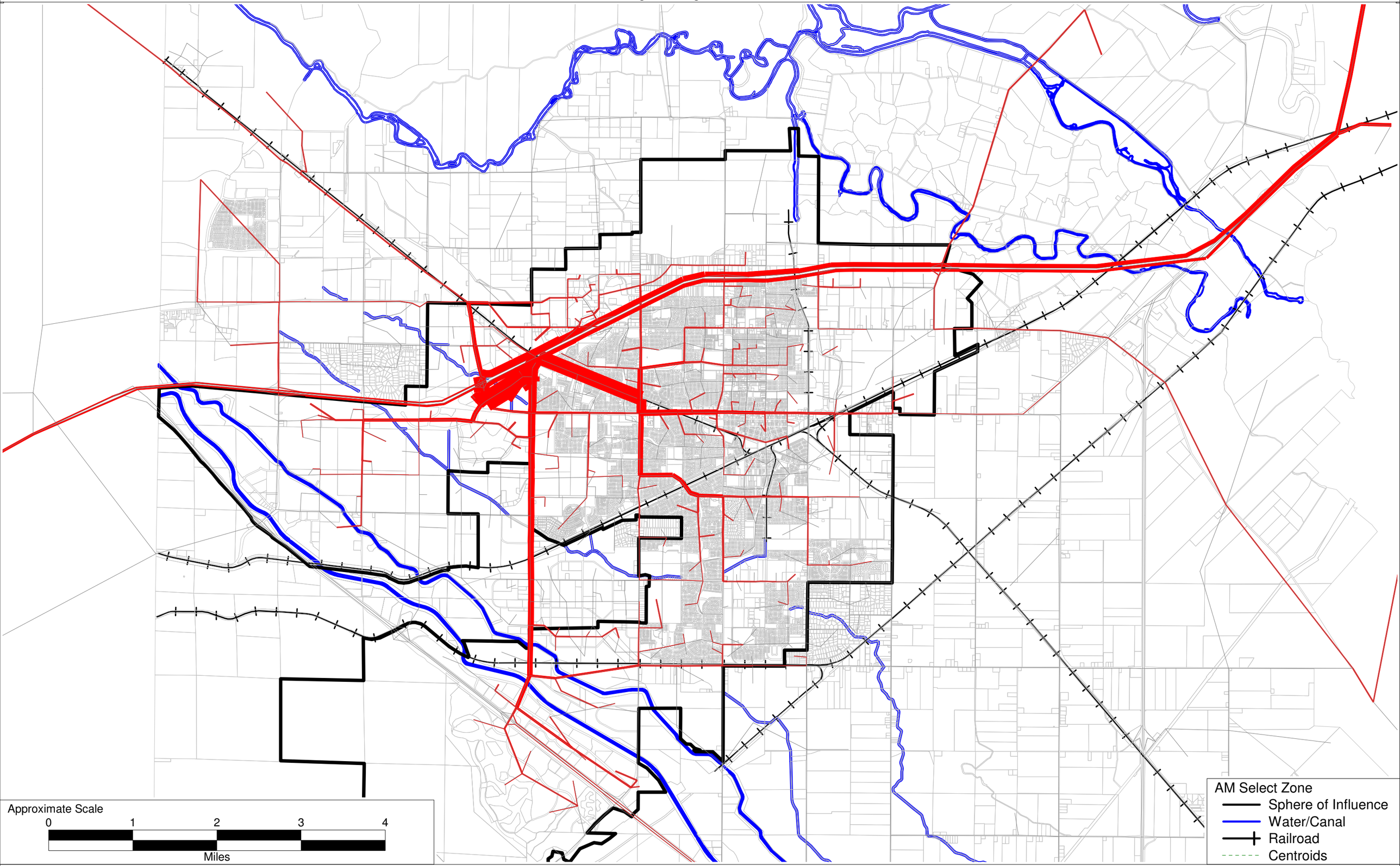
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2035 Cordes Ranch PM Select Zone



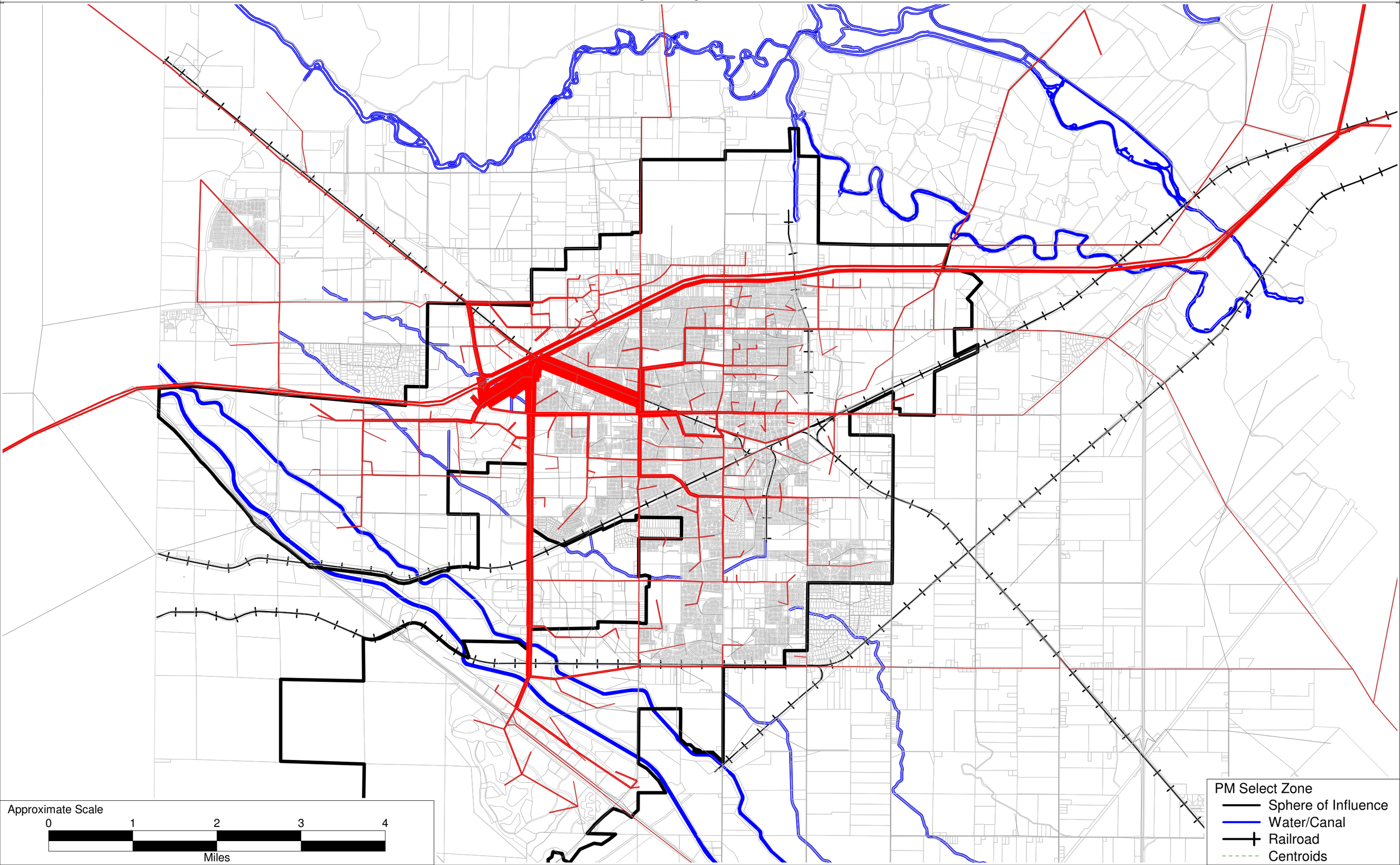
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2035 Bright Triangle AM Select Zone



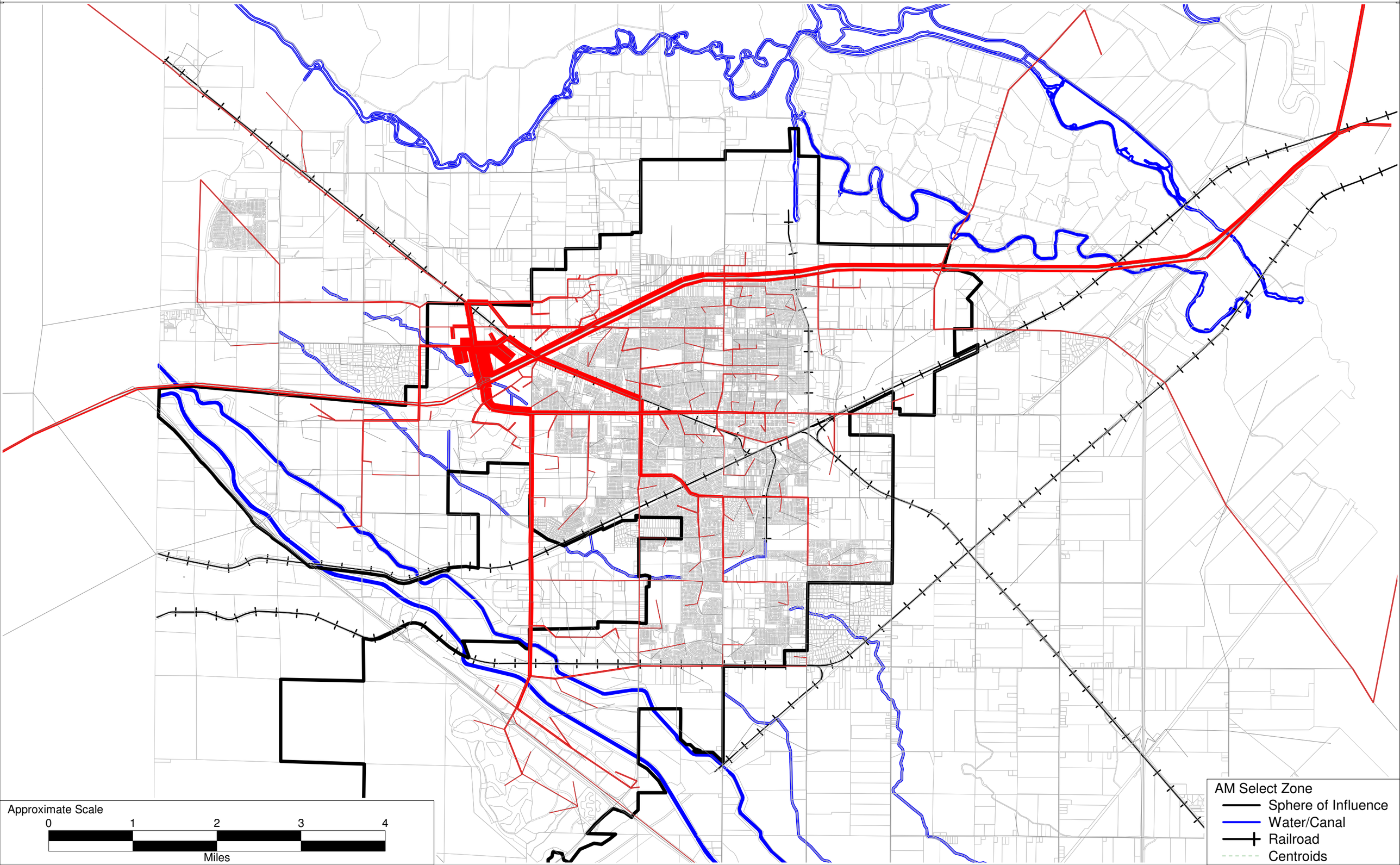
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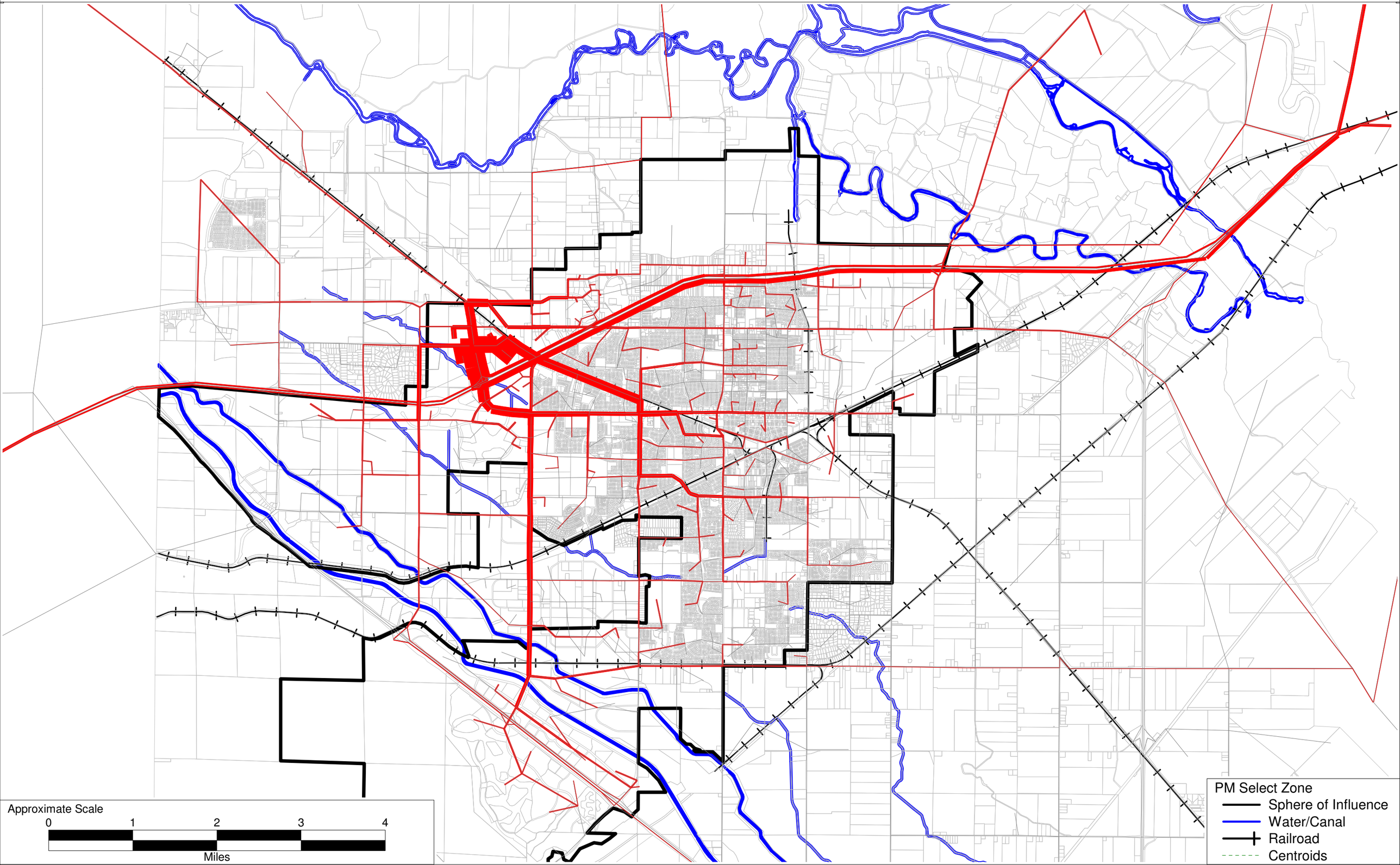
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2035 Catellus AM Select Zone



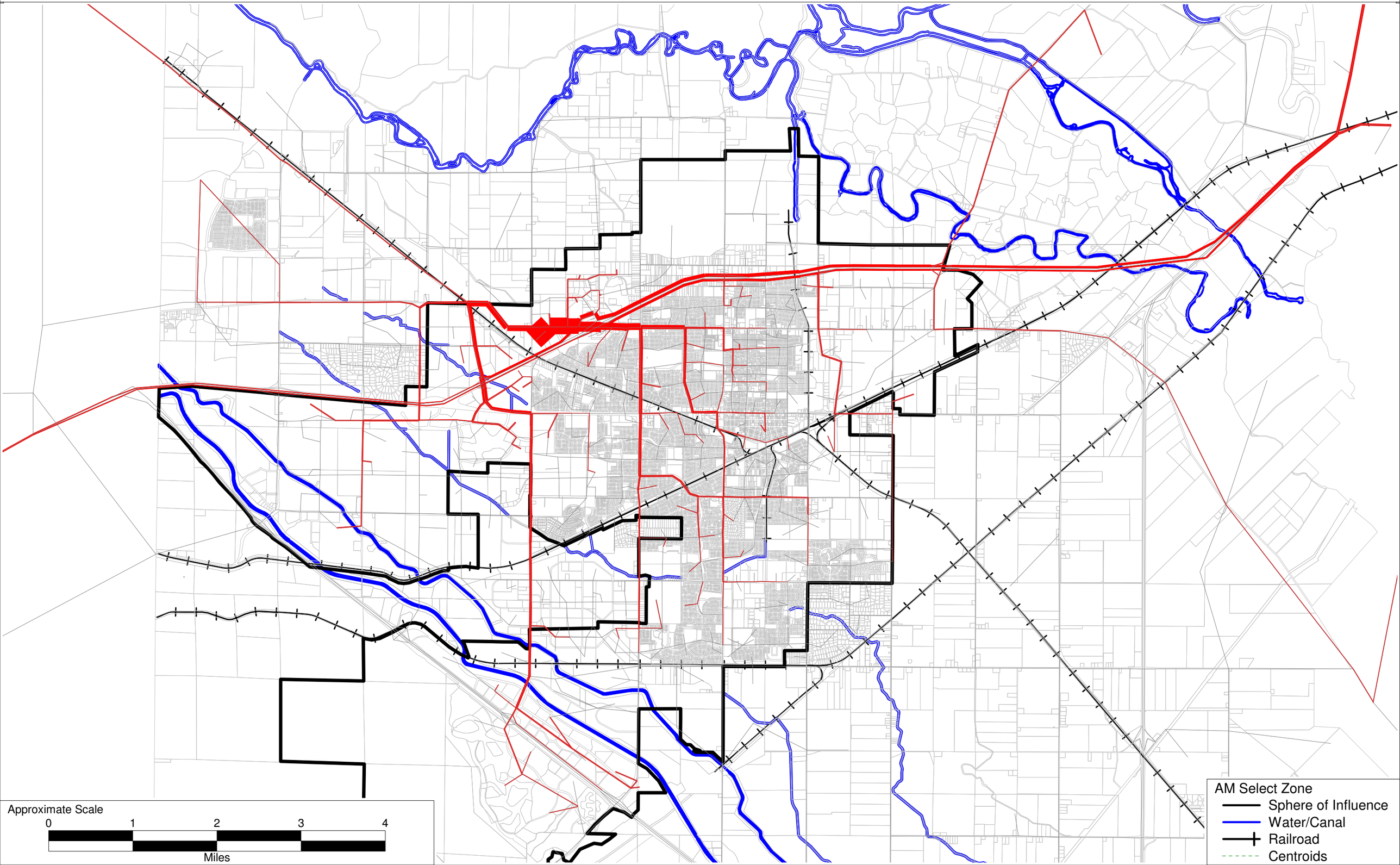
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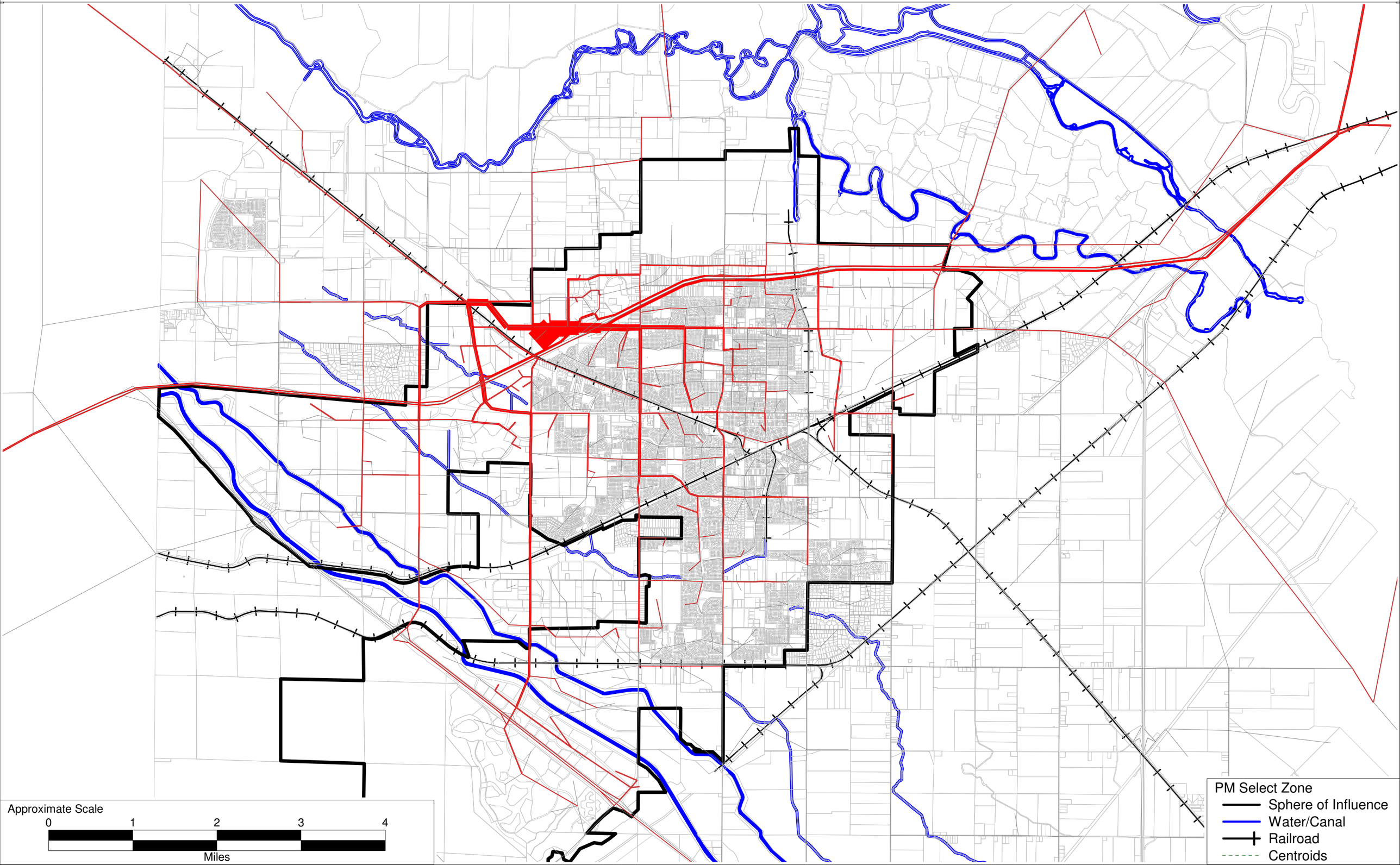
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2035 Filios AM Select Zone



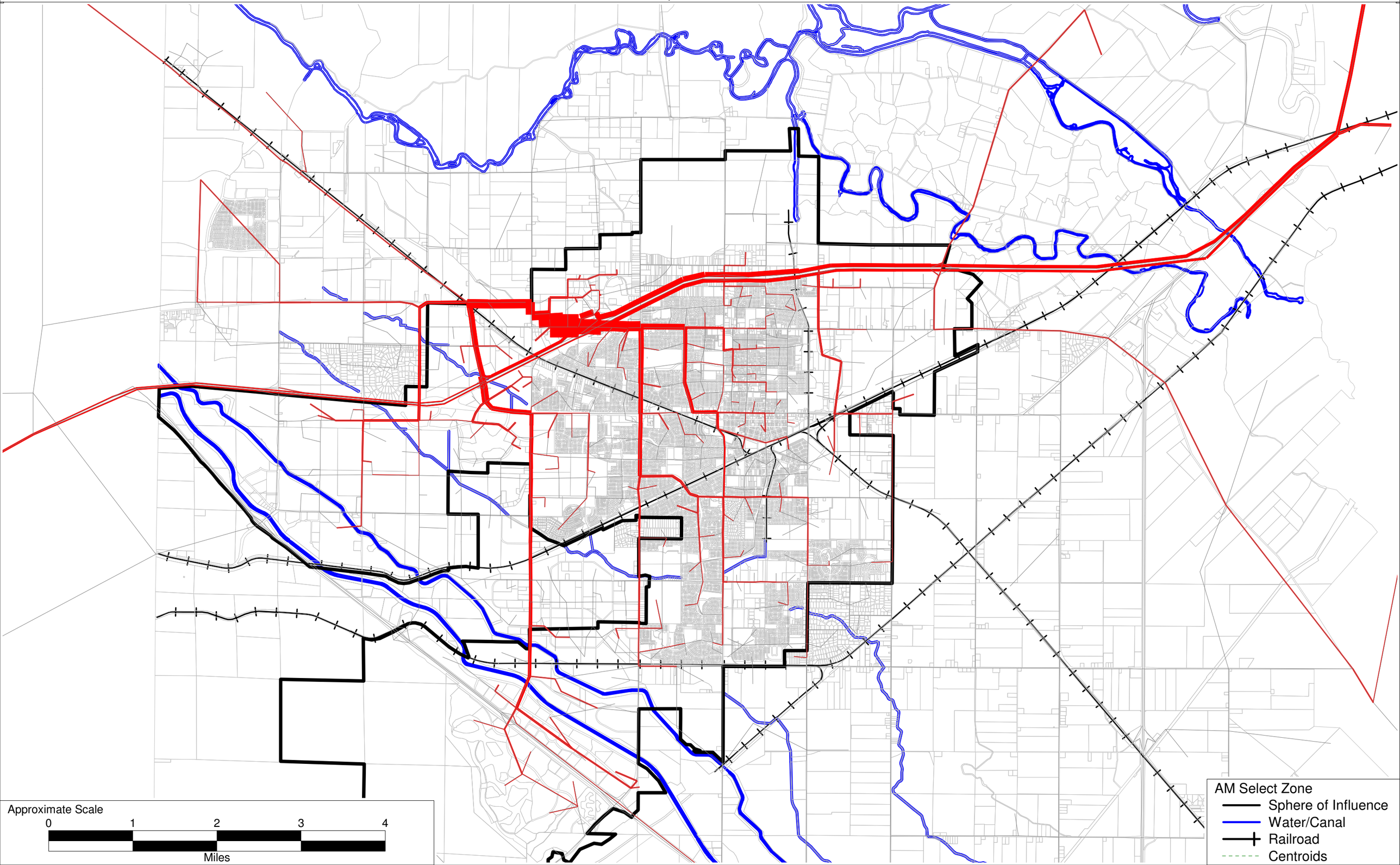
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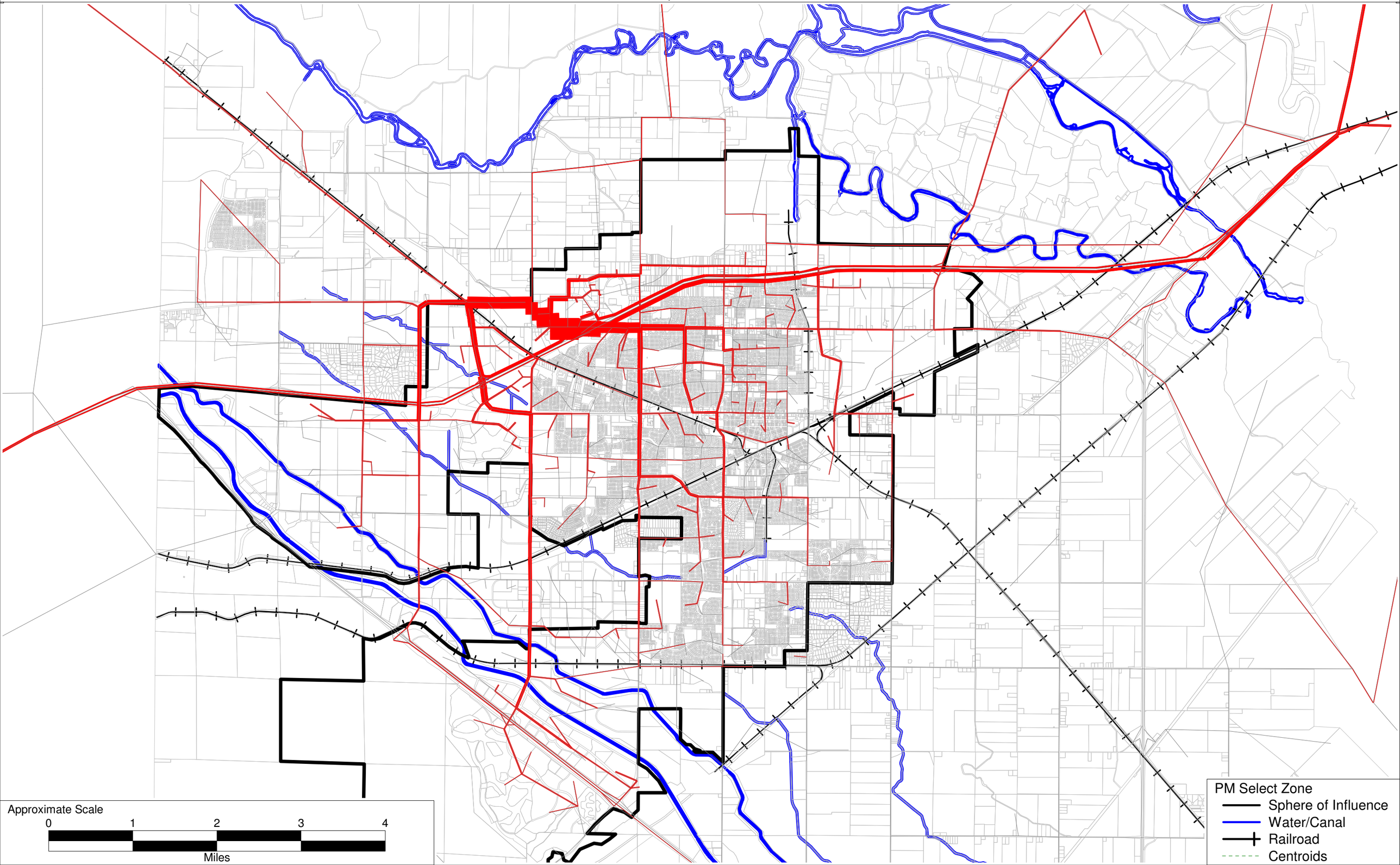
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2035 I-205 Expansion AM Select Zone



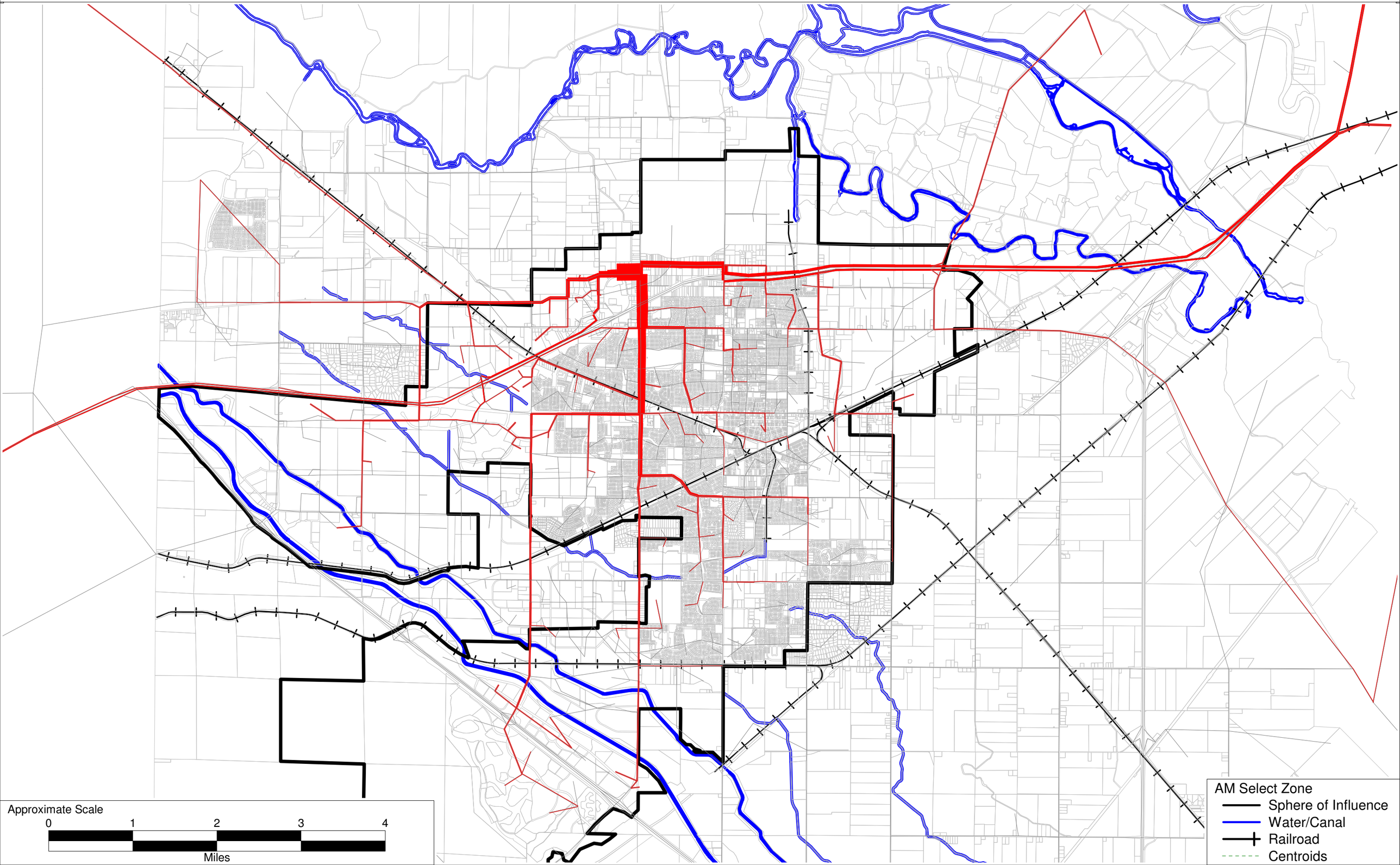
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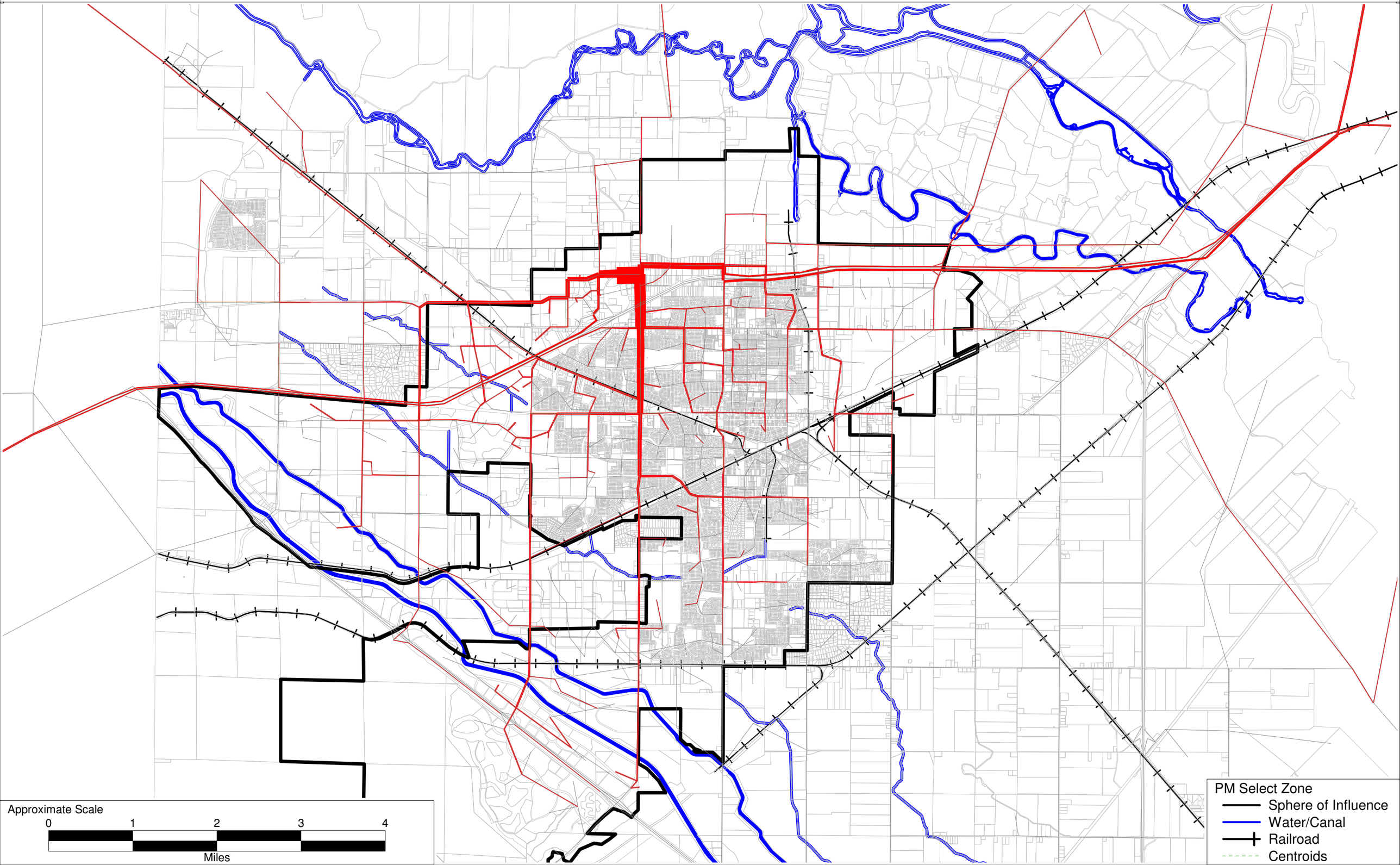
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2035 Larch Clover AM Select Zone



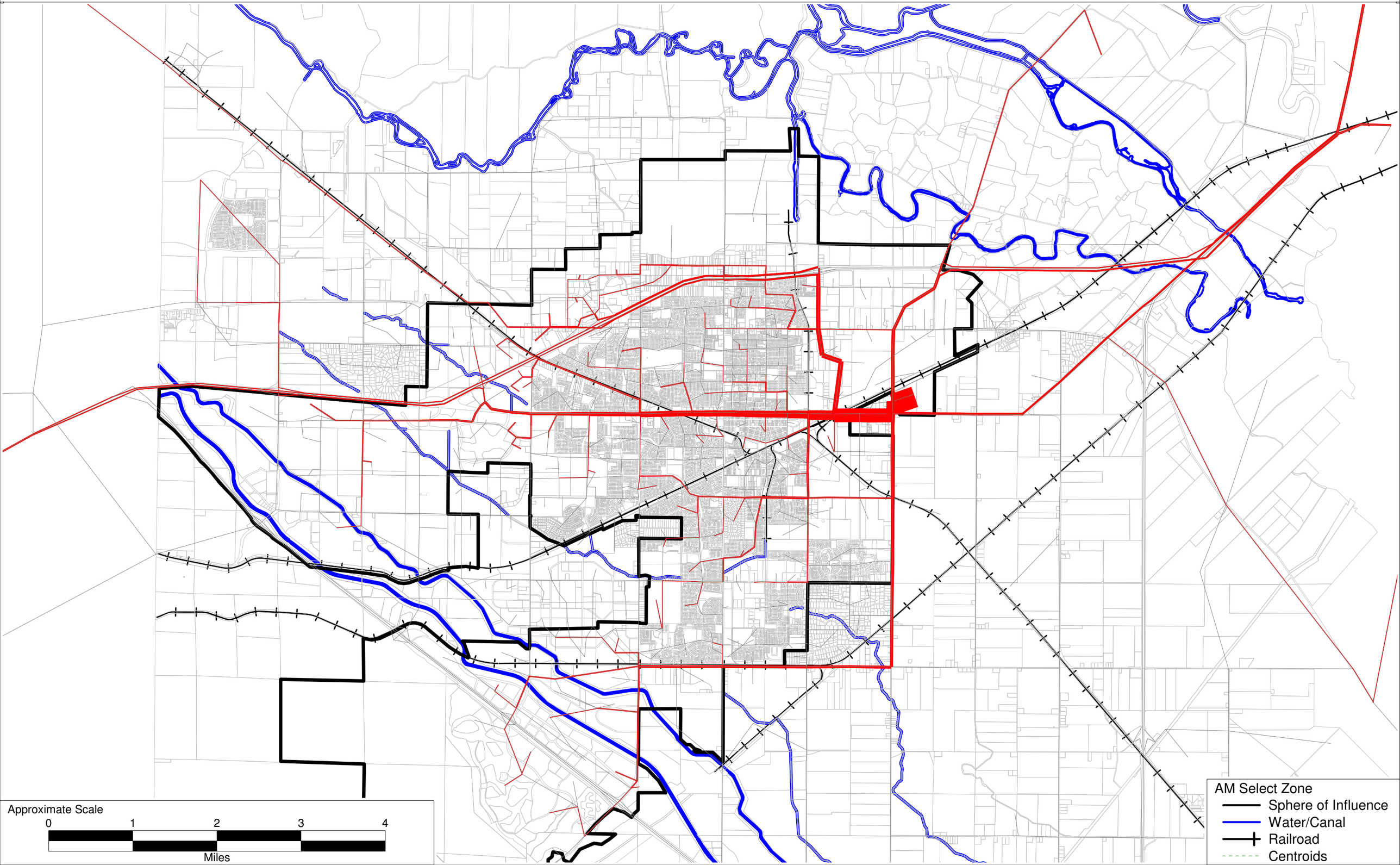
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2035 Larch Clover PM Select Zone



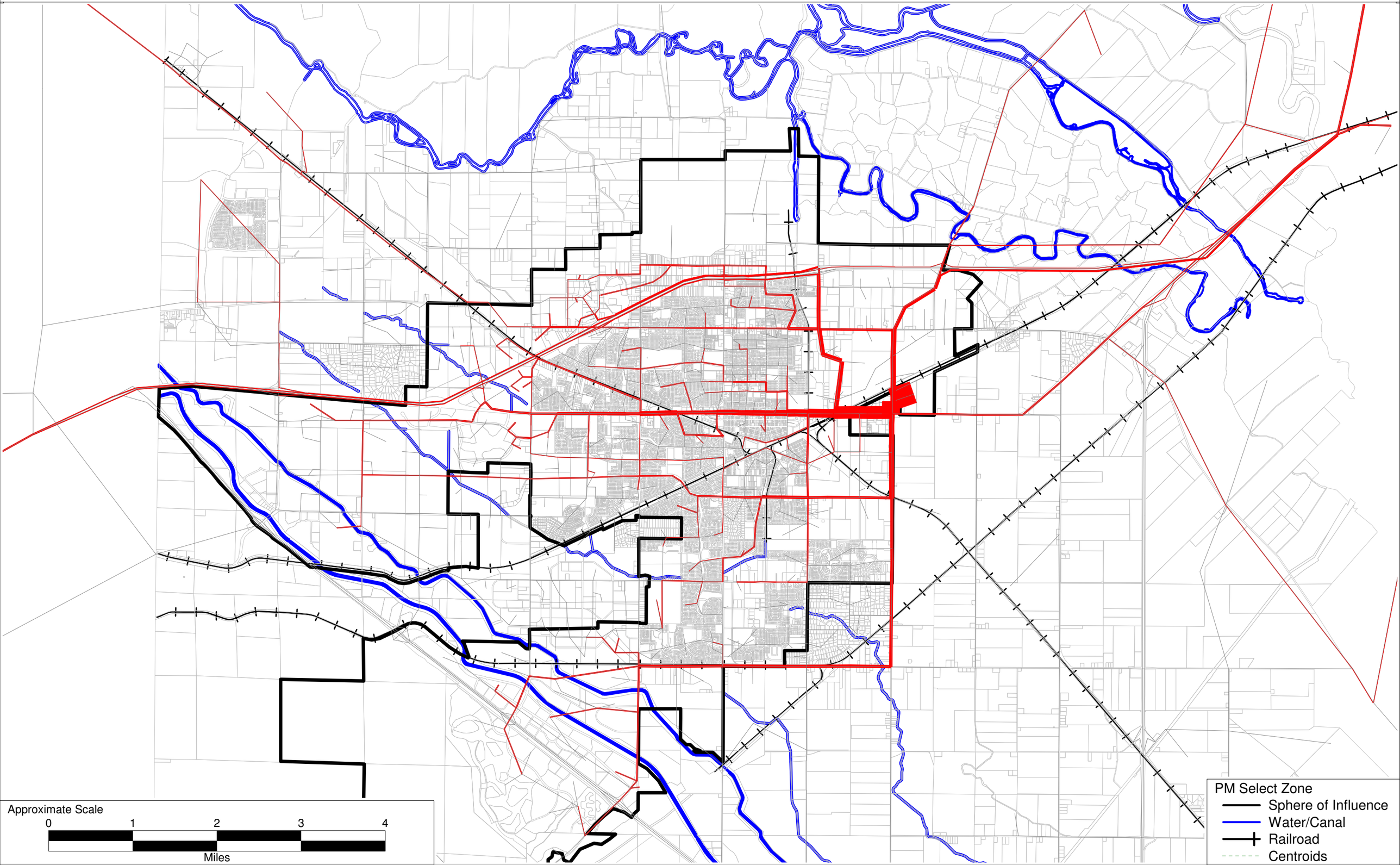
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2035 Chrisman Road AM Select Zone



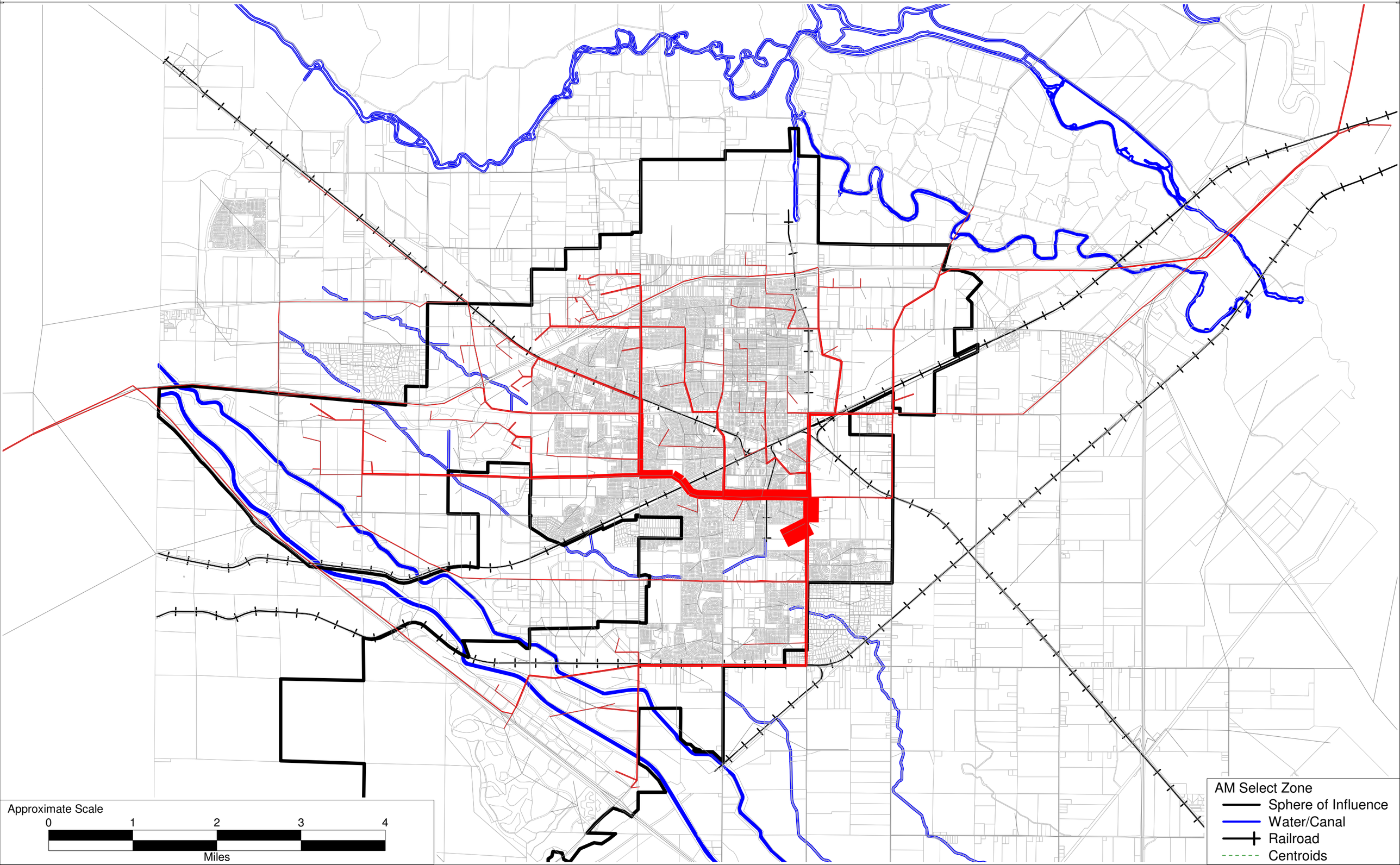
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2035 Chrisman Road PM Select Zone



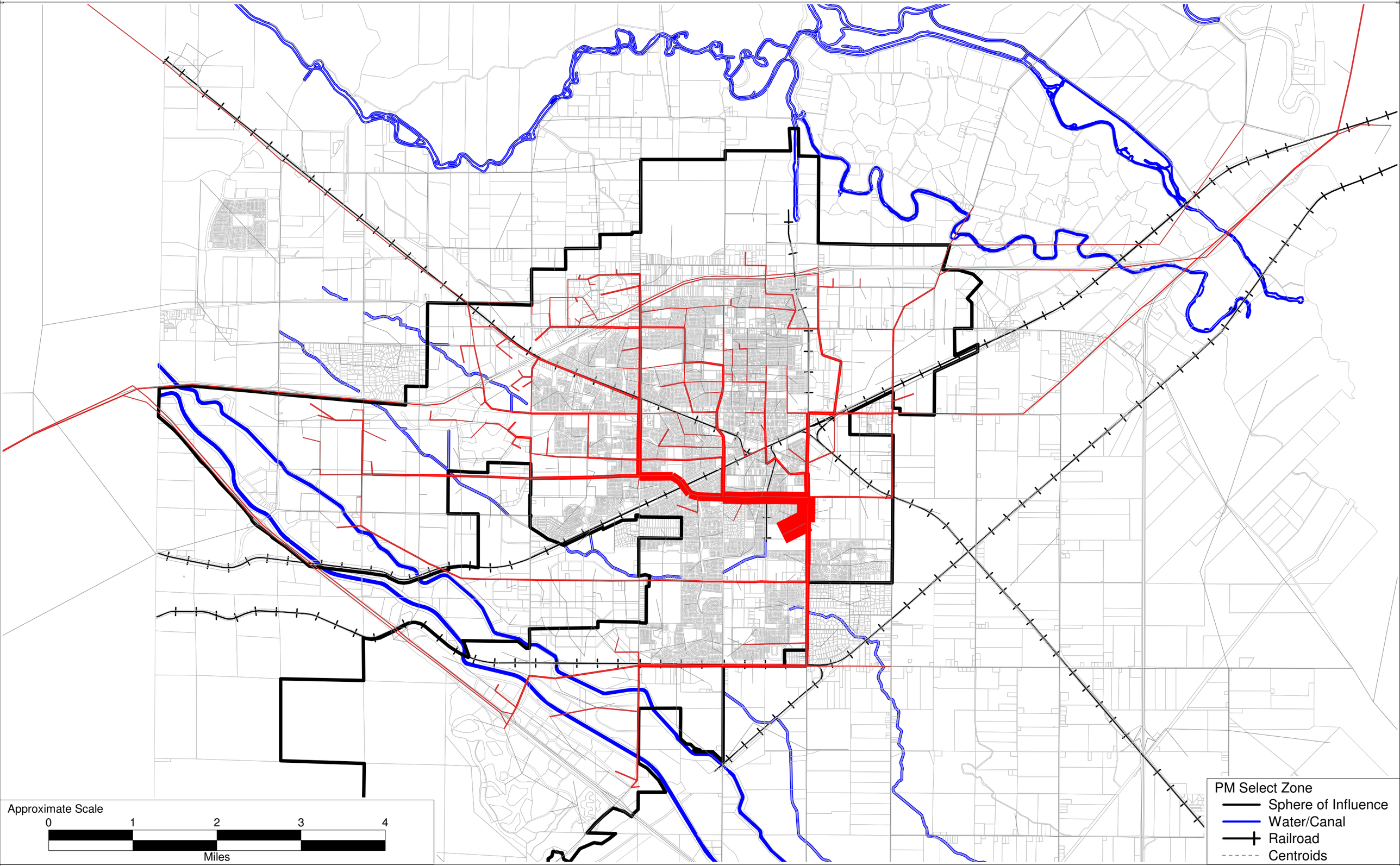
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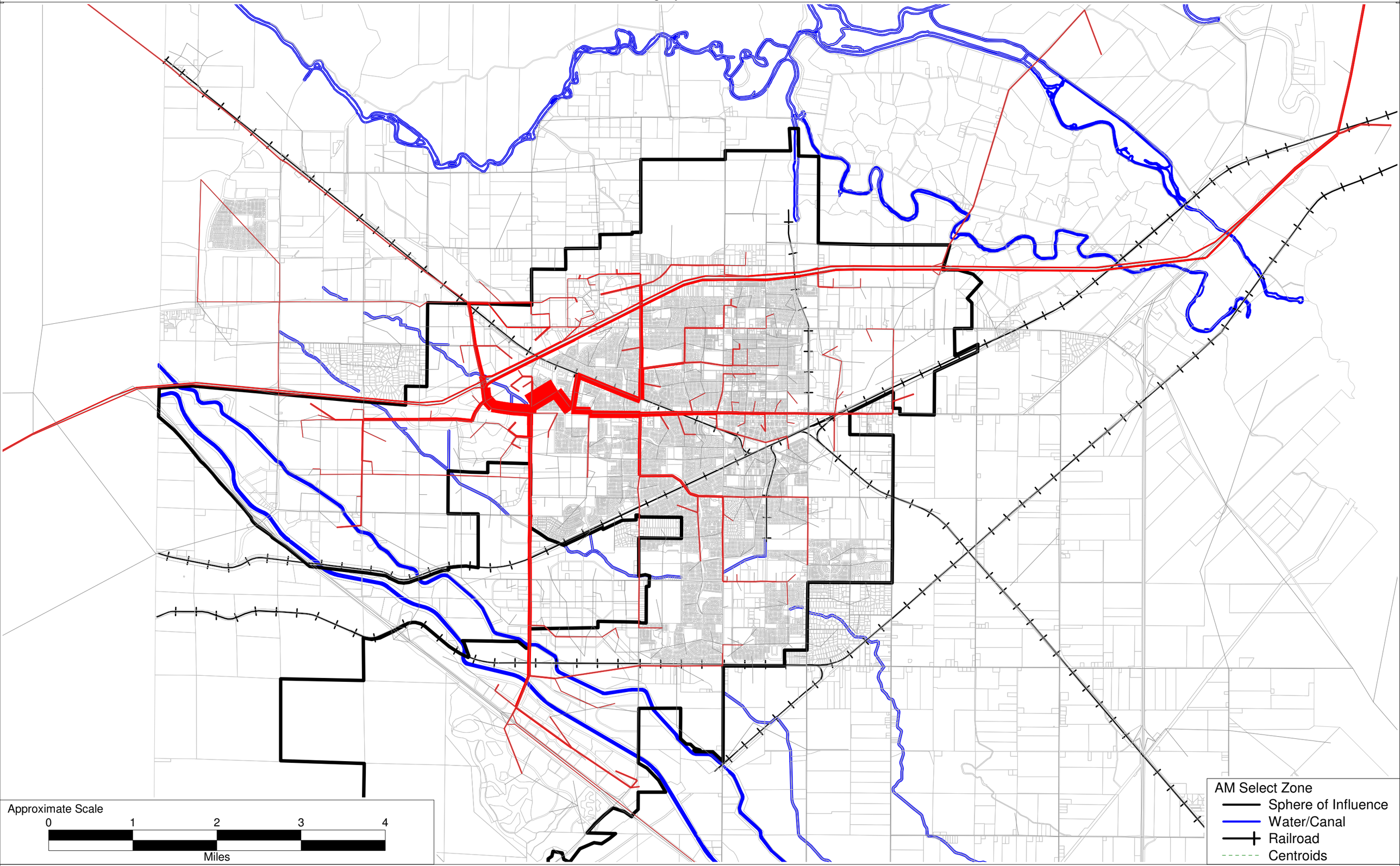
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2035 Rocha PM Select Zone



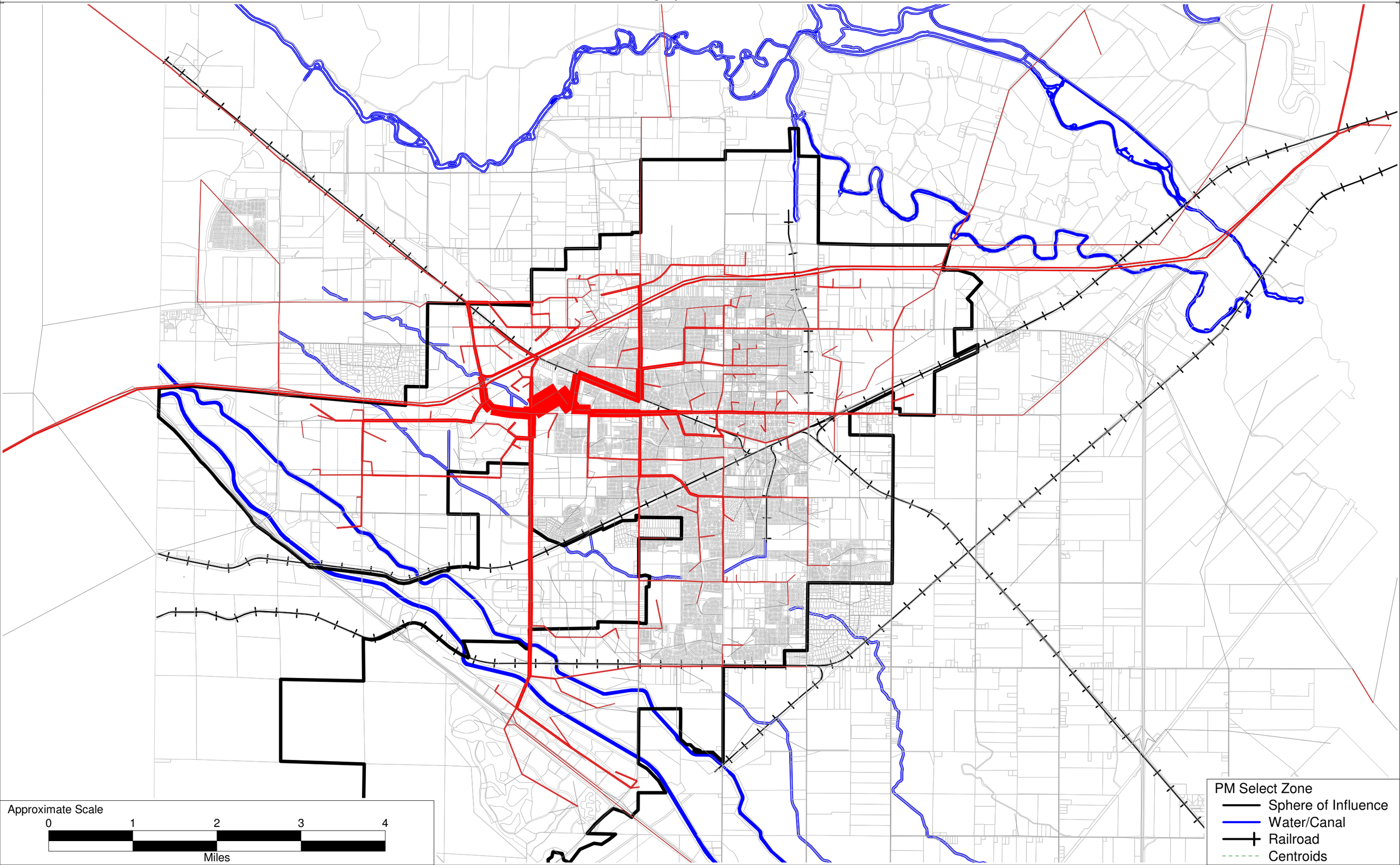
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2035 Berg-Byron AM Select Zone



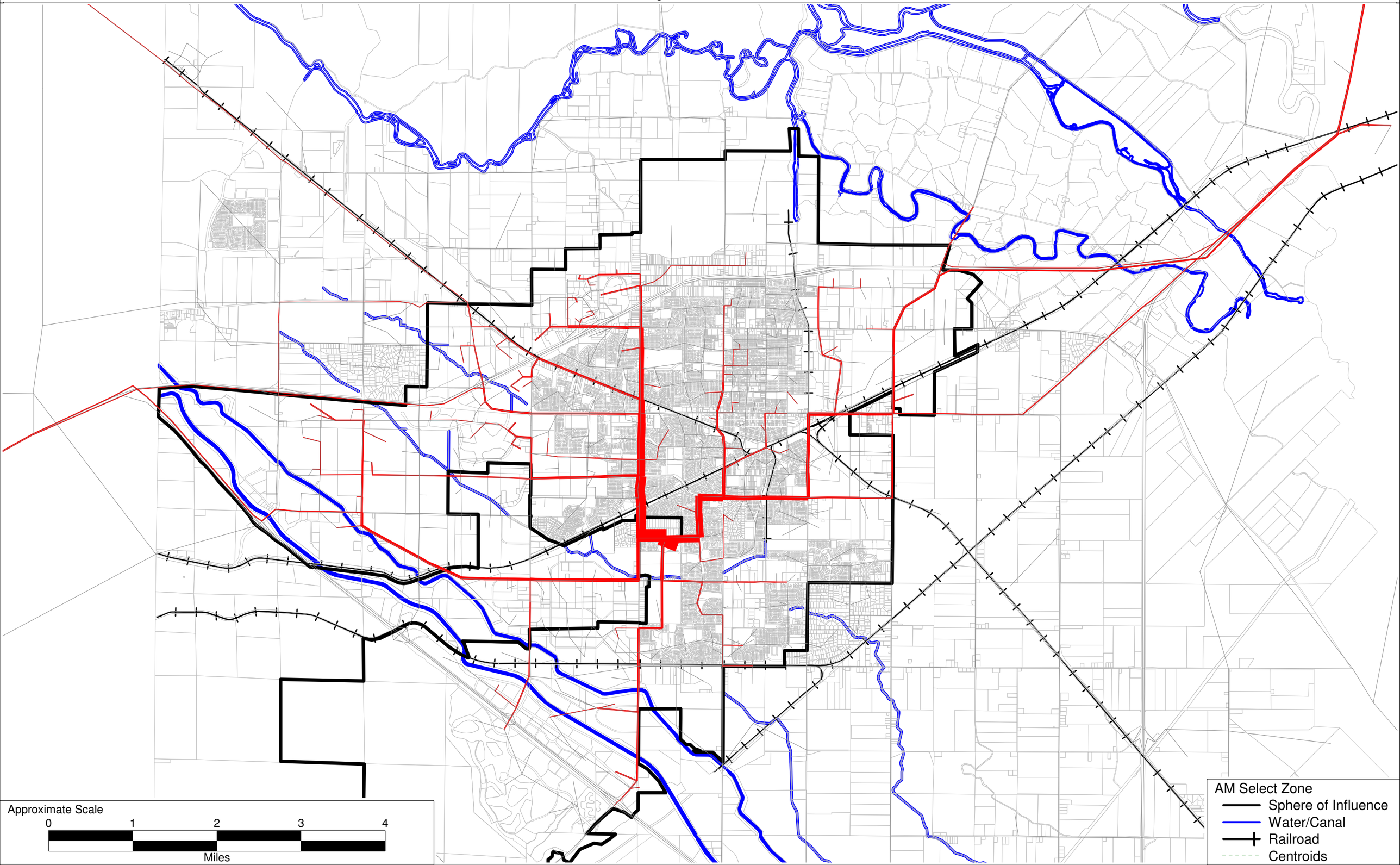
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2035 Berg-Byron PM Select Zone



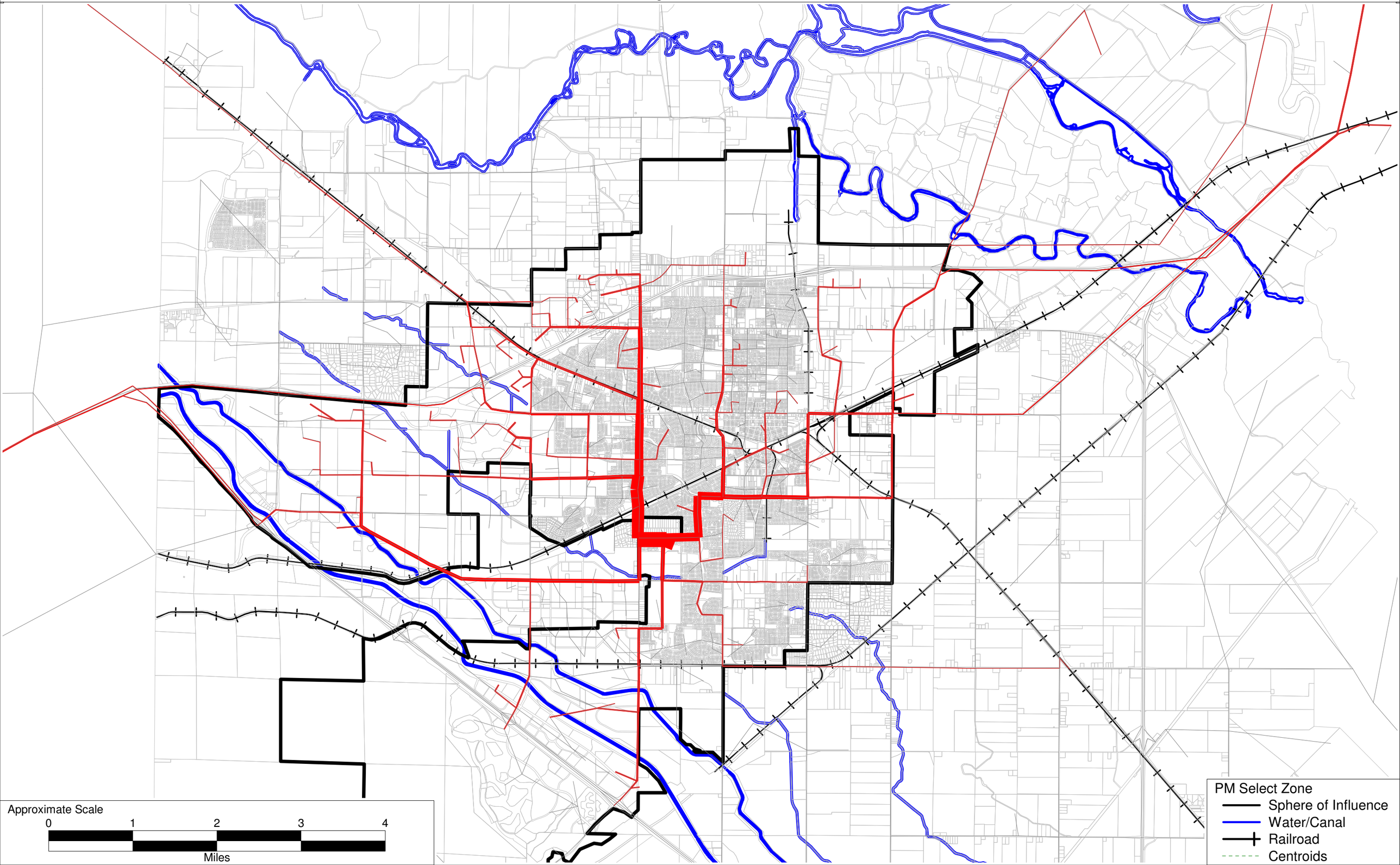
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2035 Kagehiro AM Select Zone



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2035 Kagehiro PM Select Zone



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PLANNING AREAS BUILDOUT SELECT ZONE PLOTS

(SOURCE: FEHR & PEERS ASSOCIATES)

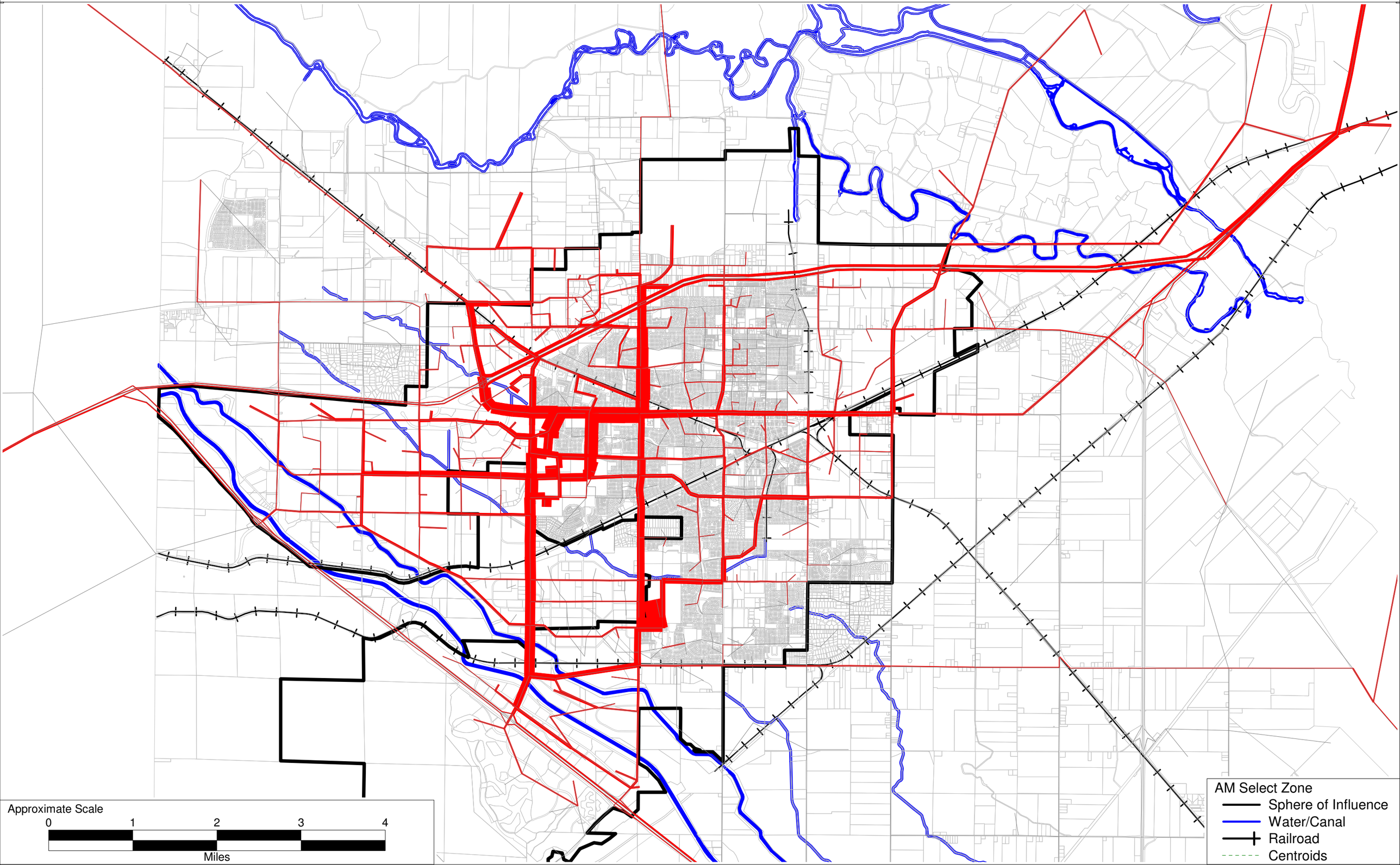
TABLE C-1
TRACY MODEL ESTIMATED PEAK HOUR VEHICLE TRIP GENERATION FOR PLANNING AREAS

Planning Area	2035		Buildout	
	AM Trips	PM Trips	AM Trips	PM Trips
Planning Area 1 (Westside Residential)	1,800	3,400	1,800	3,400
Planning Area 2 (Urban Reserve 1)	900	1,700	1,900	3,650
Planning Area 3 (Ellis)	1,150	2,150	1,150	2,150
Planning Area 4 (South Linne)	0	0	450	850
Planning Area 5 (Tracy Hills)	5,250	9,850	14,150	26,150
Planning Area 6 (Gateway)	3,850	7,100	9,300	17,450
Planning Area 7 (Cordes Ranch)	4,800	8,950	11,650	22,100
Planning Area 8 (Bright Triangle)	2,450	4,500	5,600	10,250
Planning Area 9 (Catellus)	1,650	3,100	4,750	8,950
Planning Area 10 (Filios)	1,900	3,450	1,900	3,450
Planning Area 11 (I-205 Expansion)	1,550	2,850	4,500	8,150
Planning Area 12 (West Side Industrial)	0	0	1,800	3,500
Planning Area 13 (East Side Industrial)	0	0	1,350	2,650
Planning Area 14 (Larch Clover)	1,000	1,800	24,750	45,050
Planning Area 15 (Chrisman)	900	1,650	1,950	3,650
Planning Area 16 (Rocha)	50	100	300	550
Planning Area 17 (Berg/Byron)	100	150	200	350
Planning Area 18 (Kagehiro)	150	250	150	250
Planning Area Totals	**27,500**	**51,000**	**87,650**	**162,550**
Existing (2006) Citywide Total for Comparison	***24,000***	***45,200***	***24,000***	***45,200***

Source: Fehr & Peers, March 2010. Tracy Travel Demand Model.

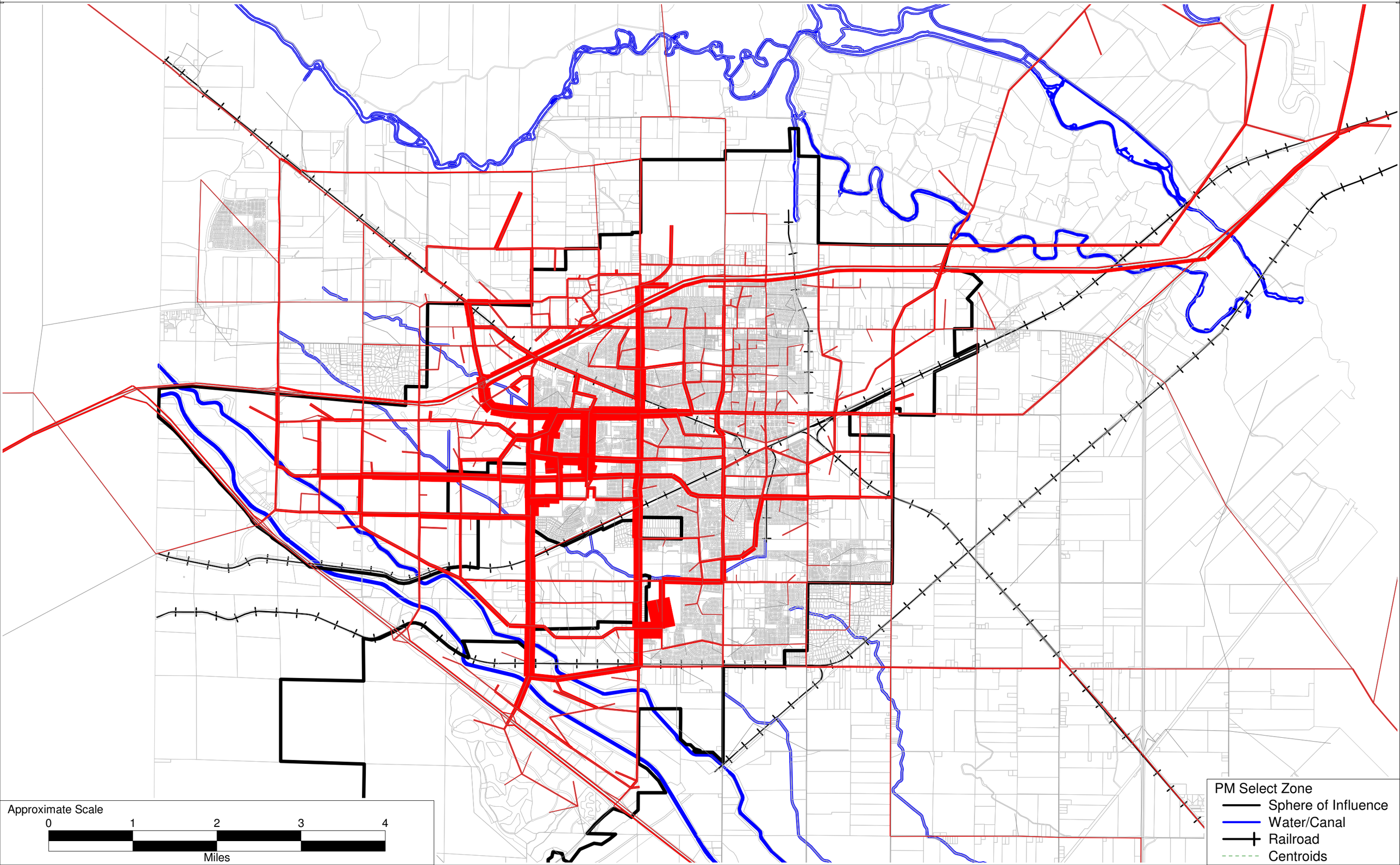
The following plots are relative to the number of trips the planning area produces. The width of the red bars indicates the relative percentage of that planning area's trips that are on the specified roadway.

Buildout Westside Residential AM Select Zone



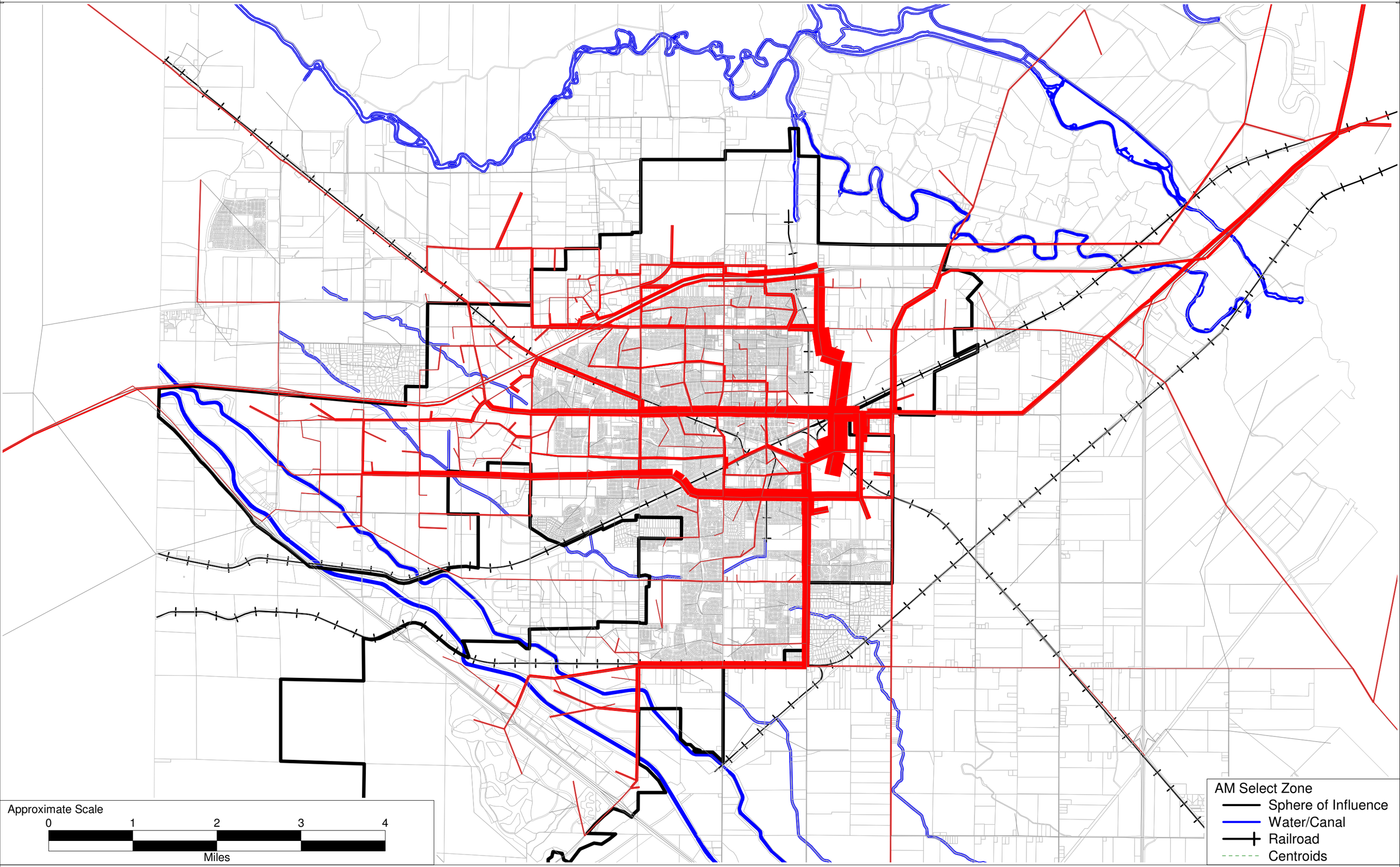
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Buildout Westside Residential PM Select Zone



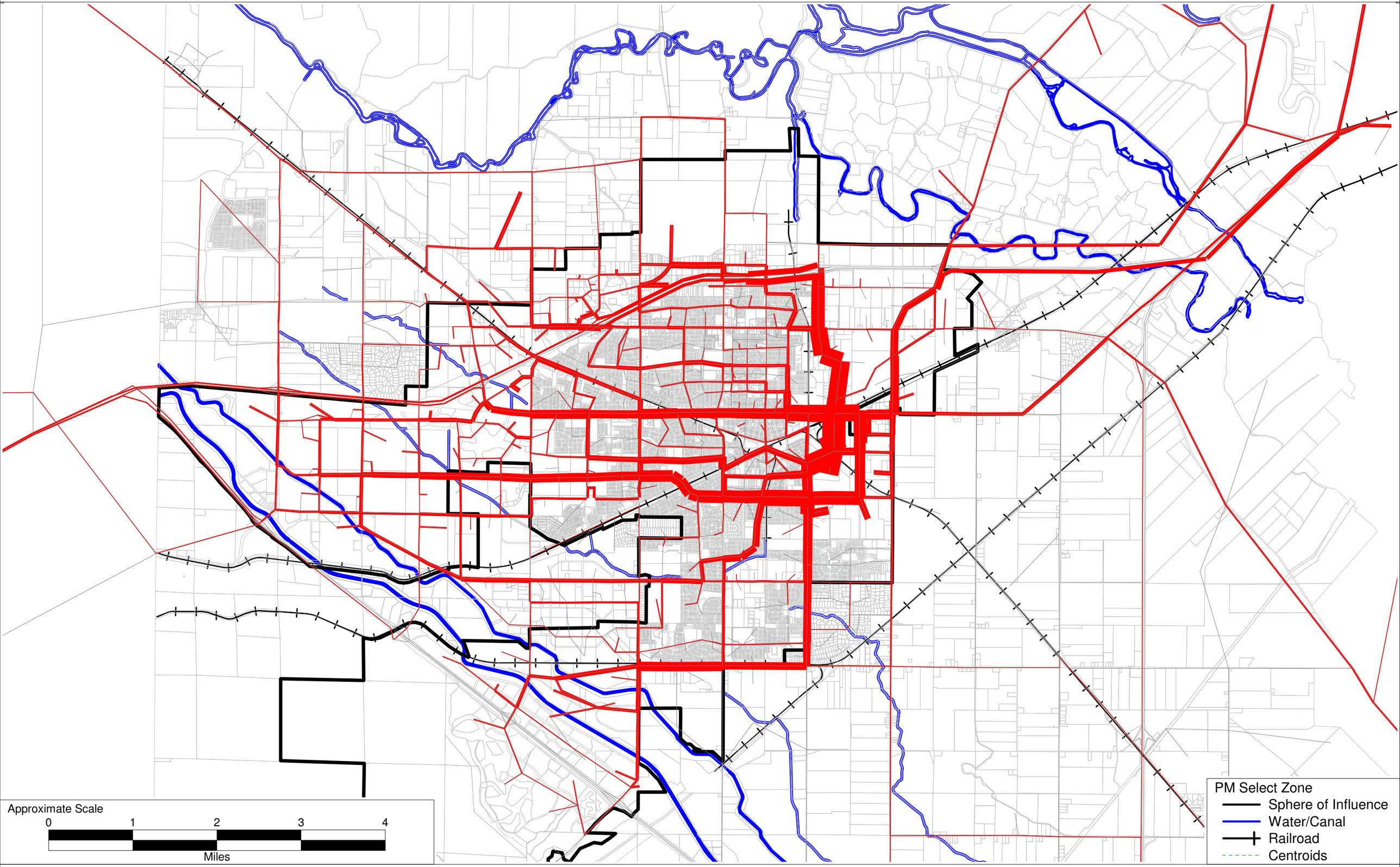
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Buildout Urban Reserve 1 AM Select Zone



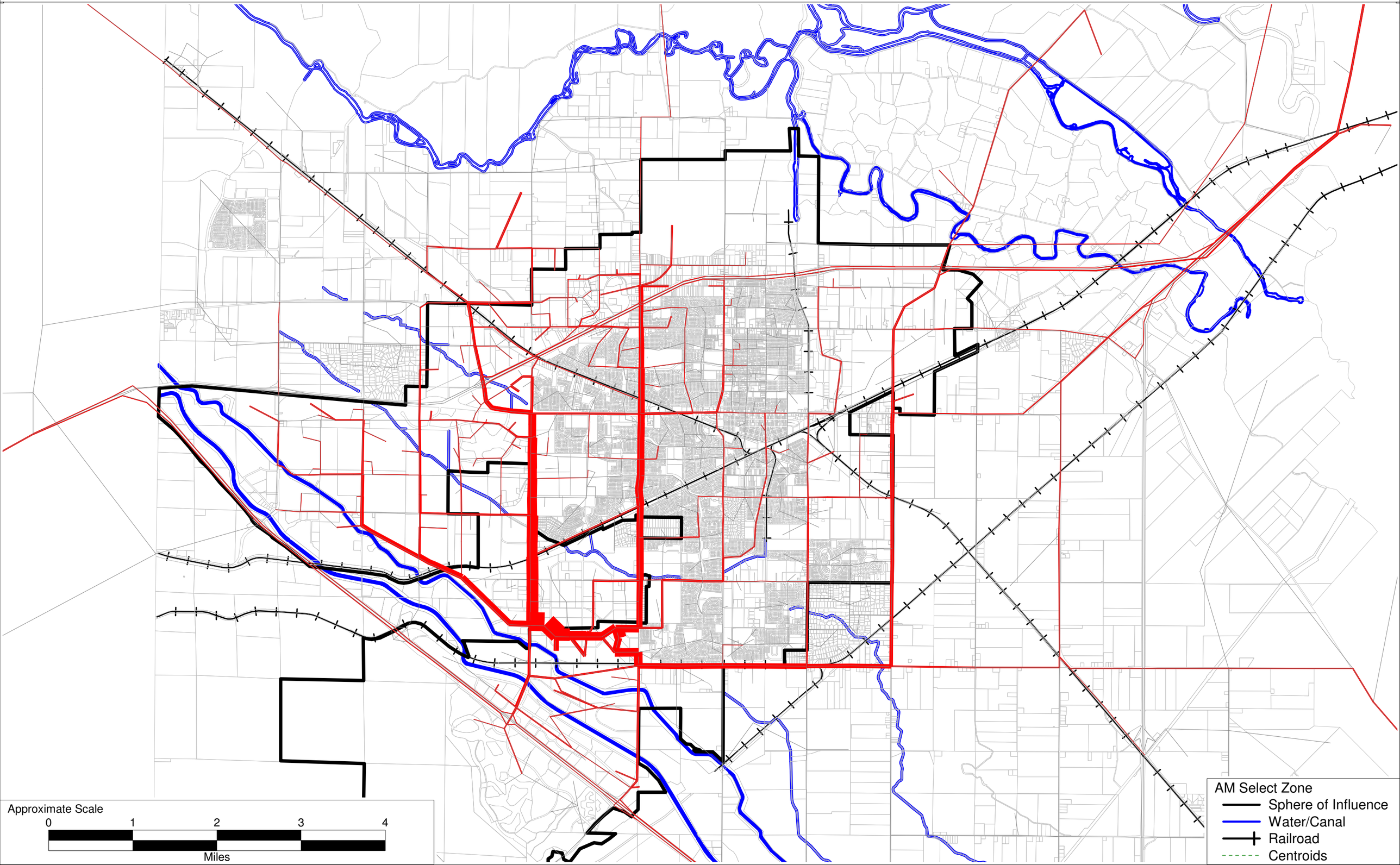
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Buildout Urban Reserve 1 PM Select Zone



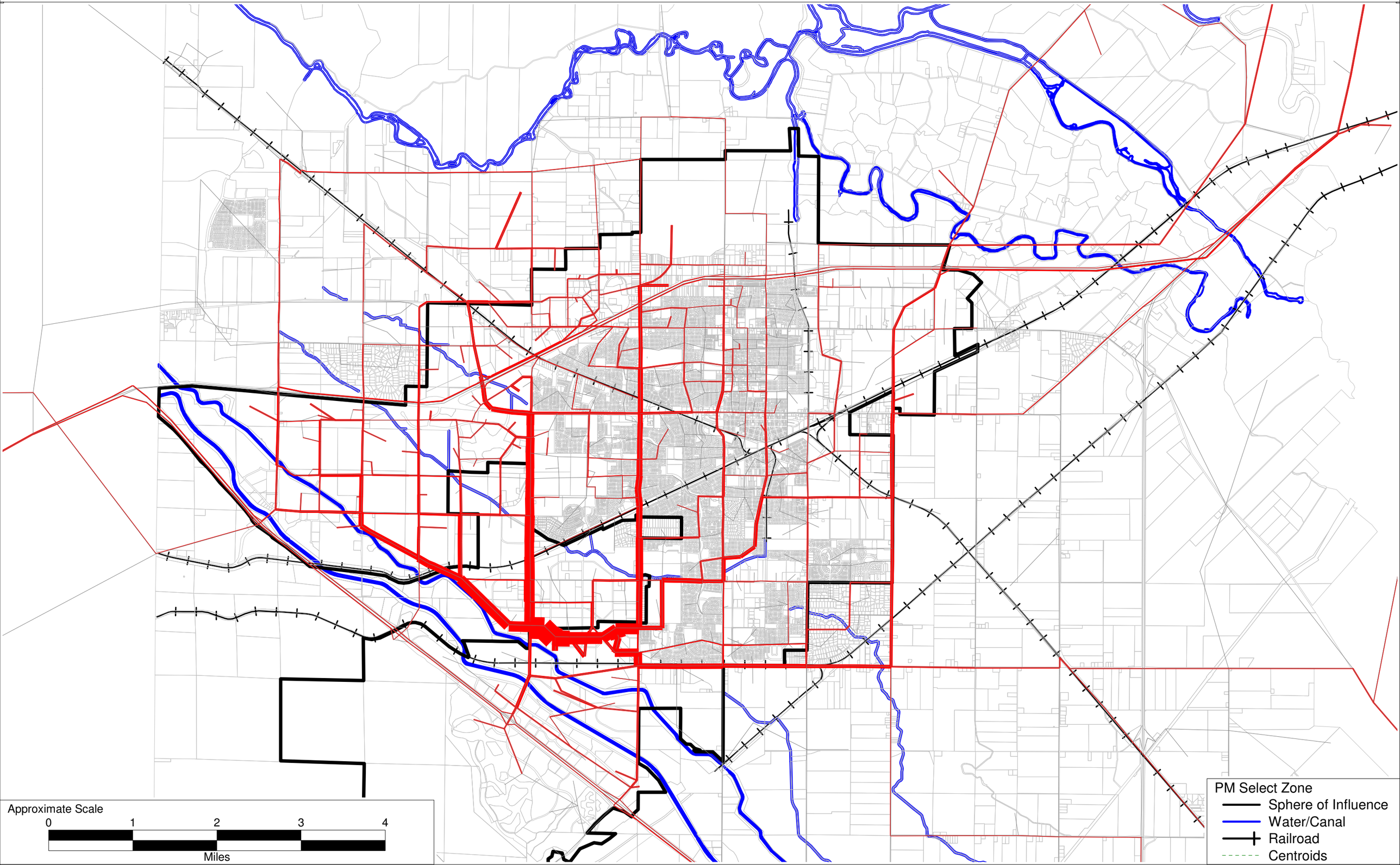
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Buildout Ellis AM Select Zone



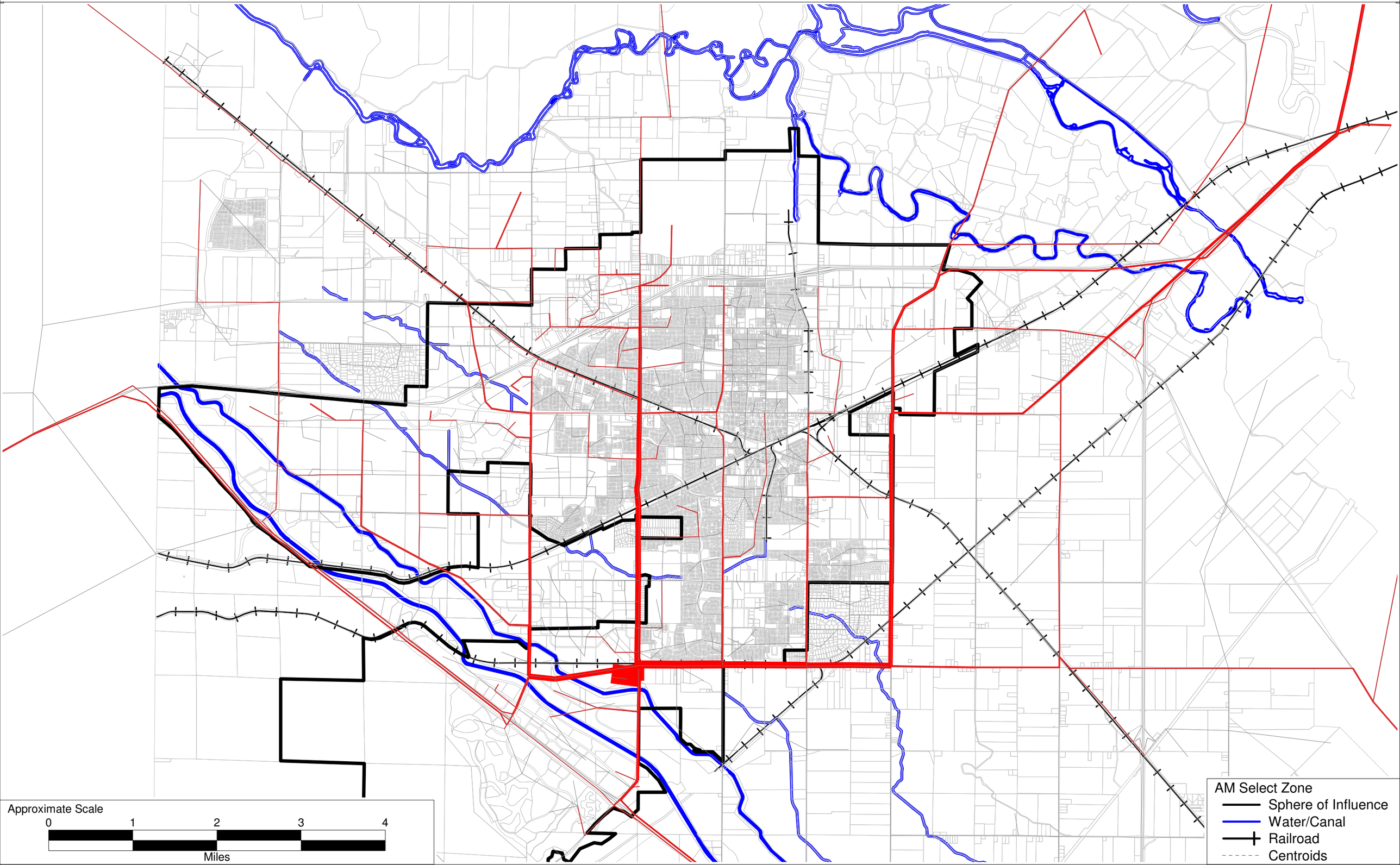
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Buildout Ellis PM Select Zone



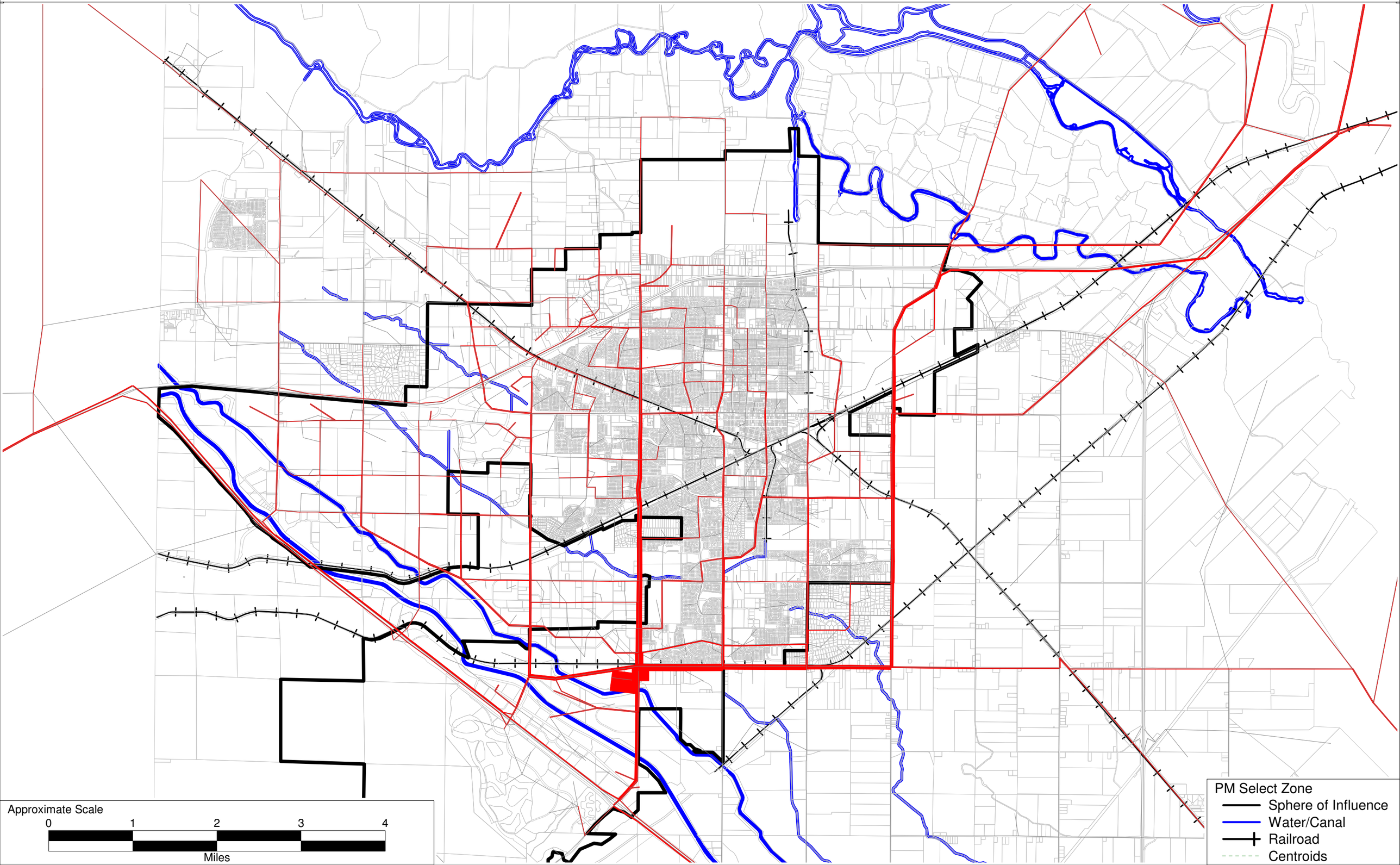
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Buildout South Linne AM Select Zone



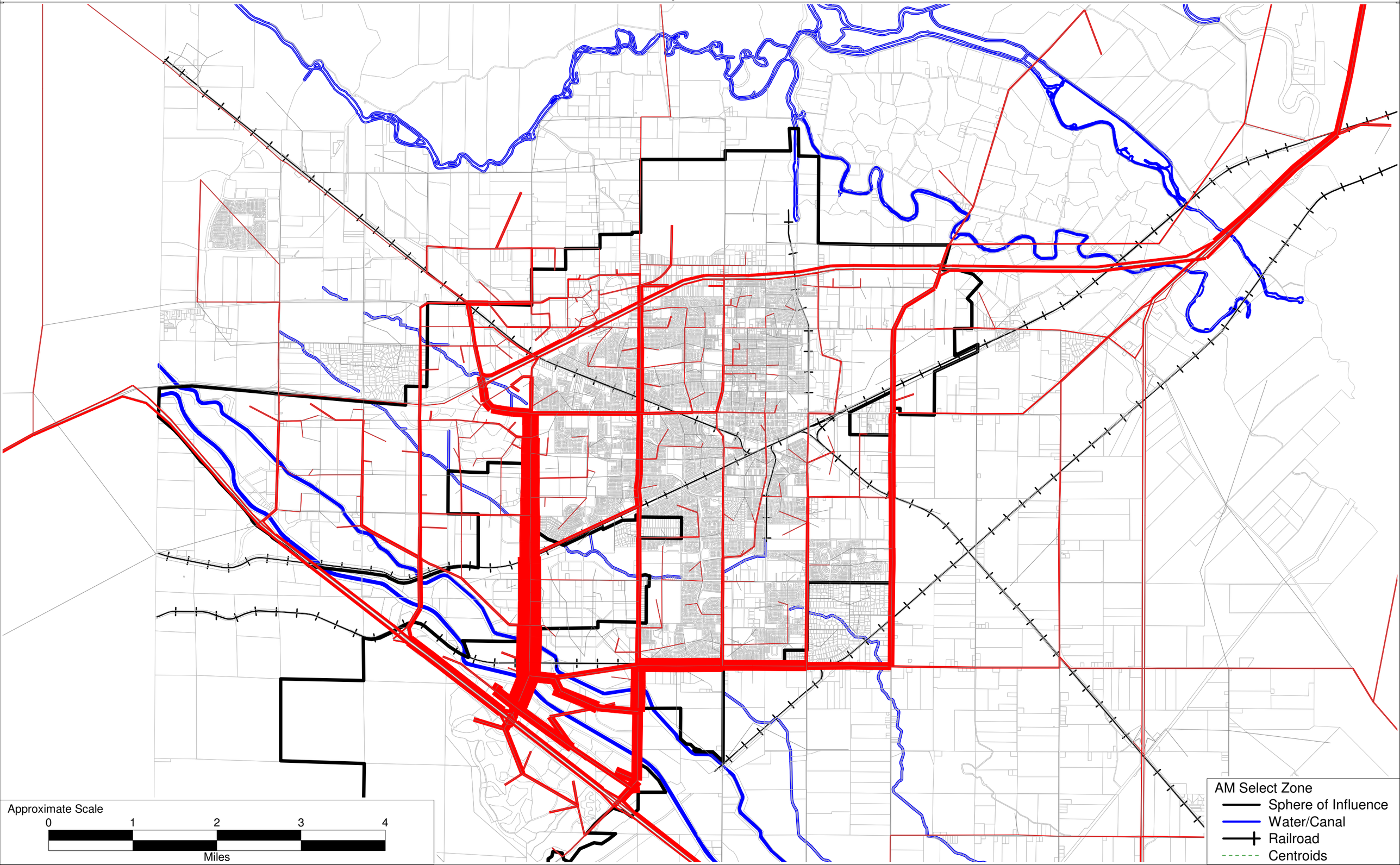
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Buildout South Linne PM Select Zone



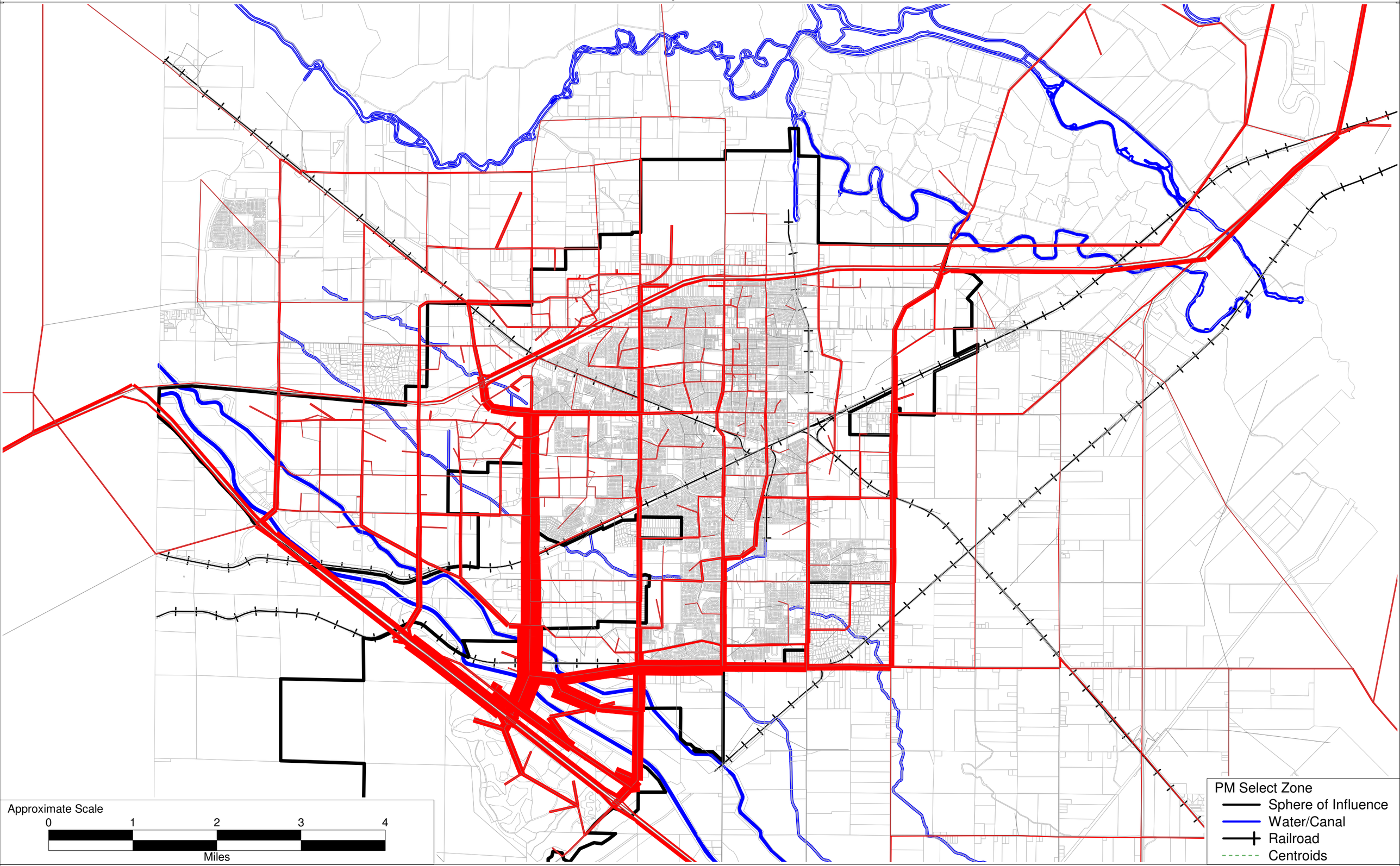
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Buildout Tracy Hills AM Select Zone



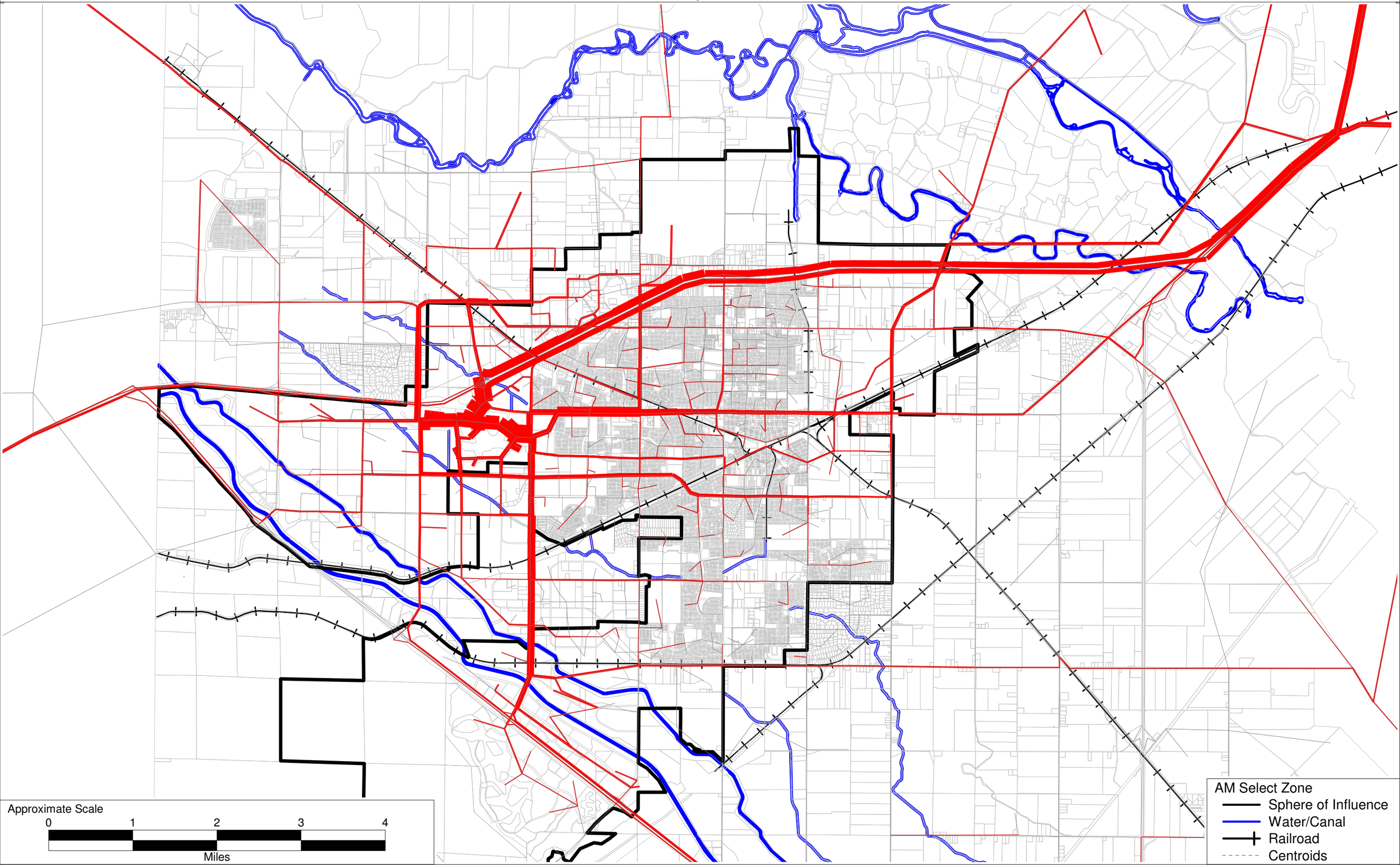
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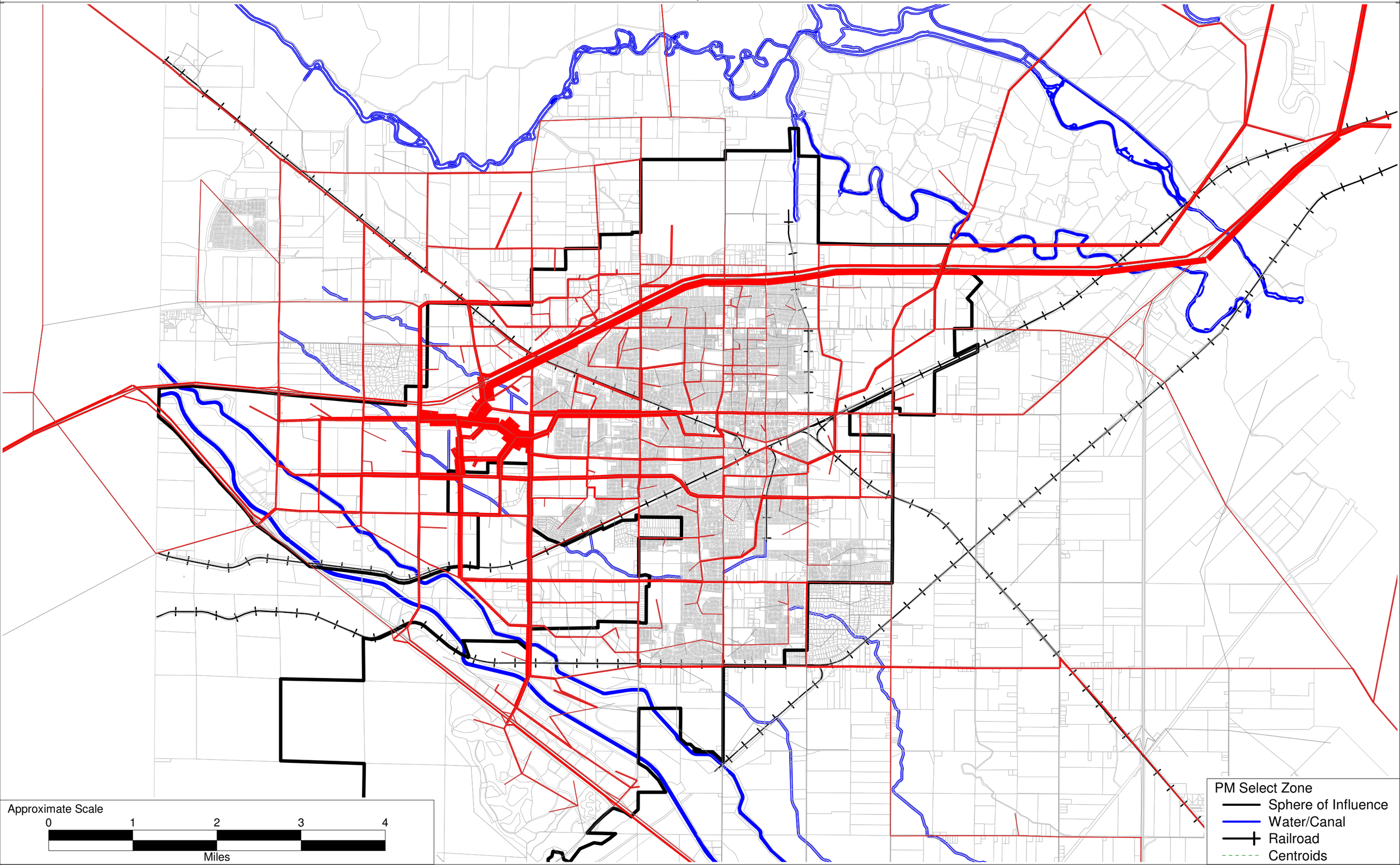
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Buildout Gateway AM Select Zone



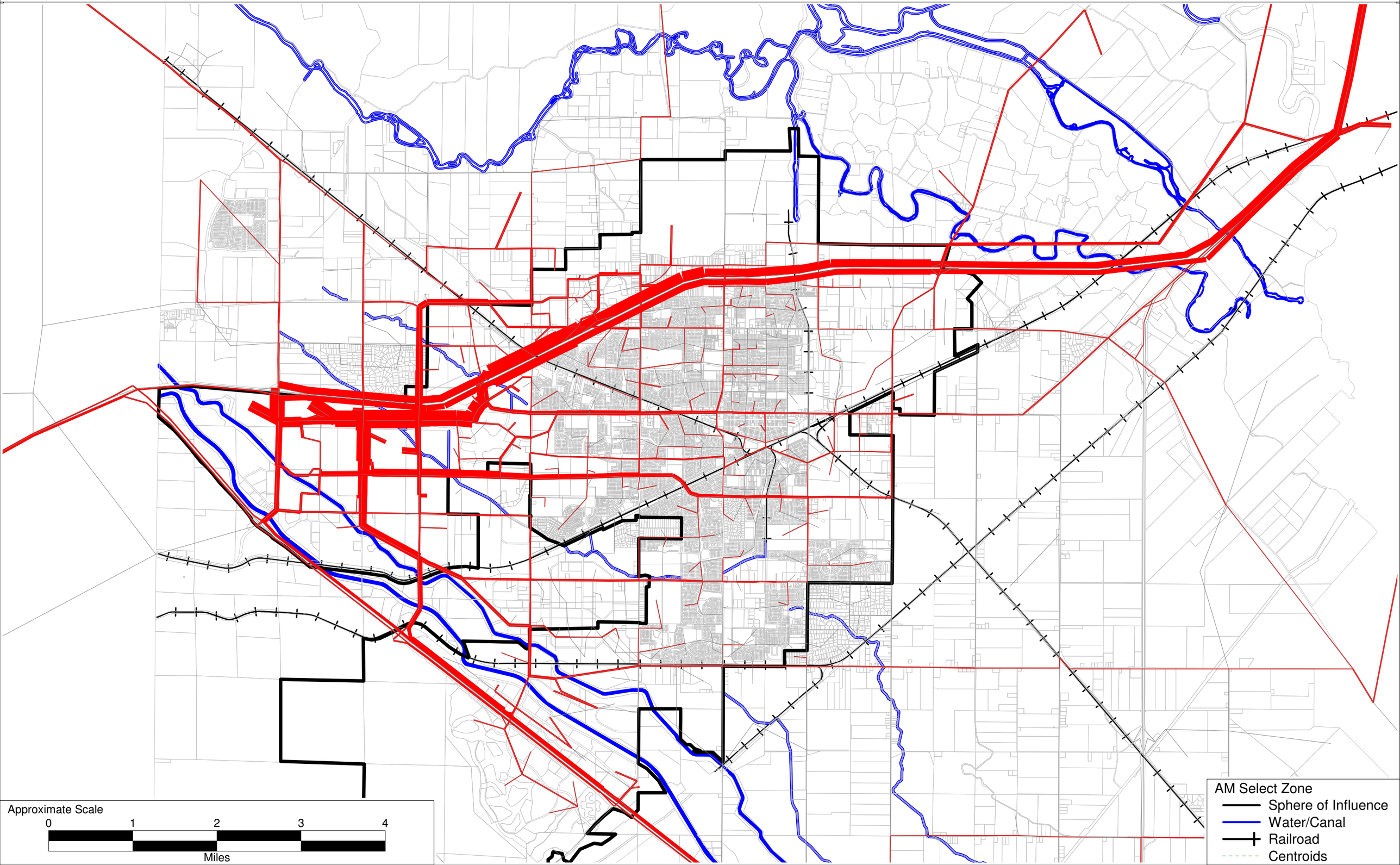
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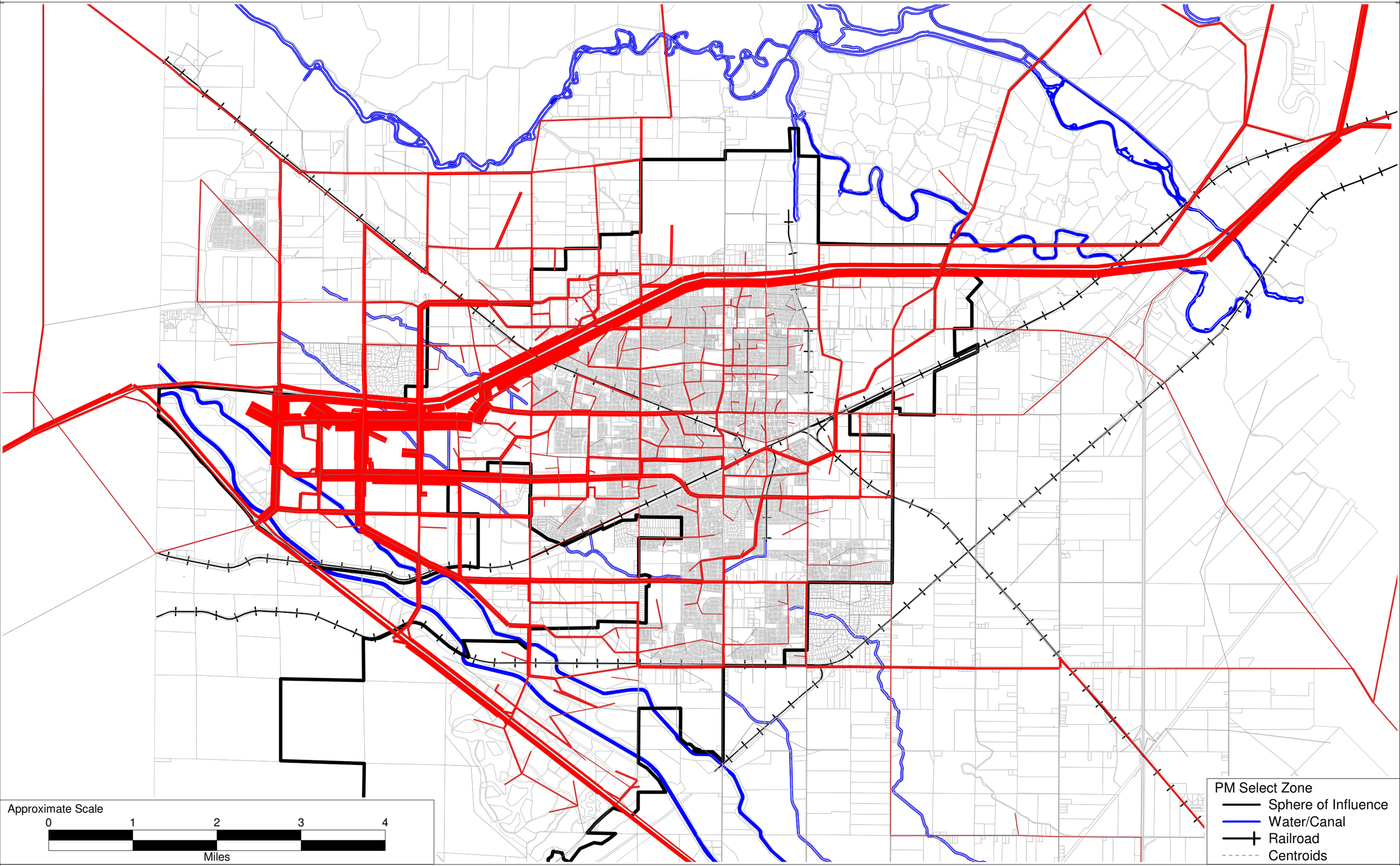
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Buildout Cordes Ranch AM Select Zone



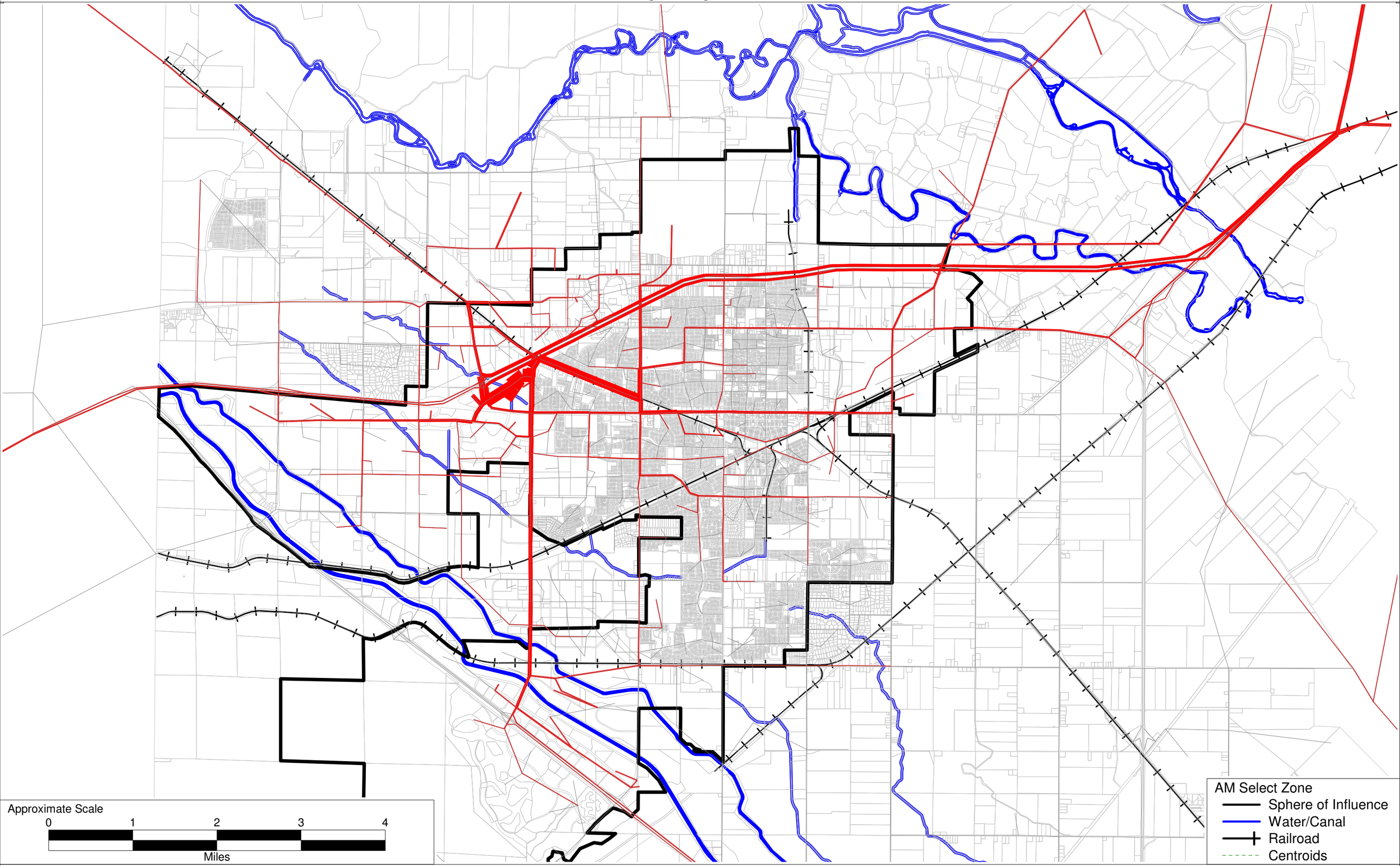
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Buildout Cordes Ranch PM Select Zone



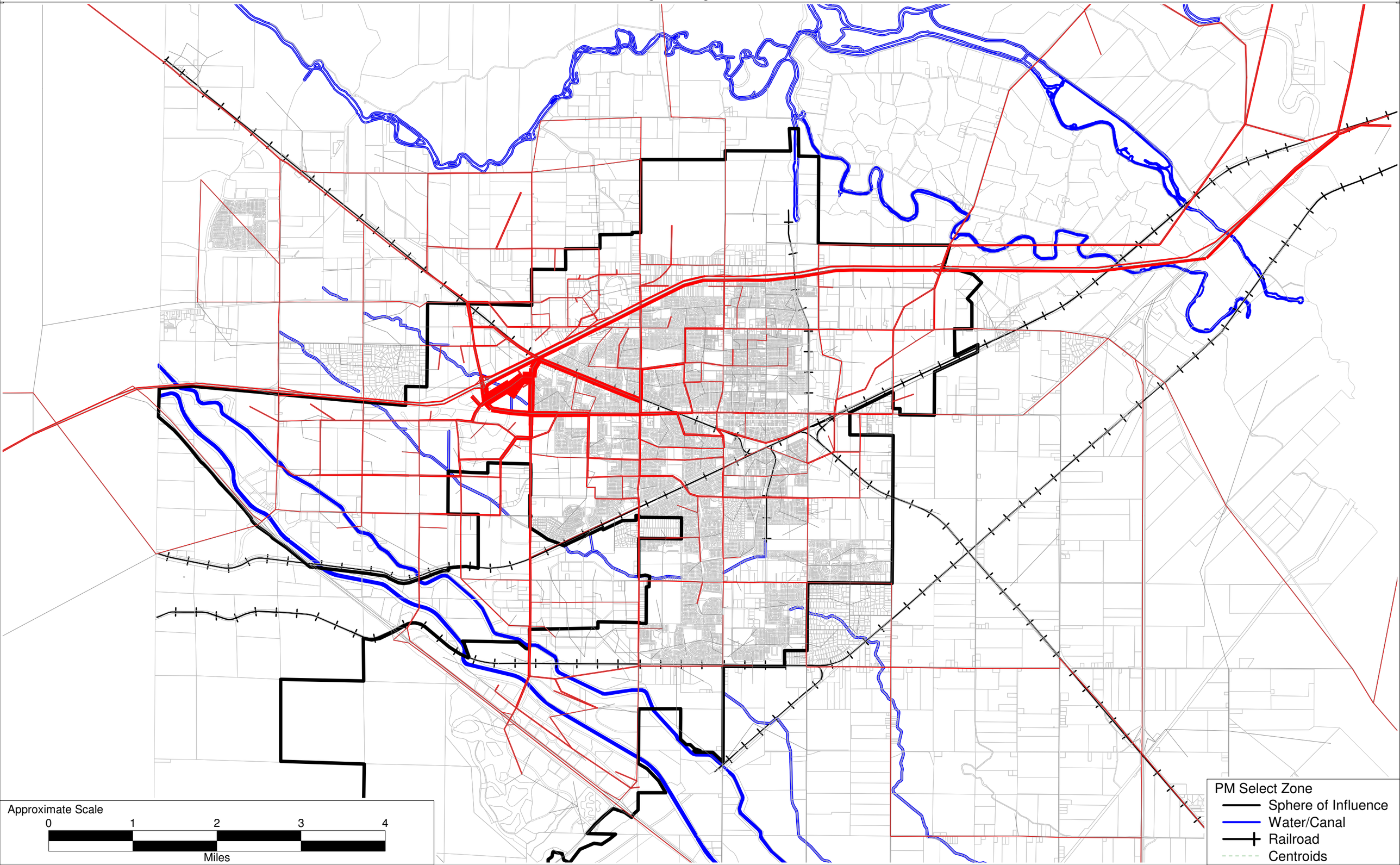
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Buildout Bright Triangle AM Select Zone



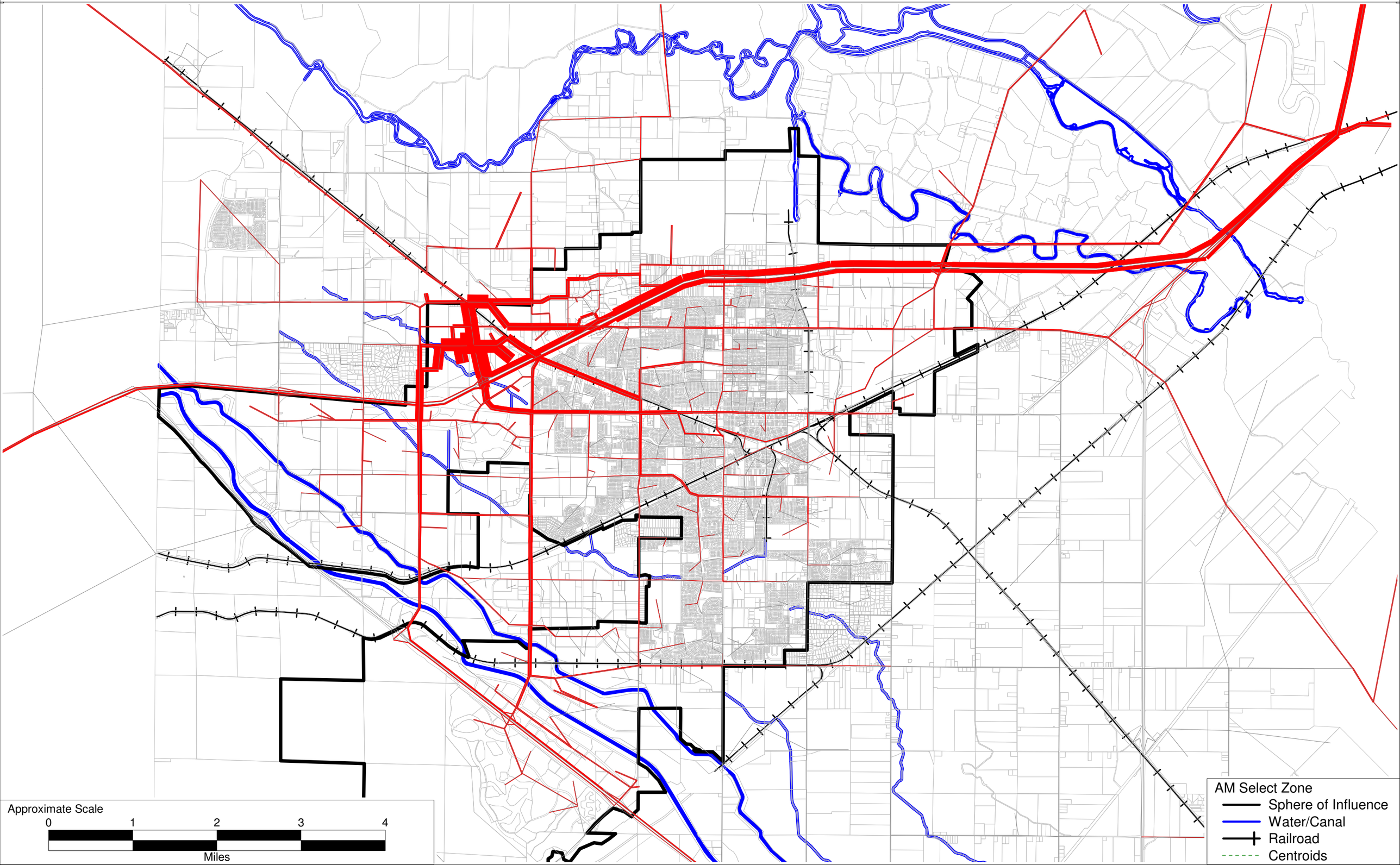
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Buildout Bright Triangle PM Select Zone



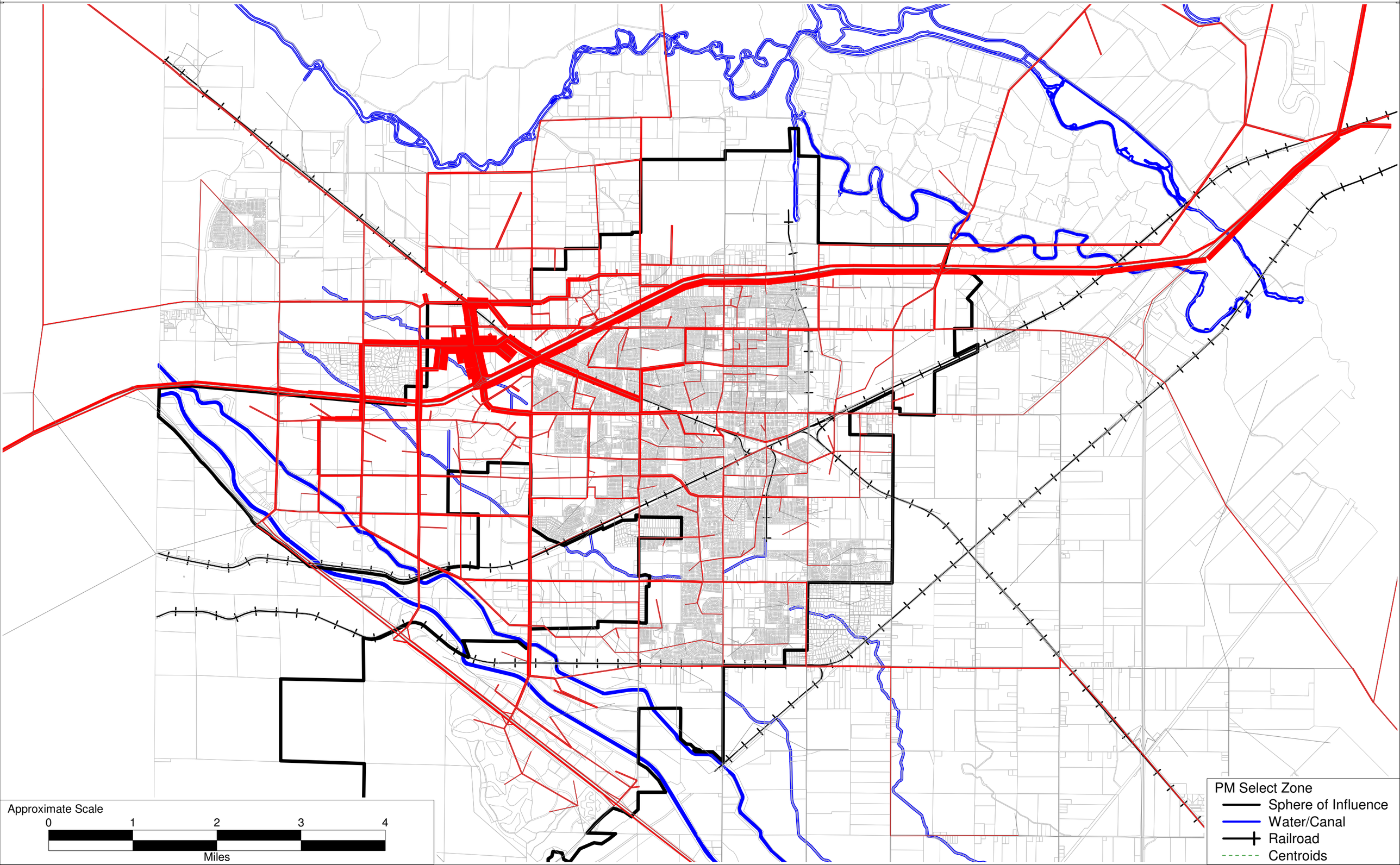
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Buildout Catellus AM Select Zone



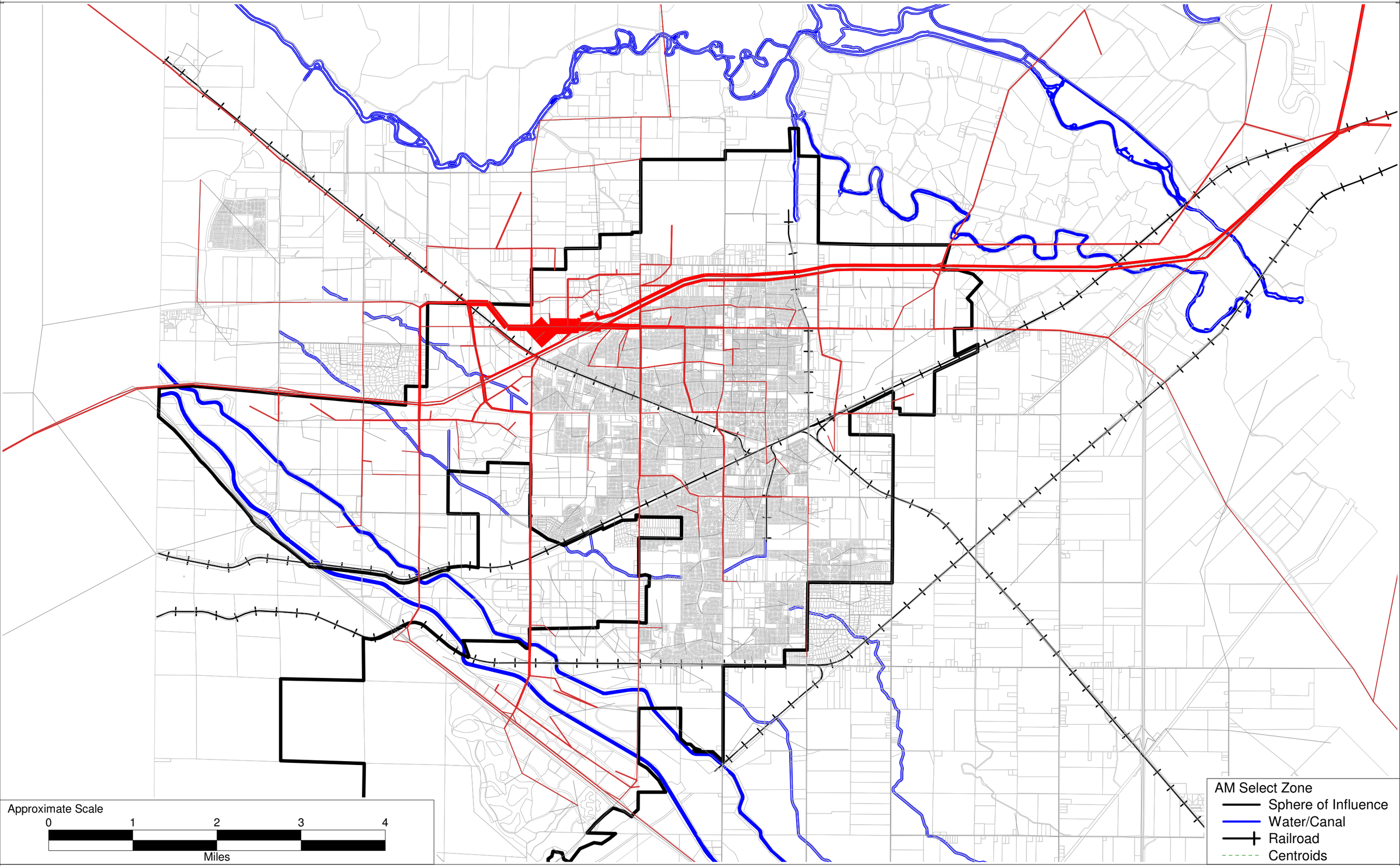
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Buildout Catellus PM Select Zone



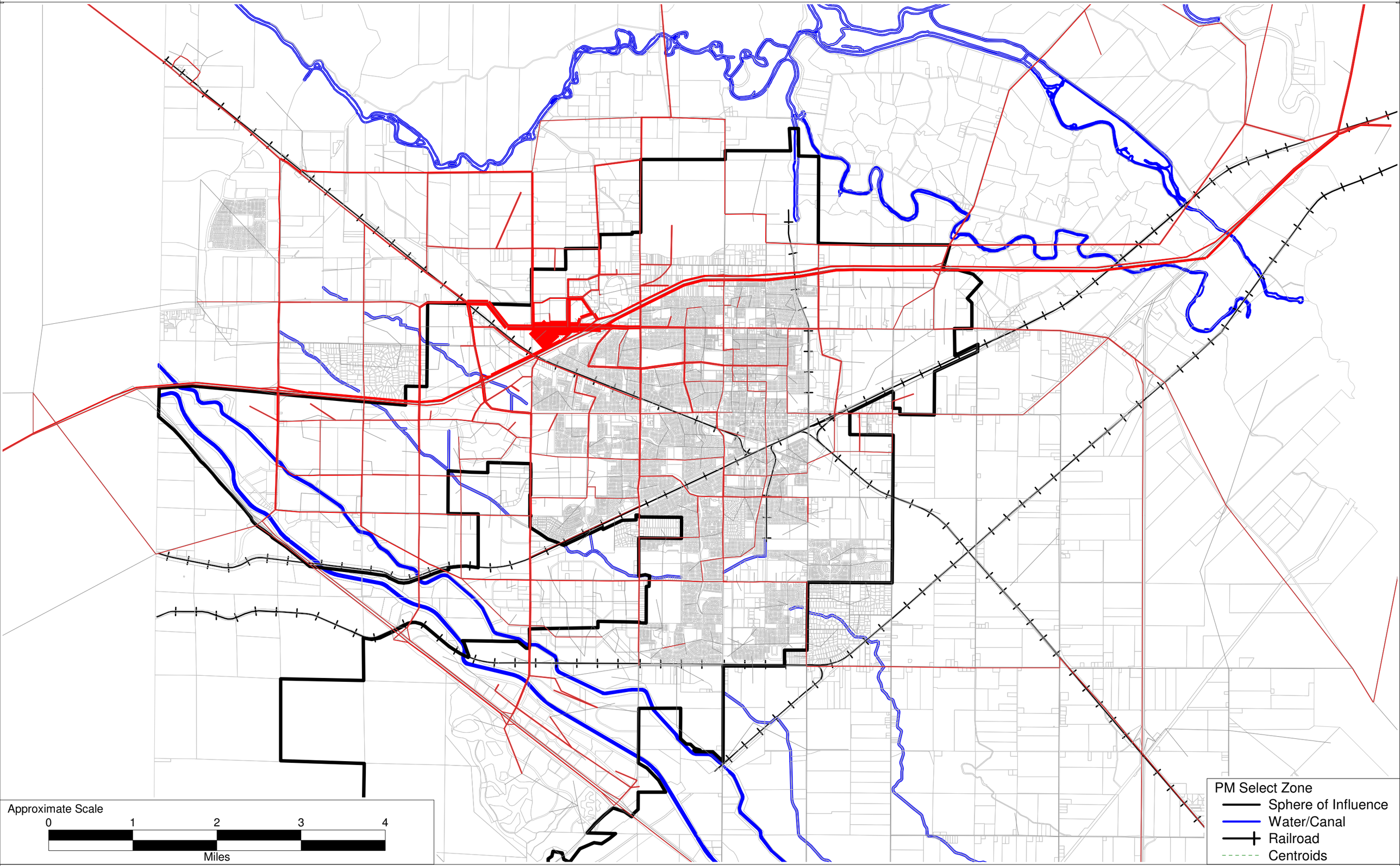
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Buildout Filios AM Select Zone



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Buildout Filios PM Select Zone



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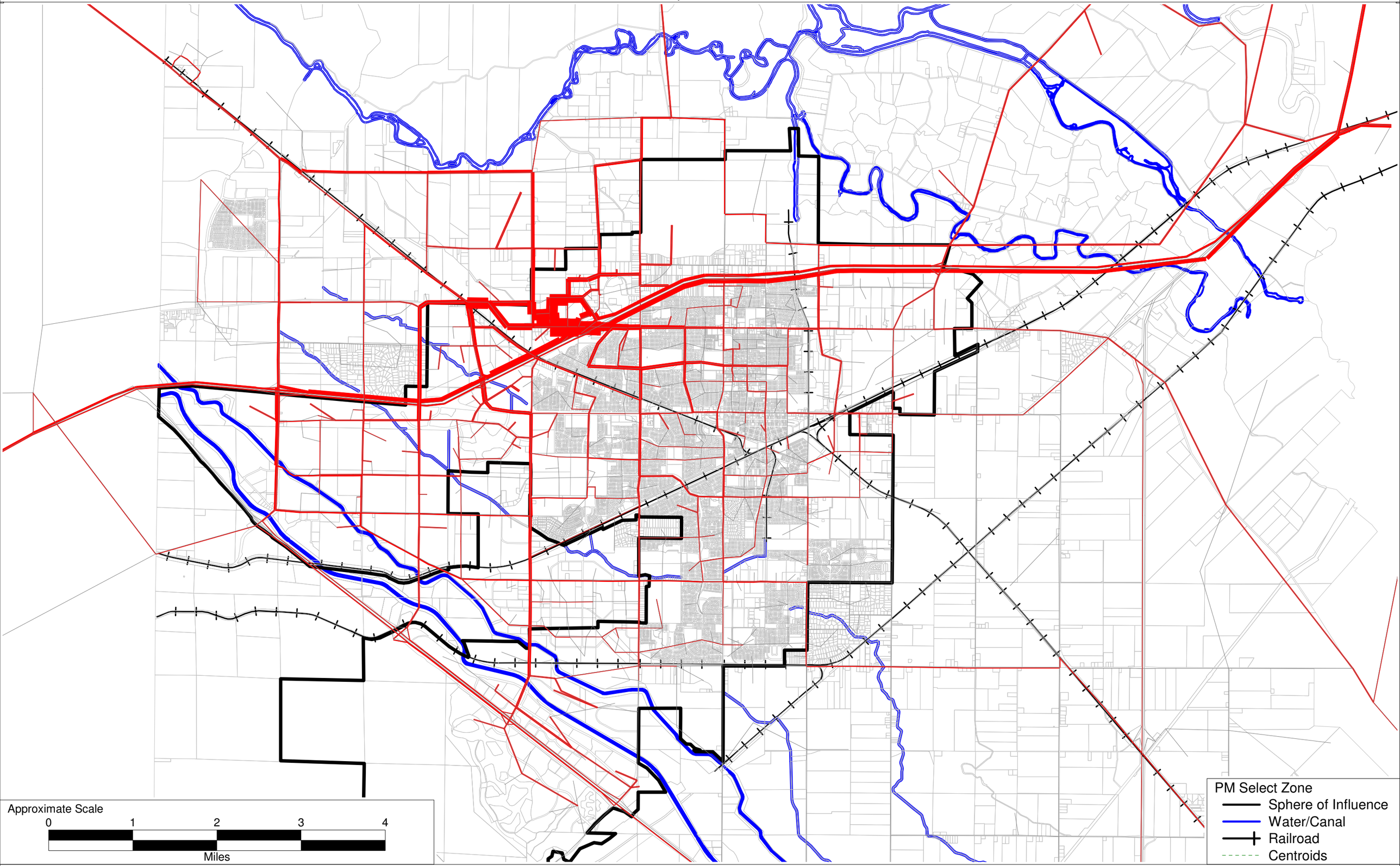
Buildout I-205 Expansion AM Select Zone

Approximate Scale
0 1 2 3 4
Miles

AM Select Zone
Sphere of Influence
Water/Canal
Railroad
Centroids

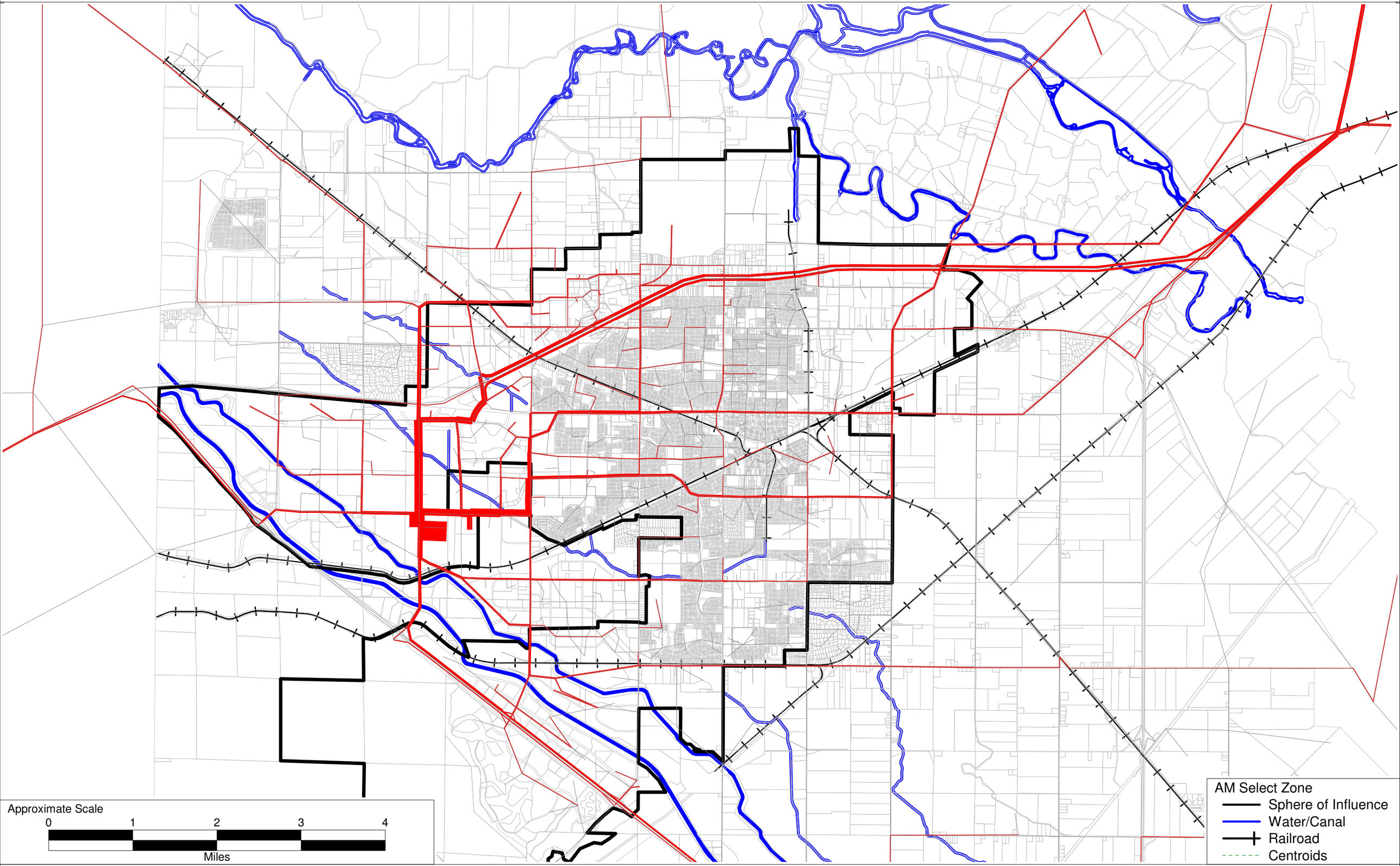
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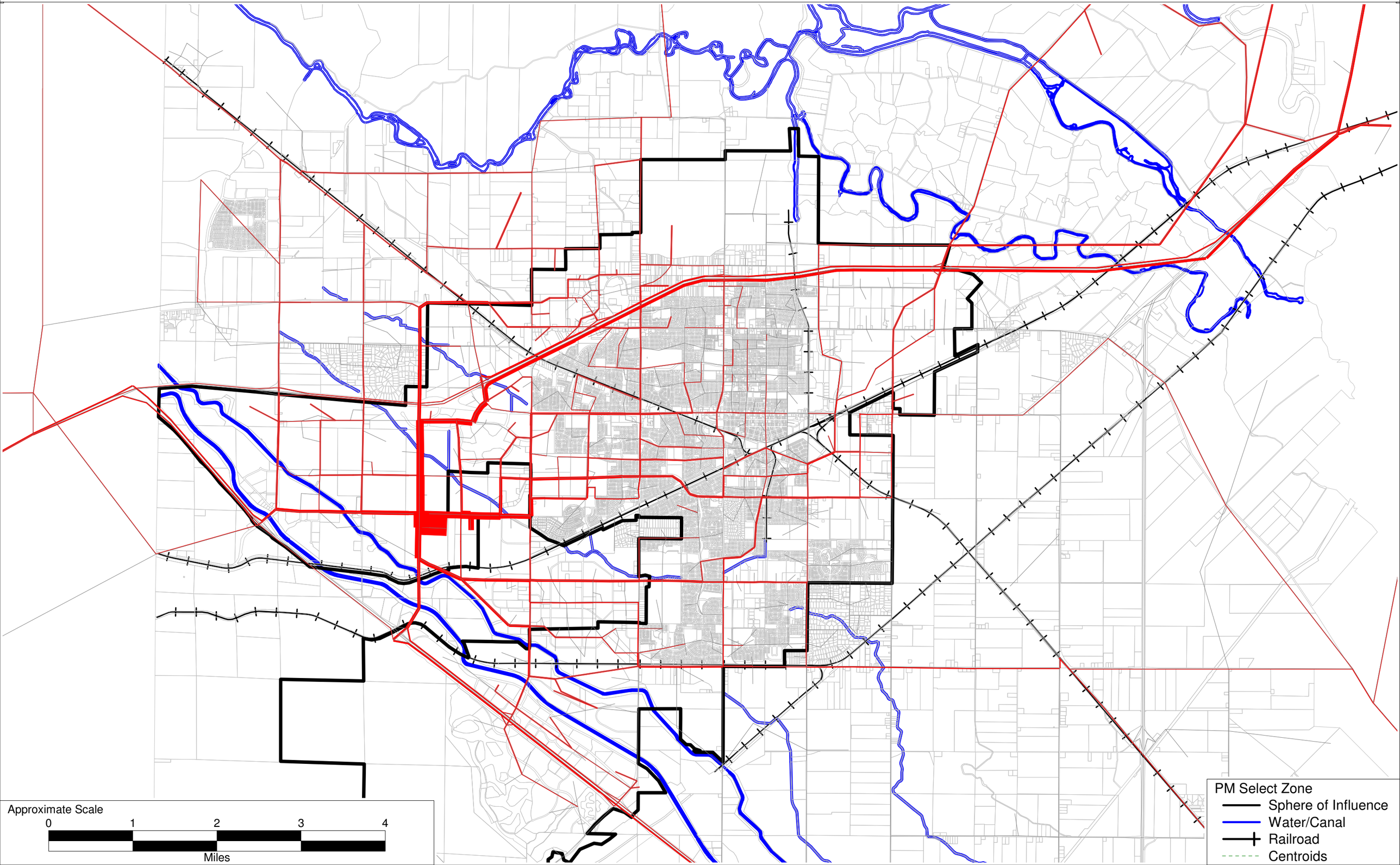
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Buildout Westside Industrial AM Select Zone



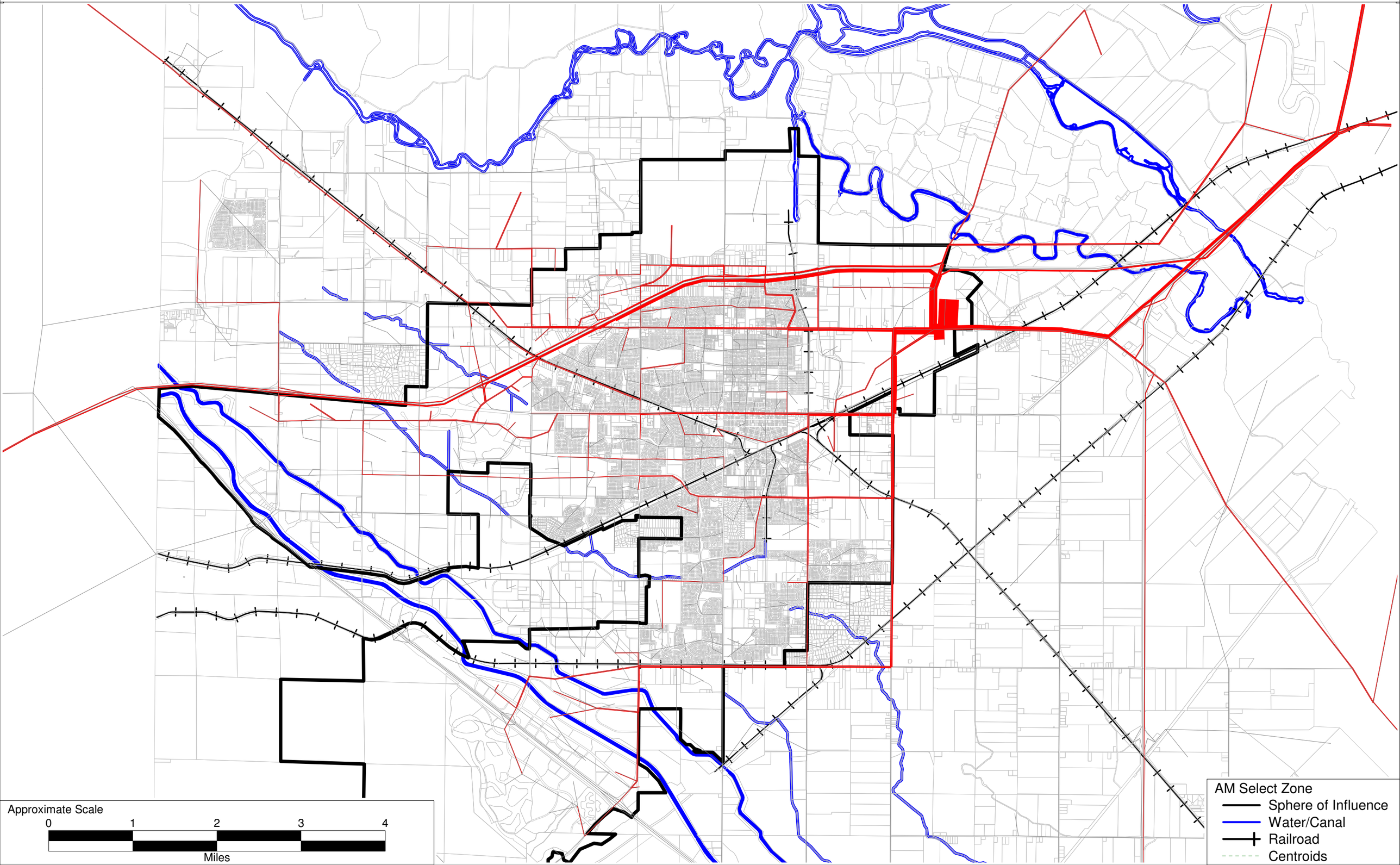
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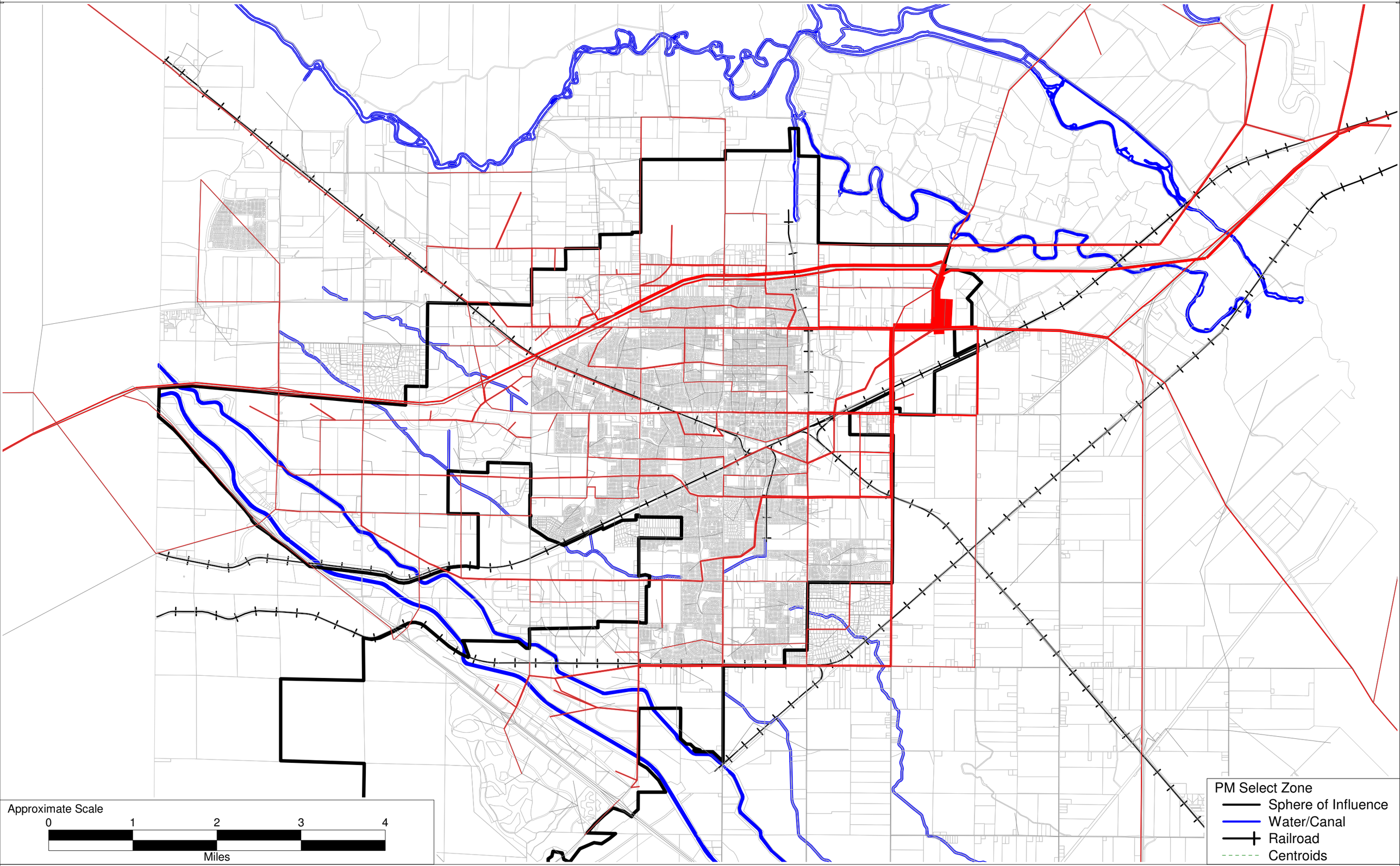
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Buildout Eastside Industrial AM Select Zone



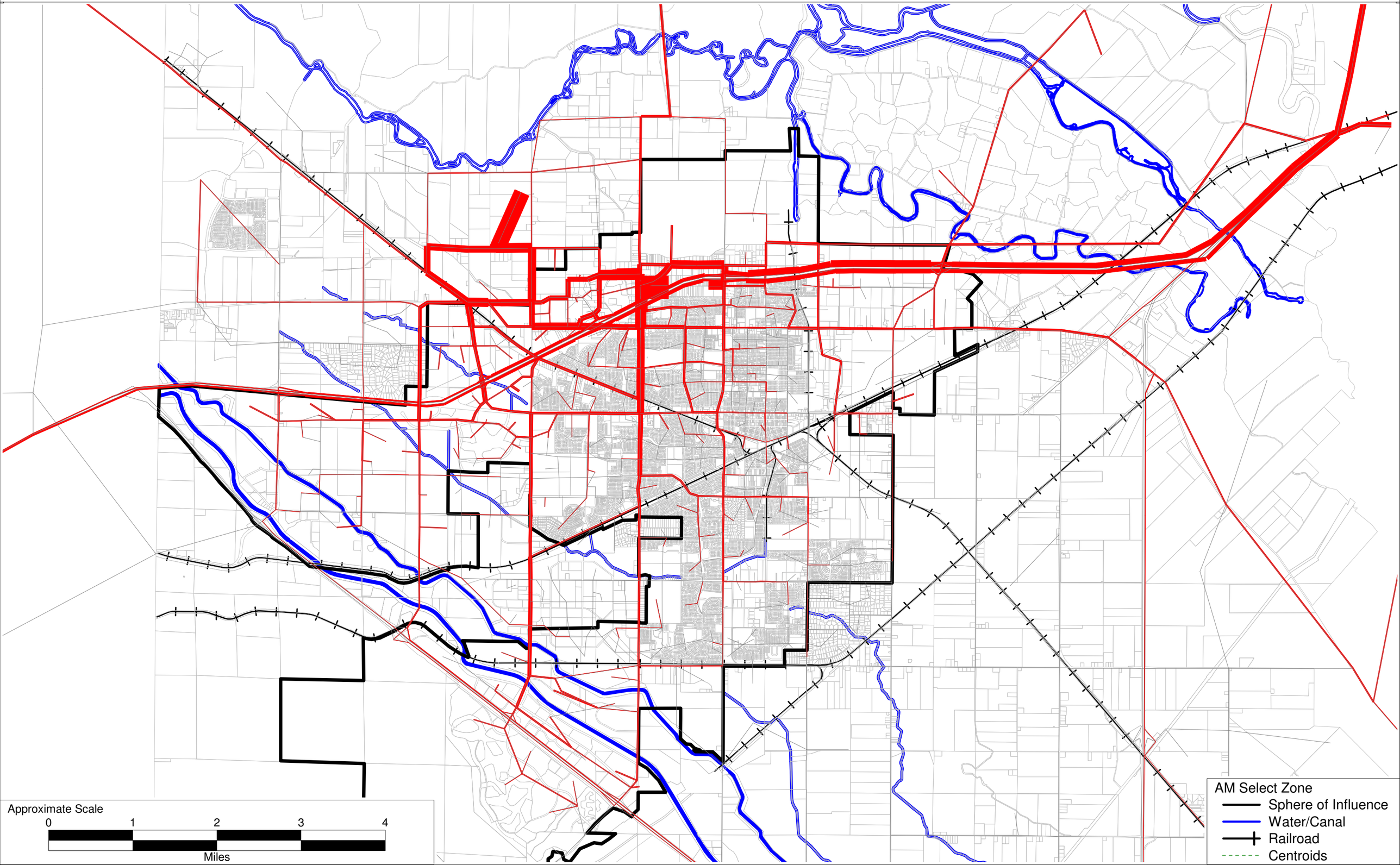
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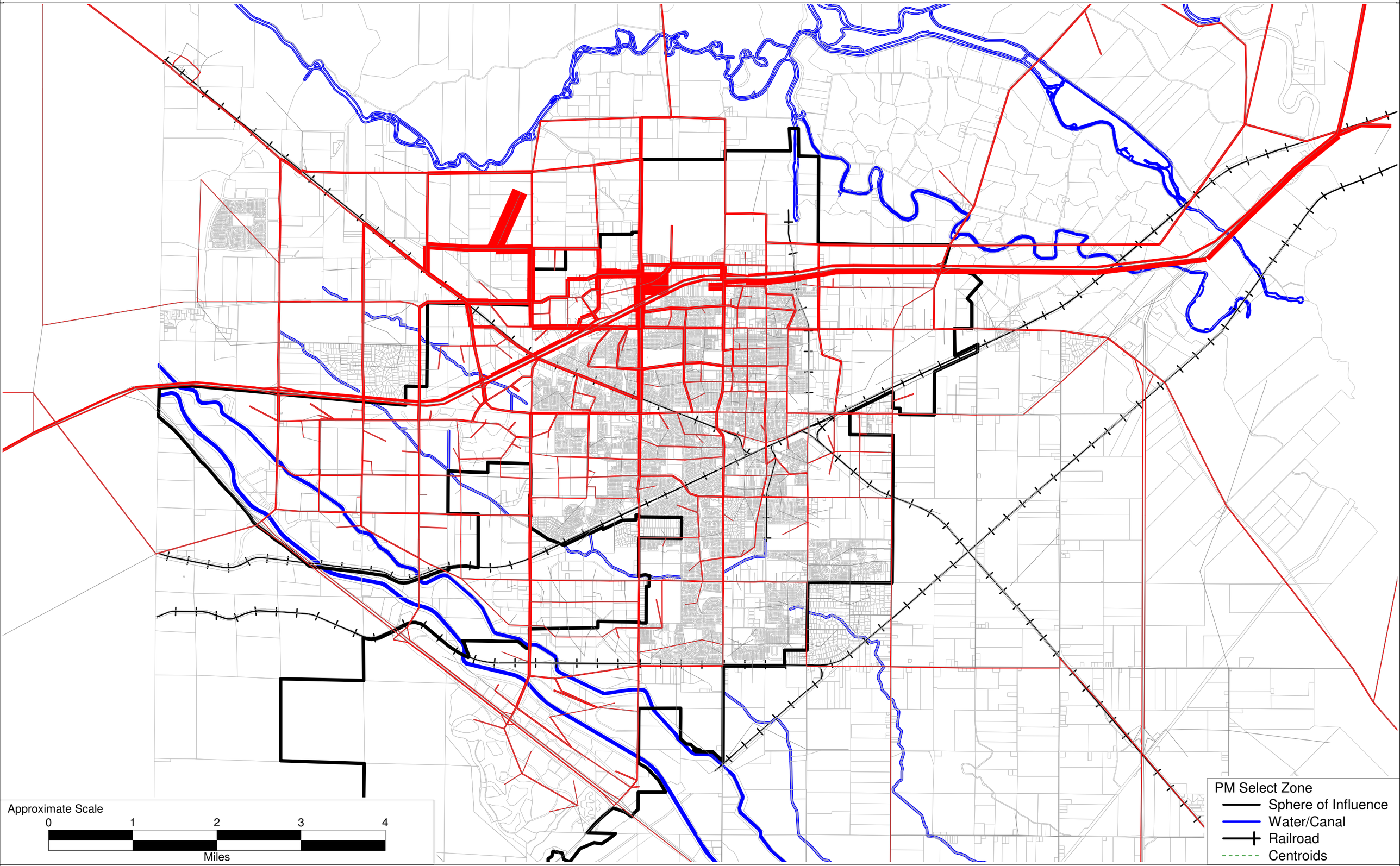
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Buildout Larch Clover AM Select Zone



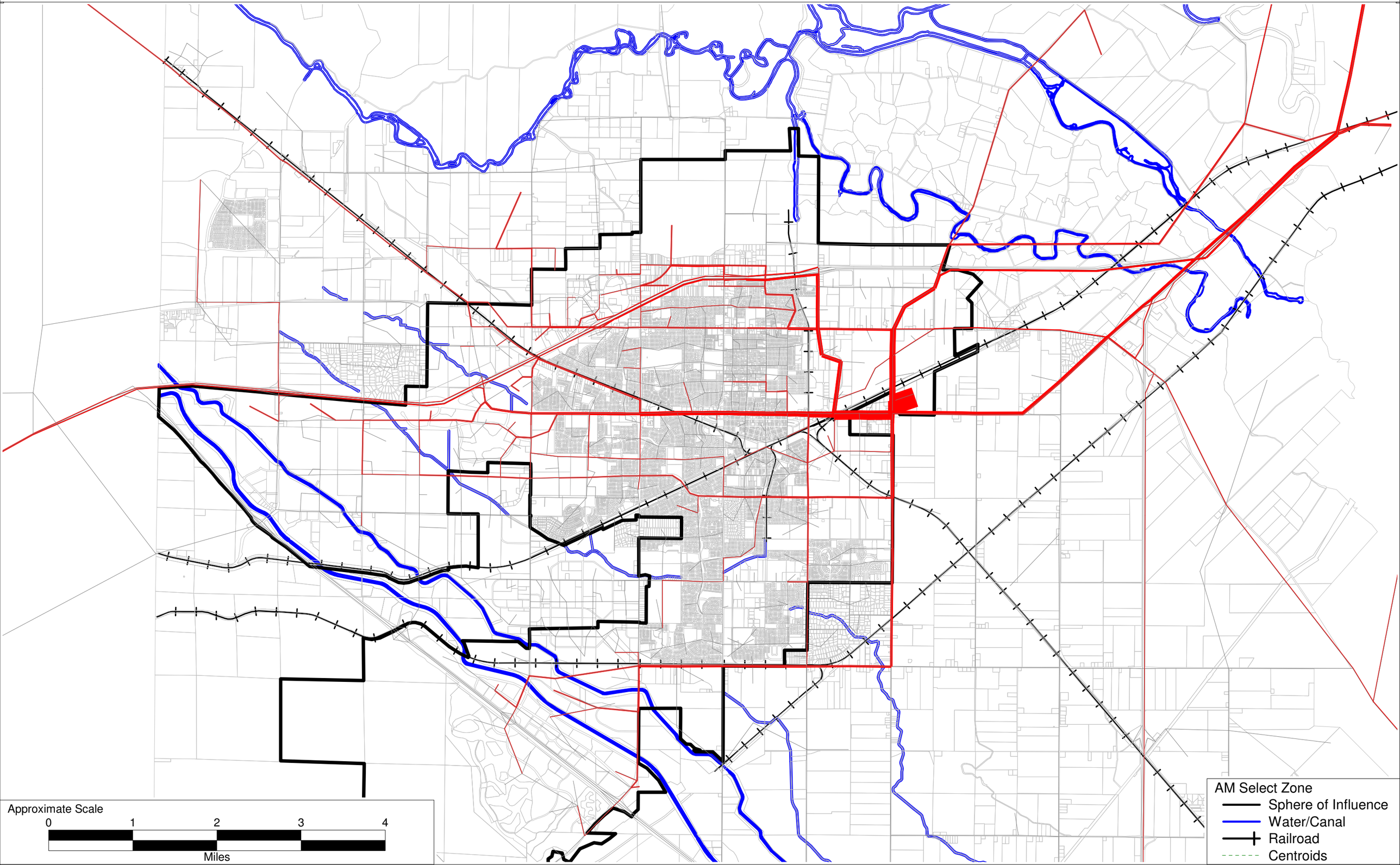
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Buildout Larch Clover PM Select Zone



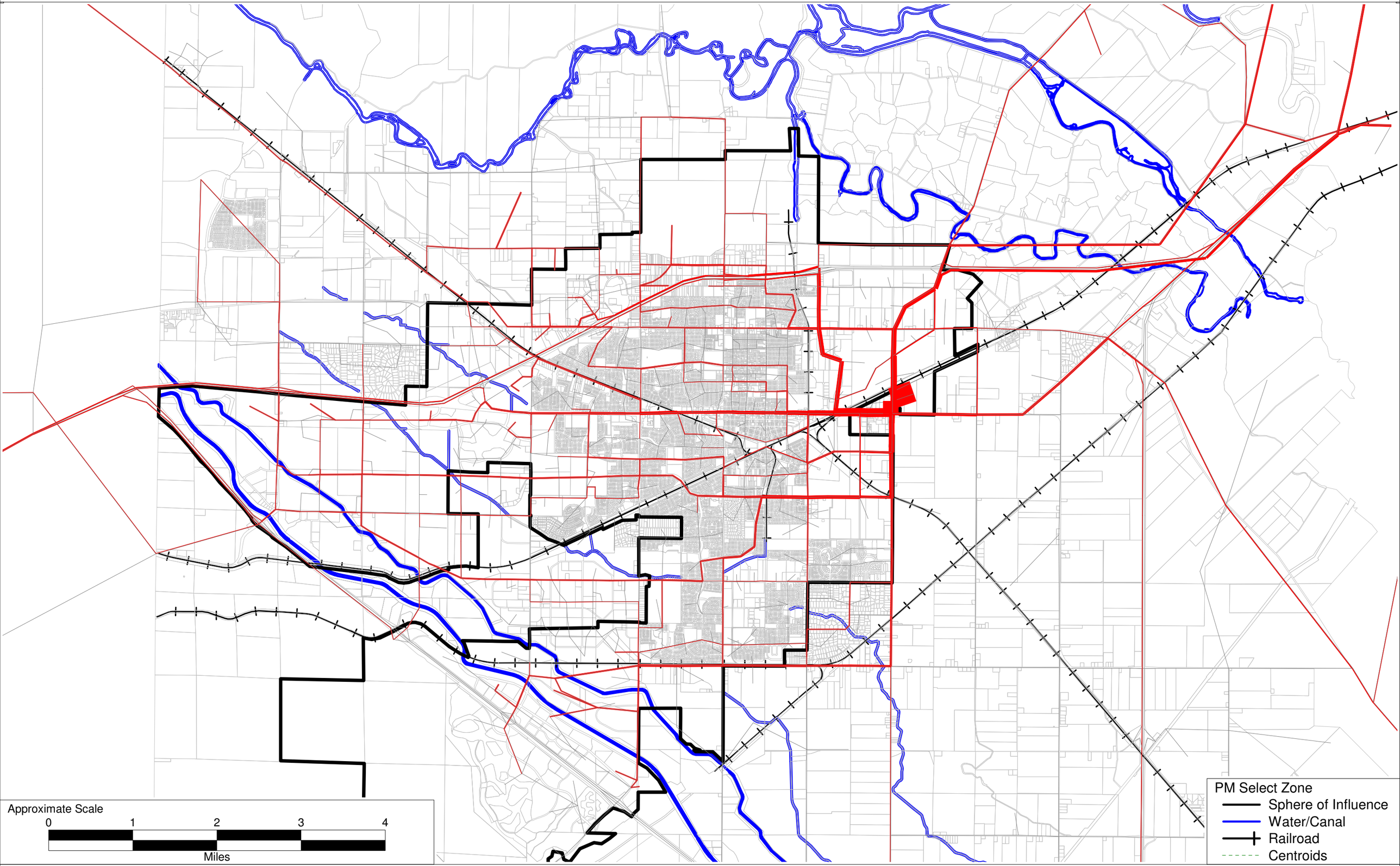
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Buildout Chrisman Road AM Select Zone



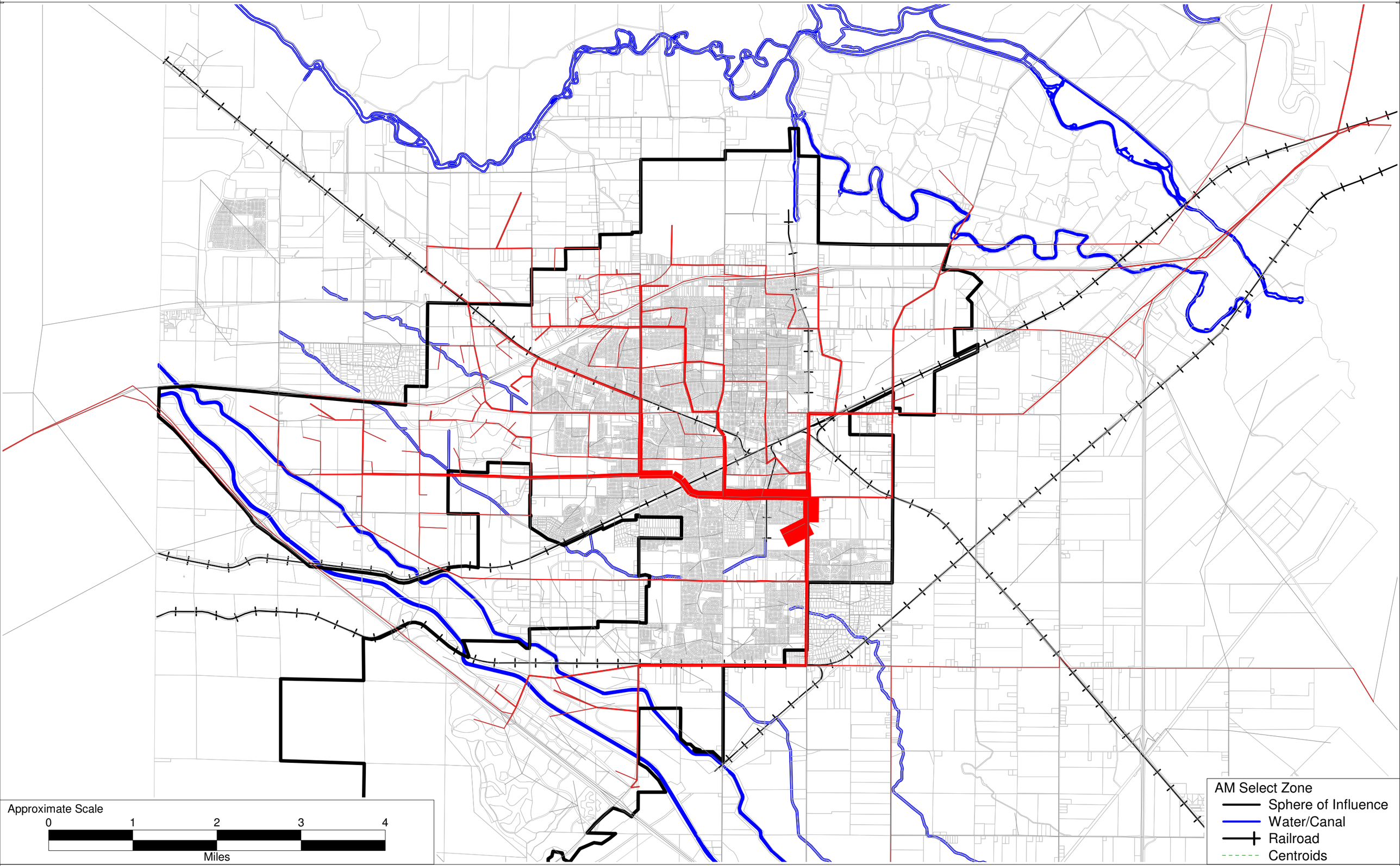
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Licensed to Fehr & Peers

Buildout Chrisman Road PM Select Zone



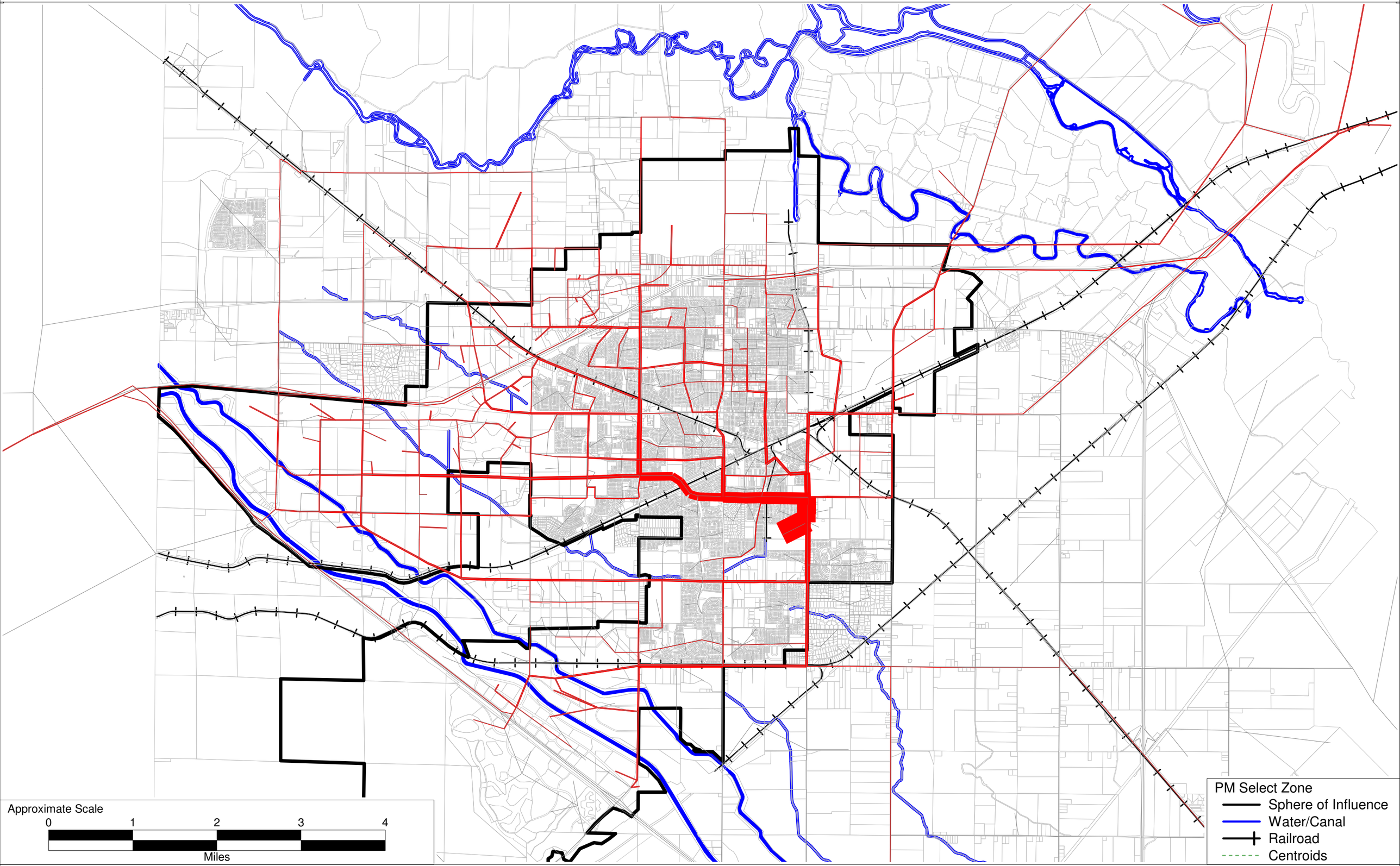
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Licensed to Fehr & Peers

Buildout Rocha AM Select Zone



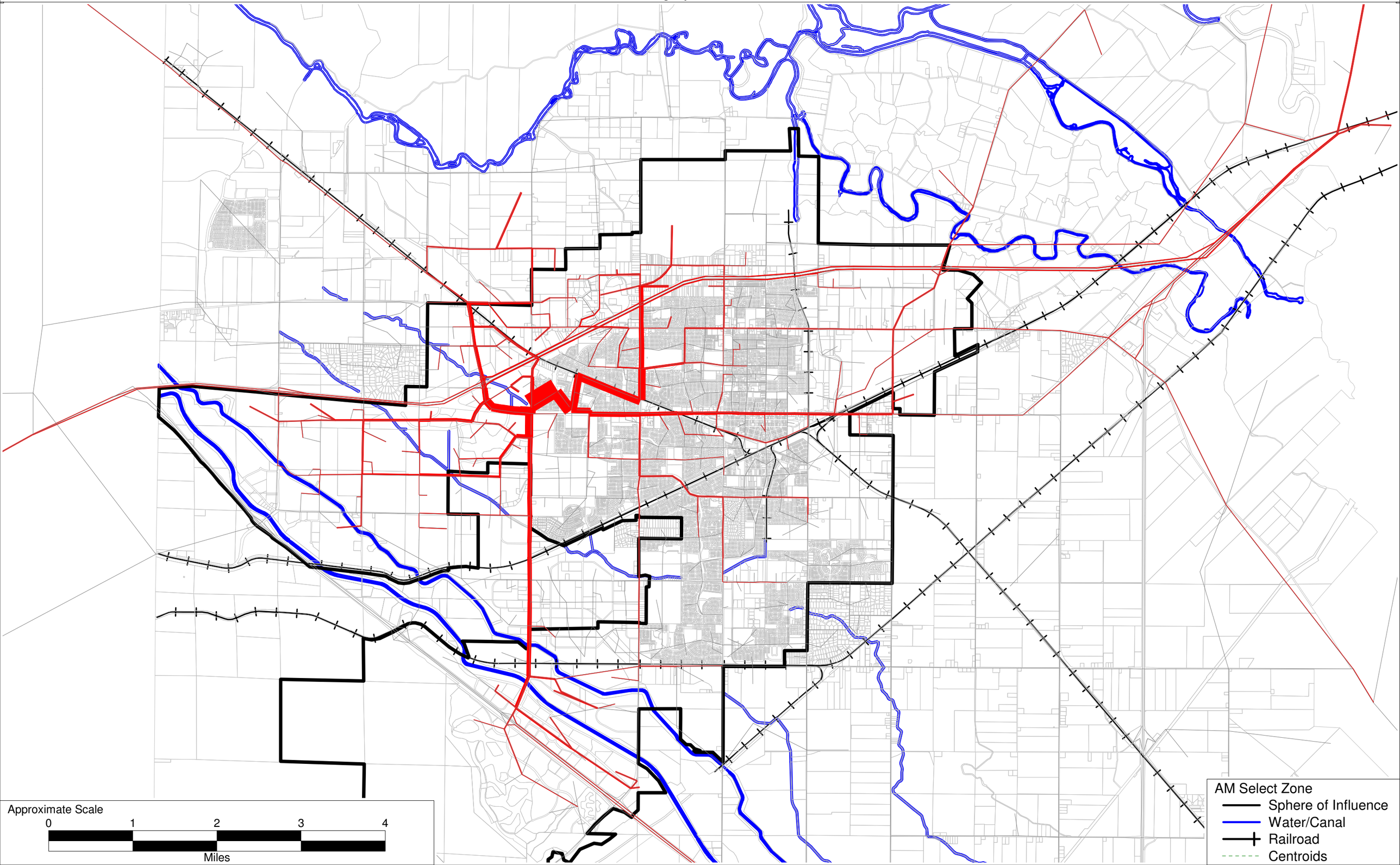
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Buildout Rocha PM Select Zone



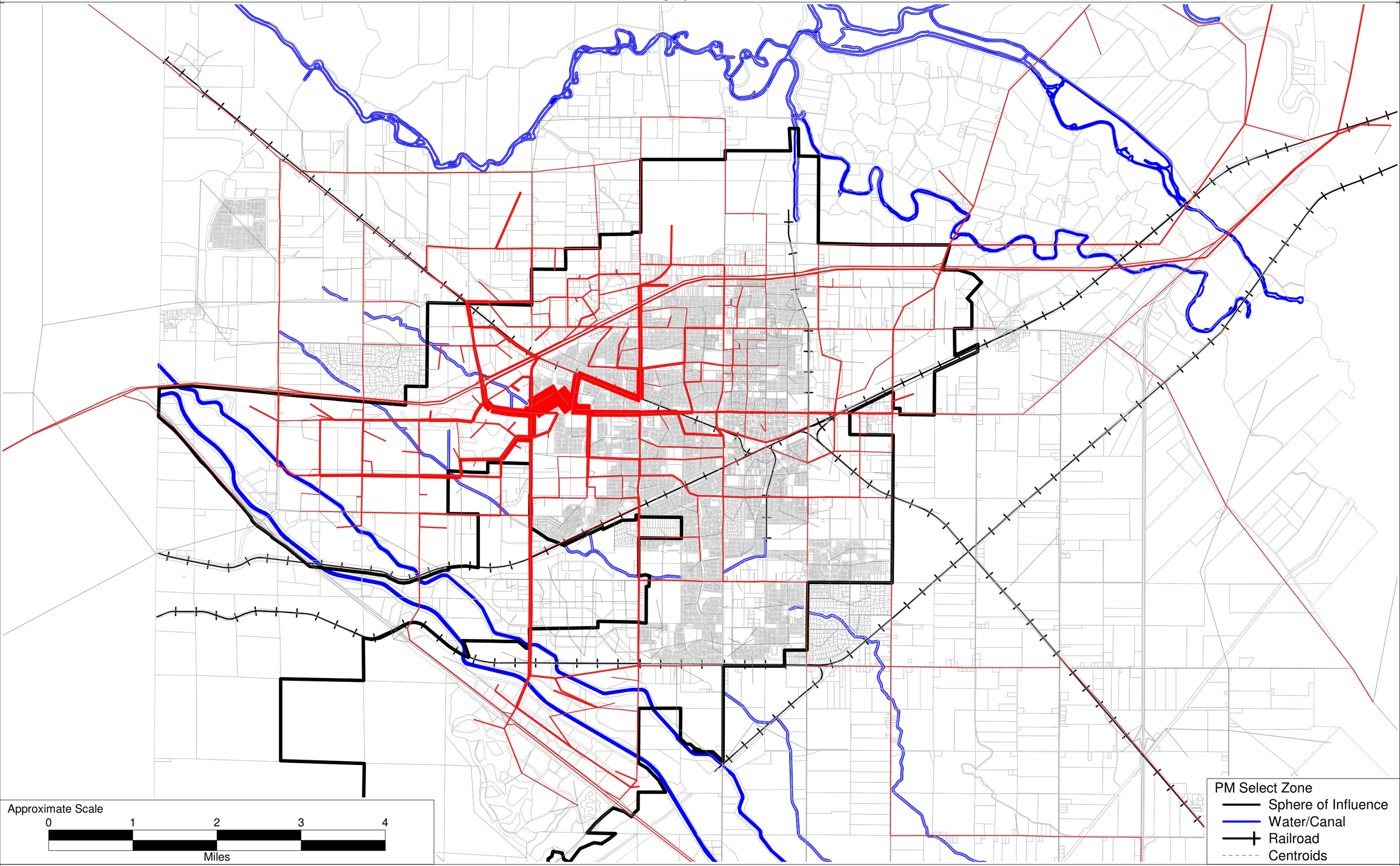
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Buildout Berg-Byron AM Select Zone



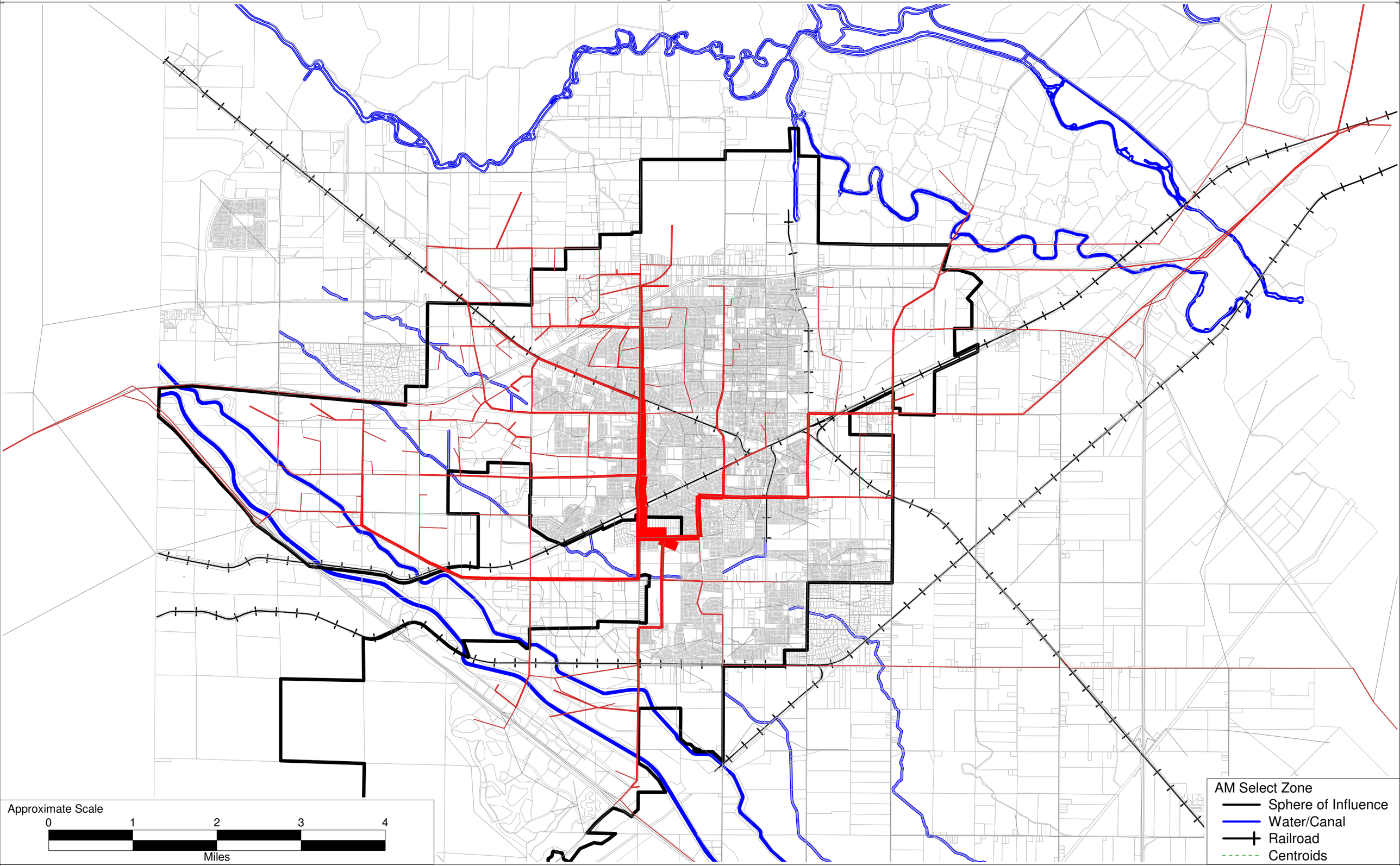
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Buildout Berg-Byron PM Select Zone



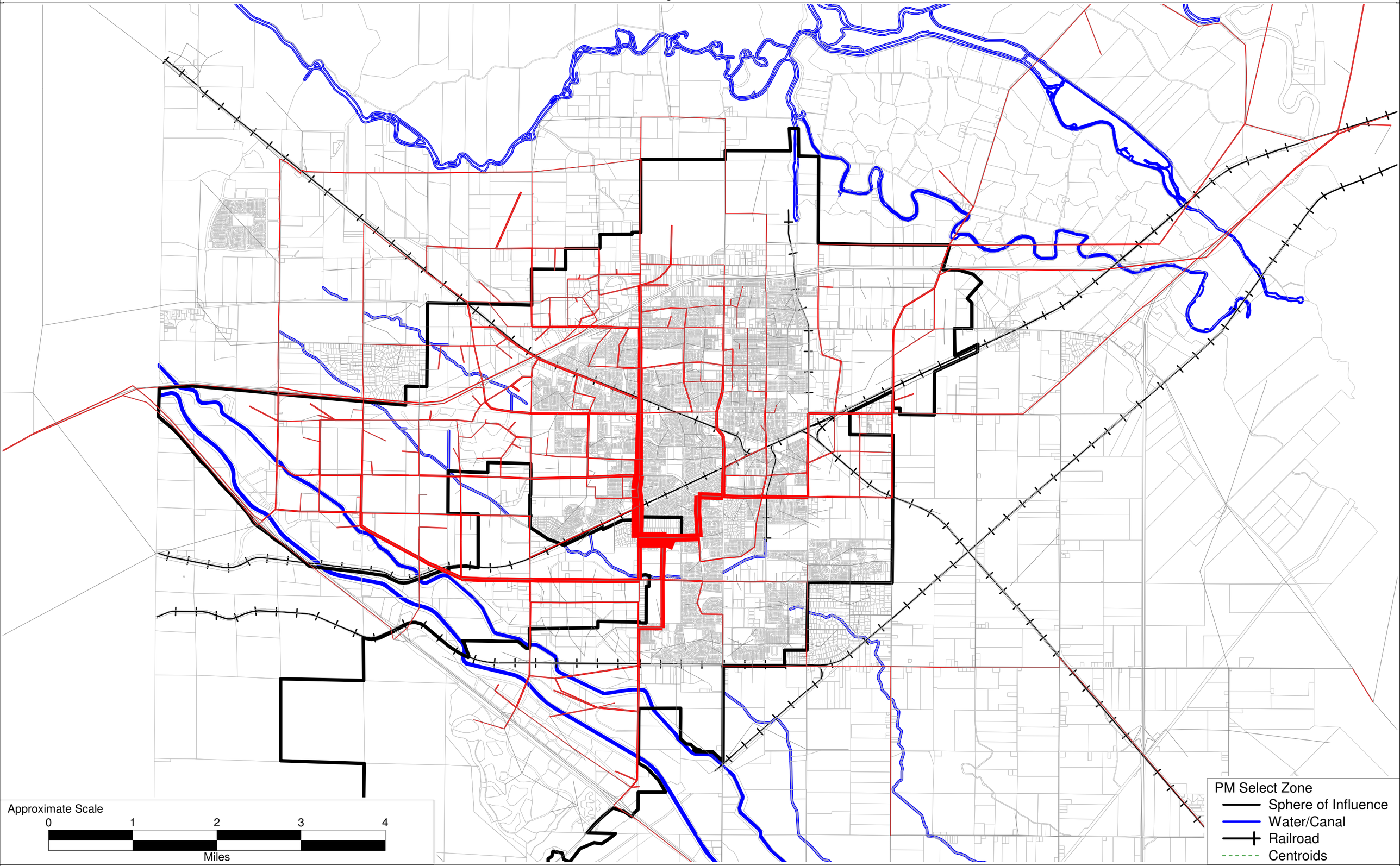
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Licensed to Fehr & Peers

Buildout Kagehiro AM Select Zone



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Buildout Kagehiro PM Select Zone



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Licensed to Fehr & Peers

APPENDIX E

ELLIS SPECIFIC PLAN CROSS SECTIONS

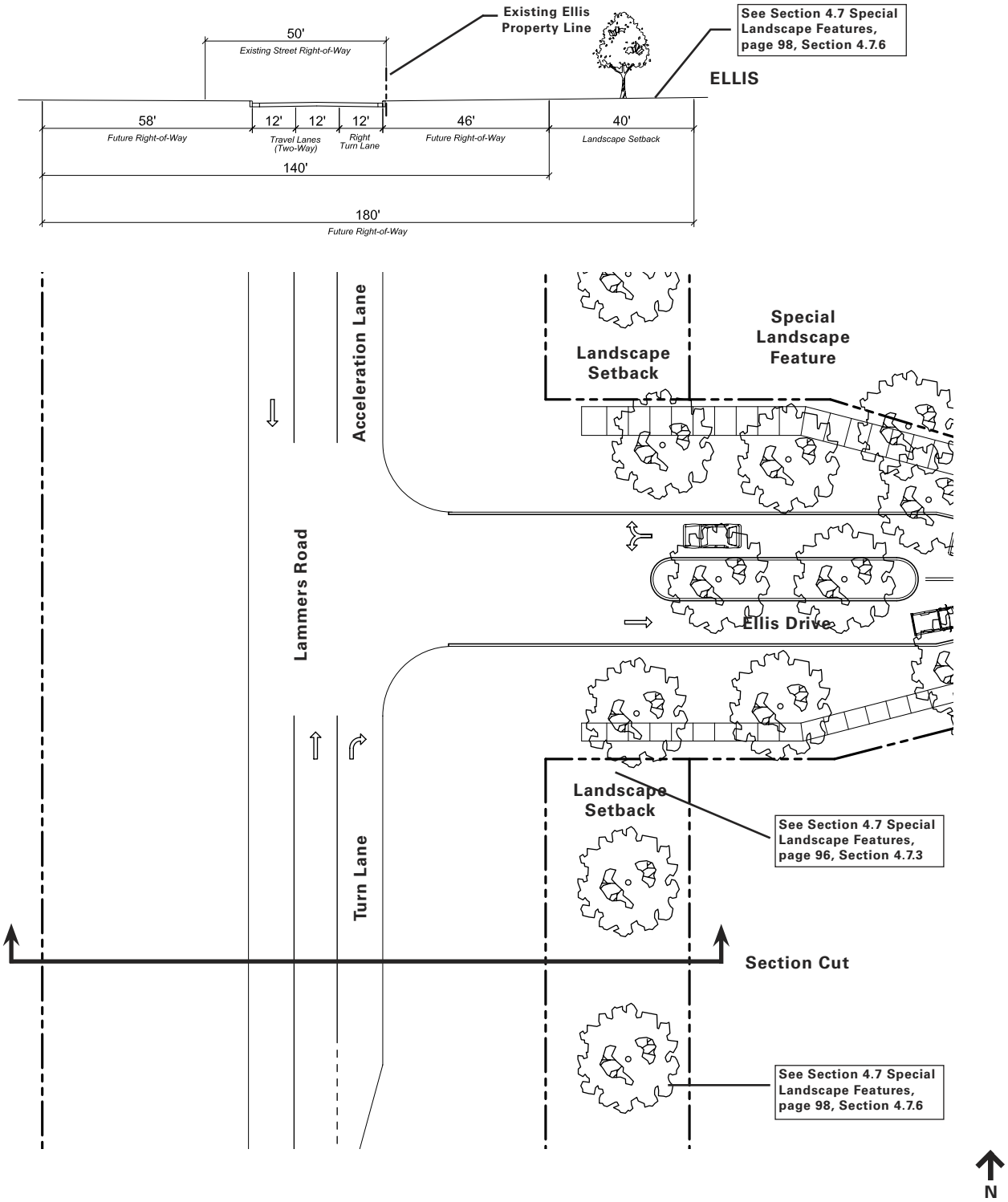


FIGURE 4.15 Existing Section and Plan: Regional Arterial – Lammers Road, Designation A (Cross-section at the time of connection of Ellis Drive to Lammers Road)

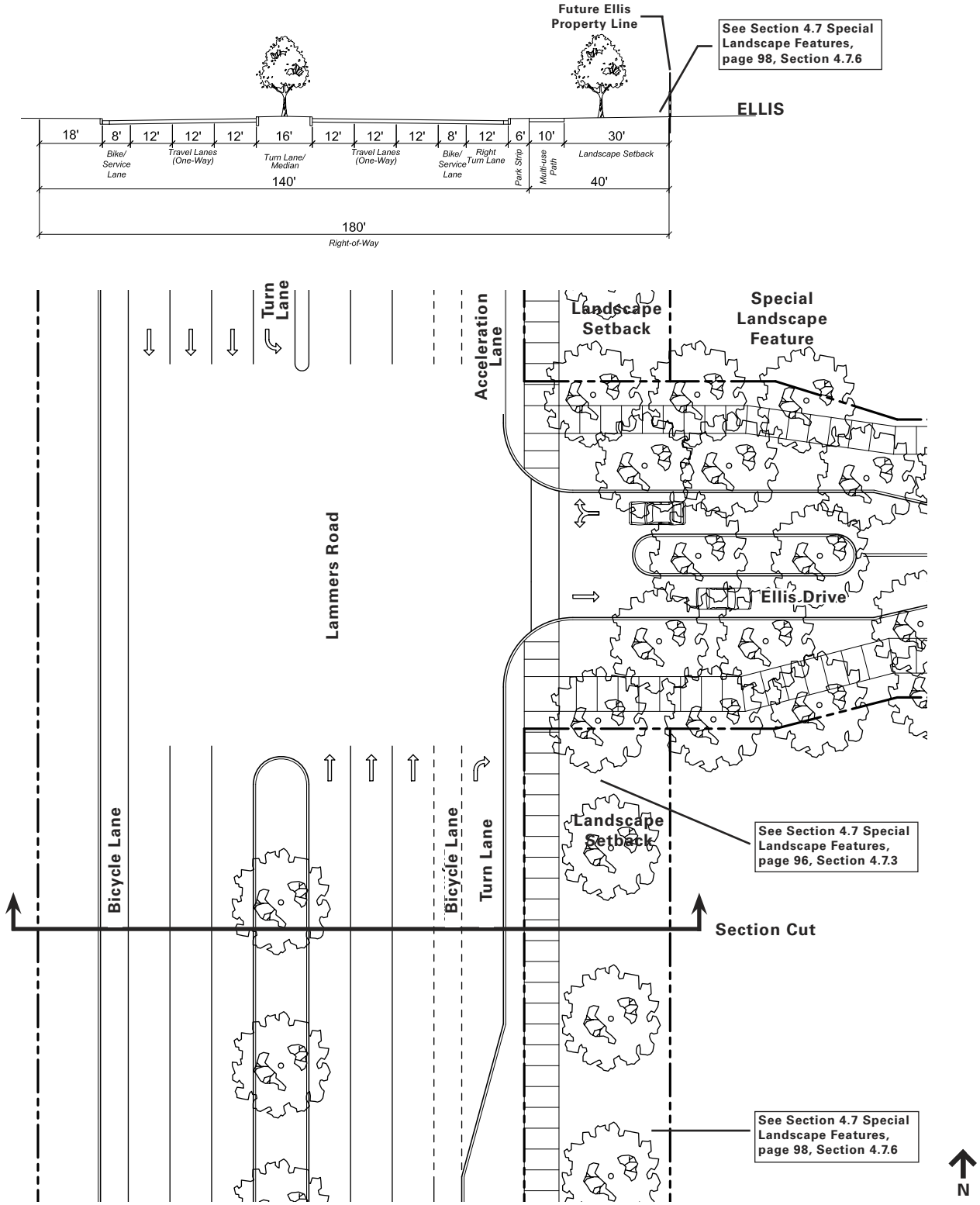


FIGURE 4.17 Build-out Section and Plan: Regional Arterial – Lammers Road, Designation A (Final Build-out)

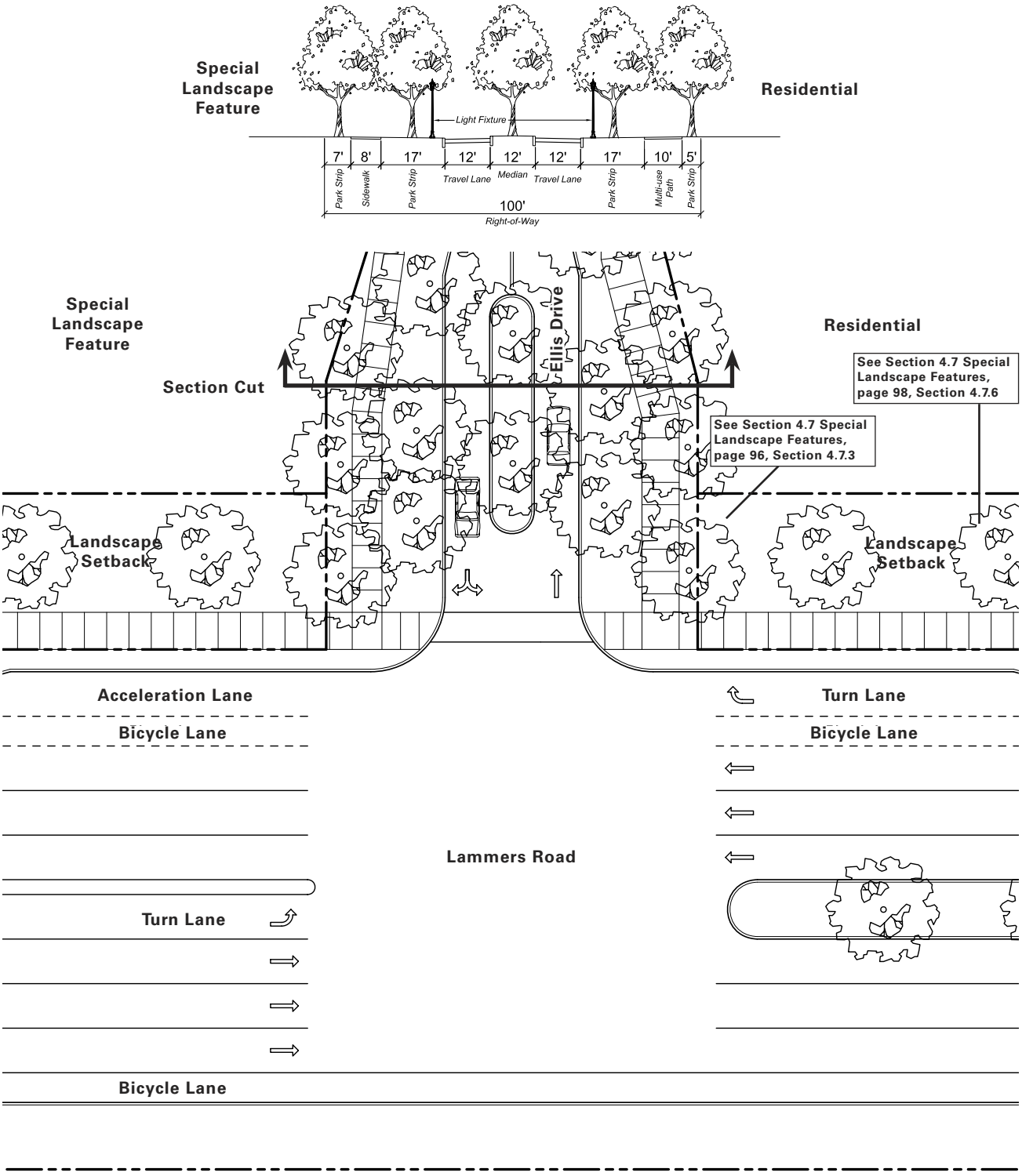


FIGURE 4.19 Proposed Section and Plan: Entry Street A

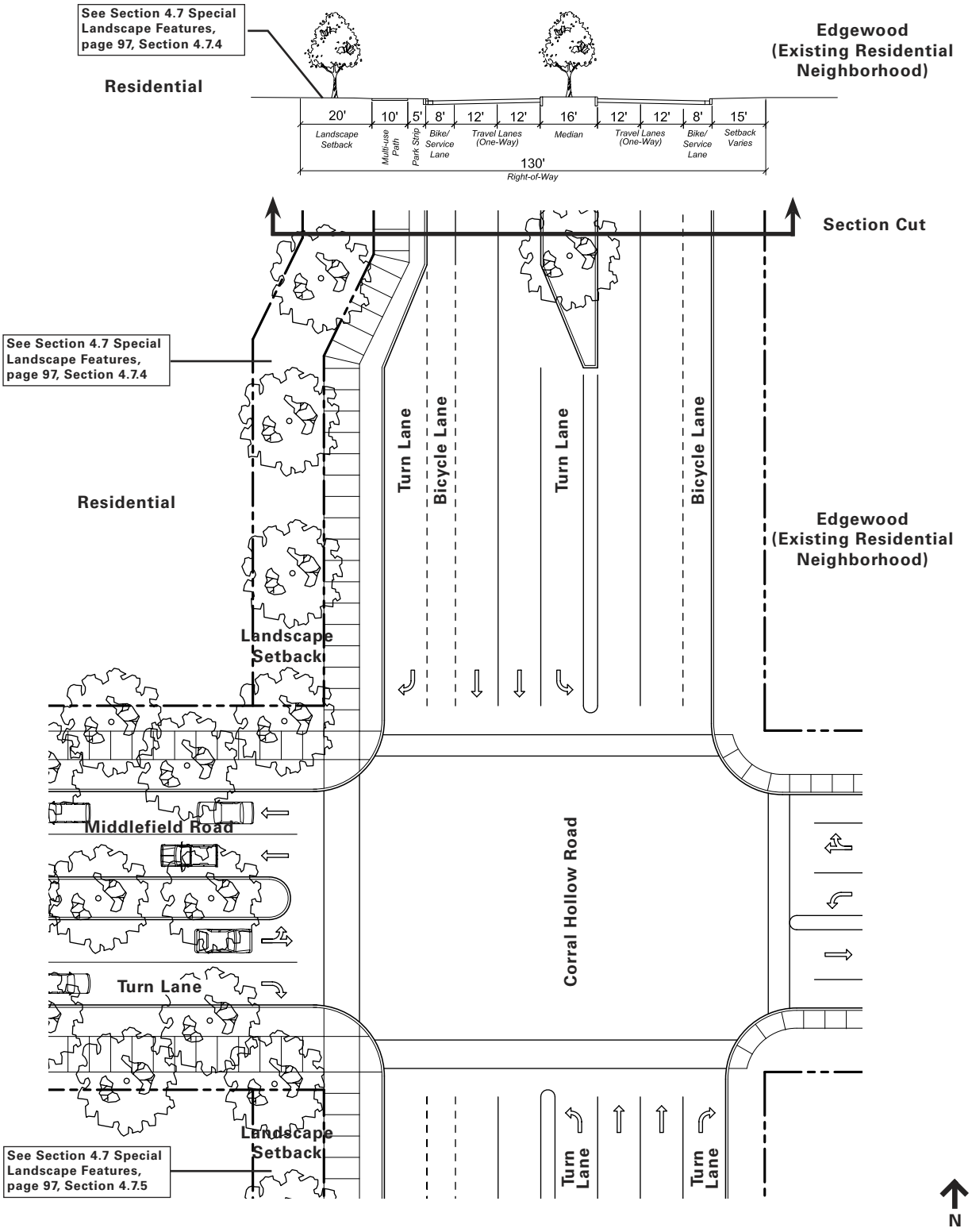


FIGURE 4.21 Interim Section and Plan: Regional Arterial – Corral Hollow Road, Designation B (Interim Condition)

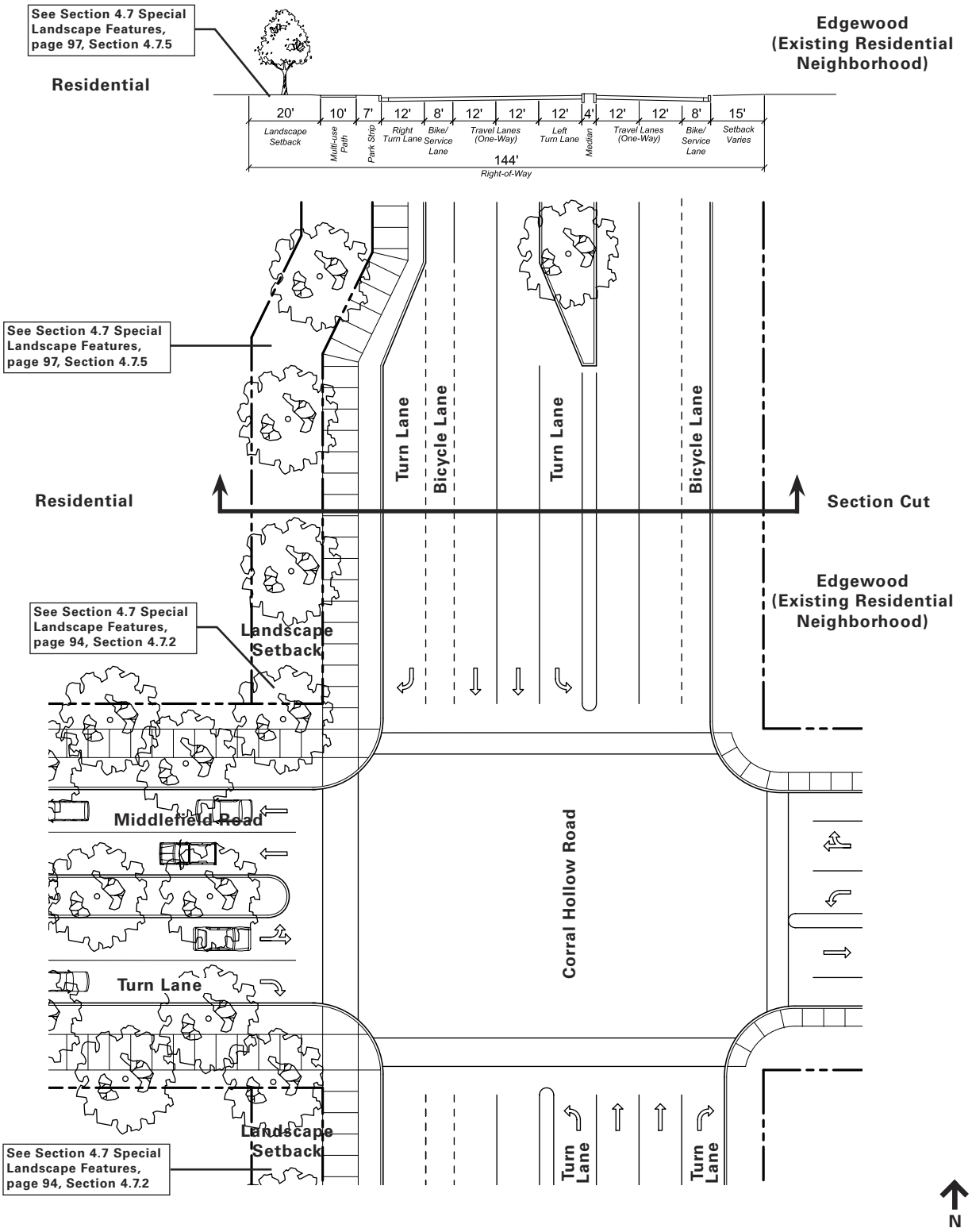


FIGURE 4.23 Build-out Section and Plan: Regional Arterial – Corral Hollow Road, Designation B (Final Build-out)

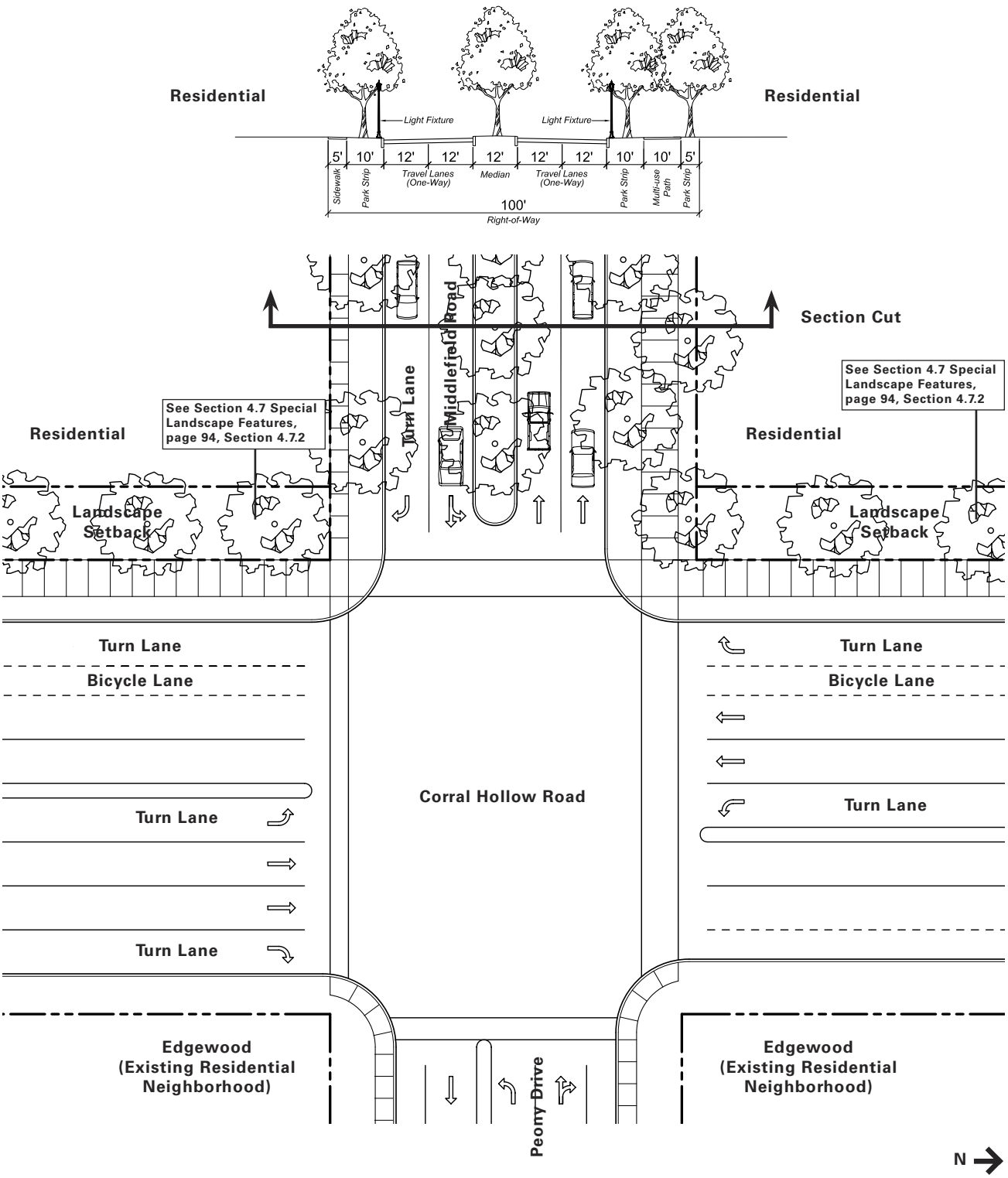


FIGURE 4.25 Proposed Section and Plan: Entry Street B

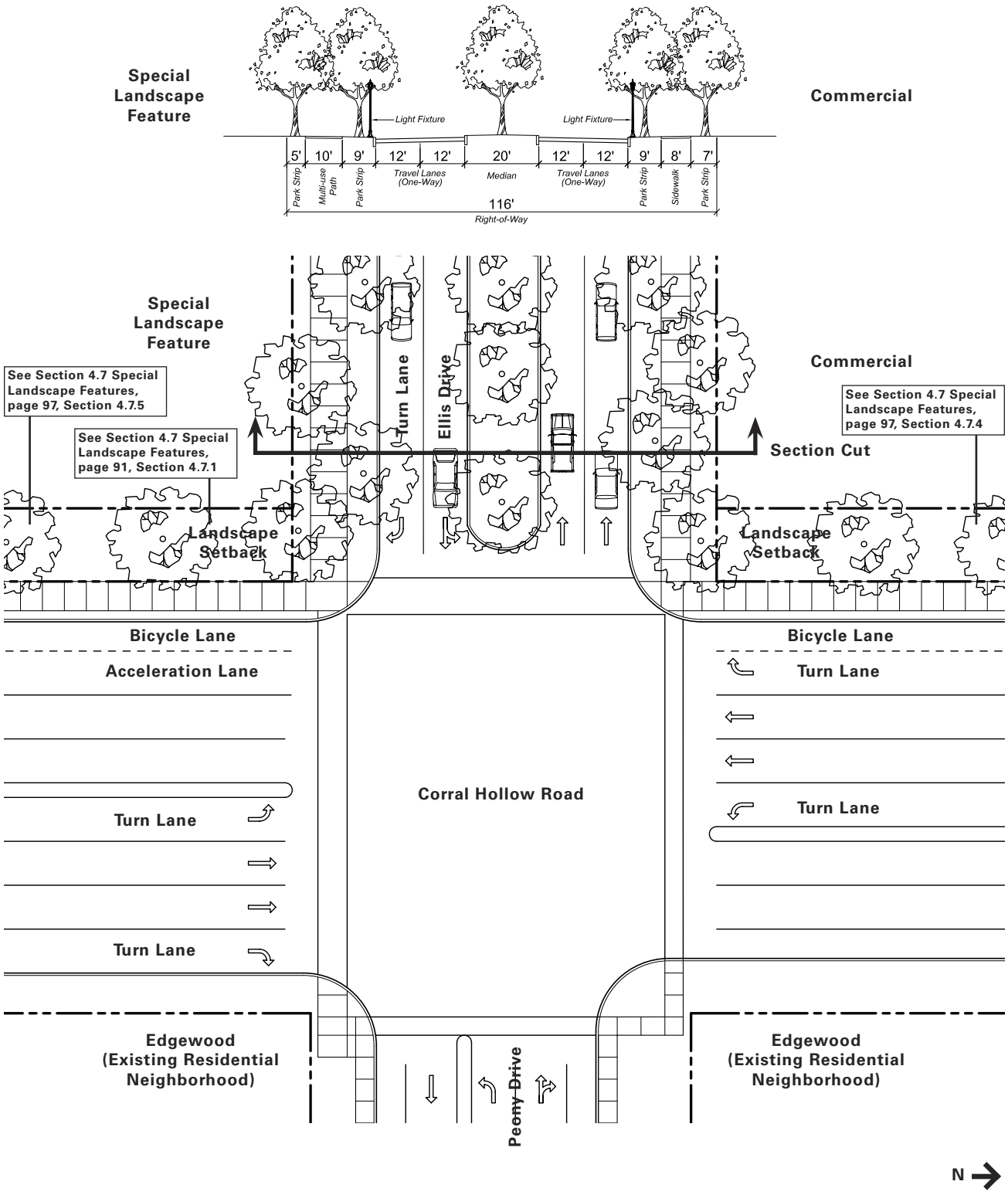


FIGURE 4.27 Proposed Section and Plan: Entry Street C (Ellis Drive)

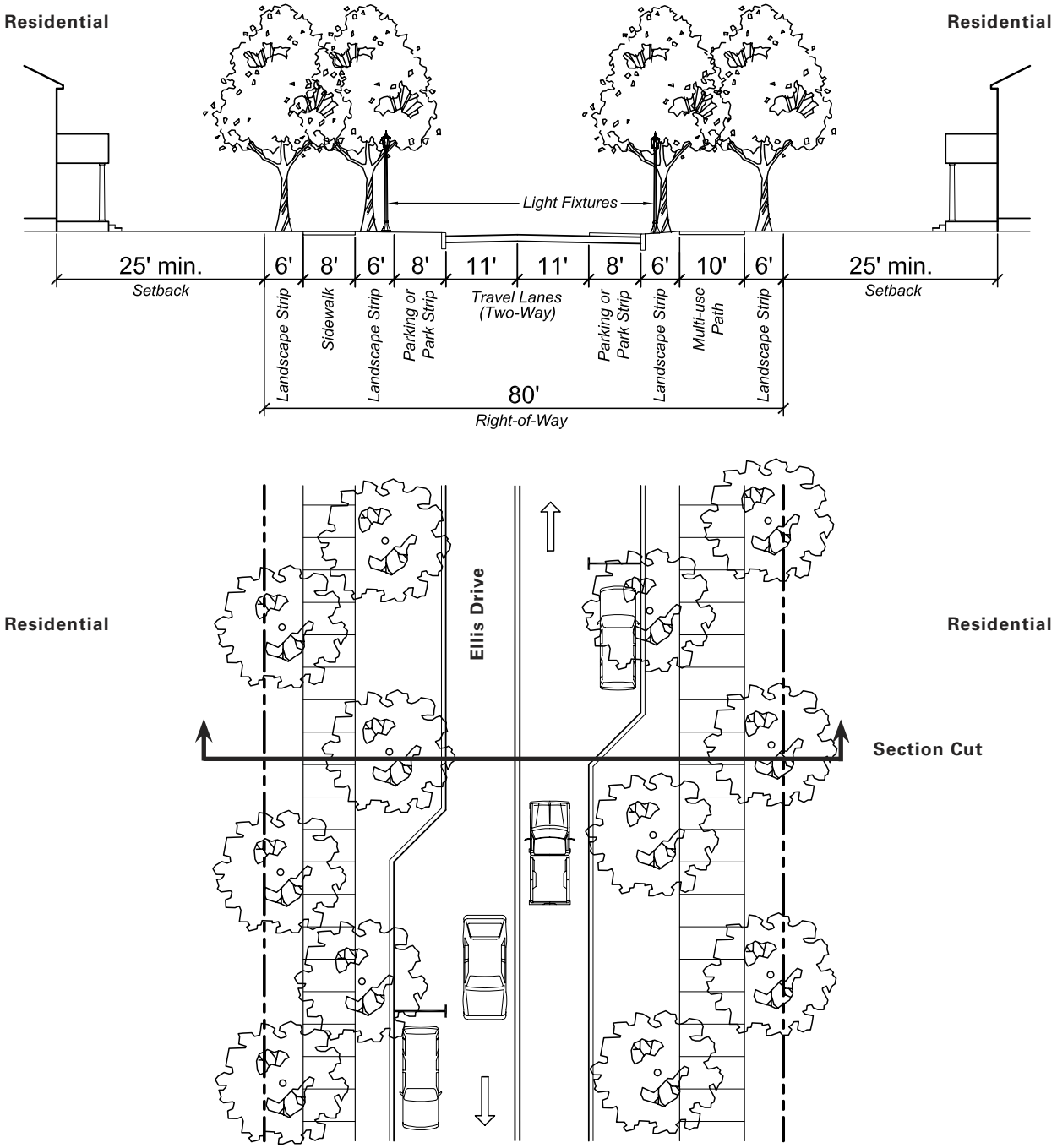


FIGURE 4.29 Proposed Section and Plan: Community Street A

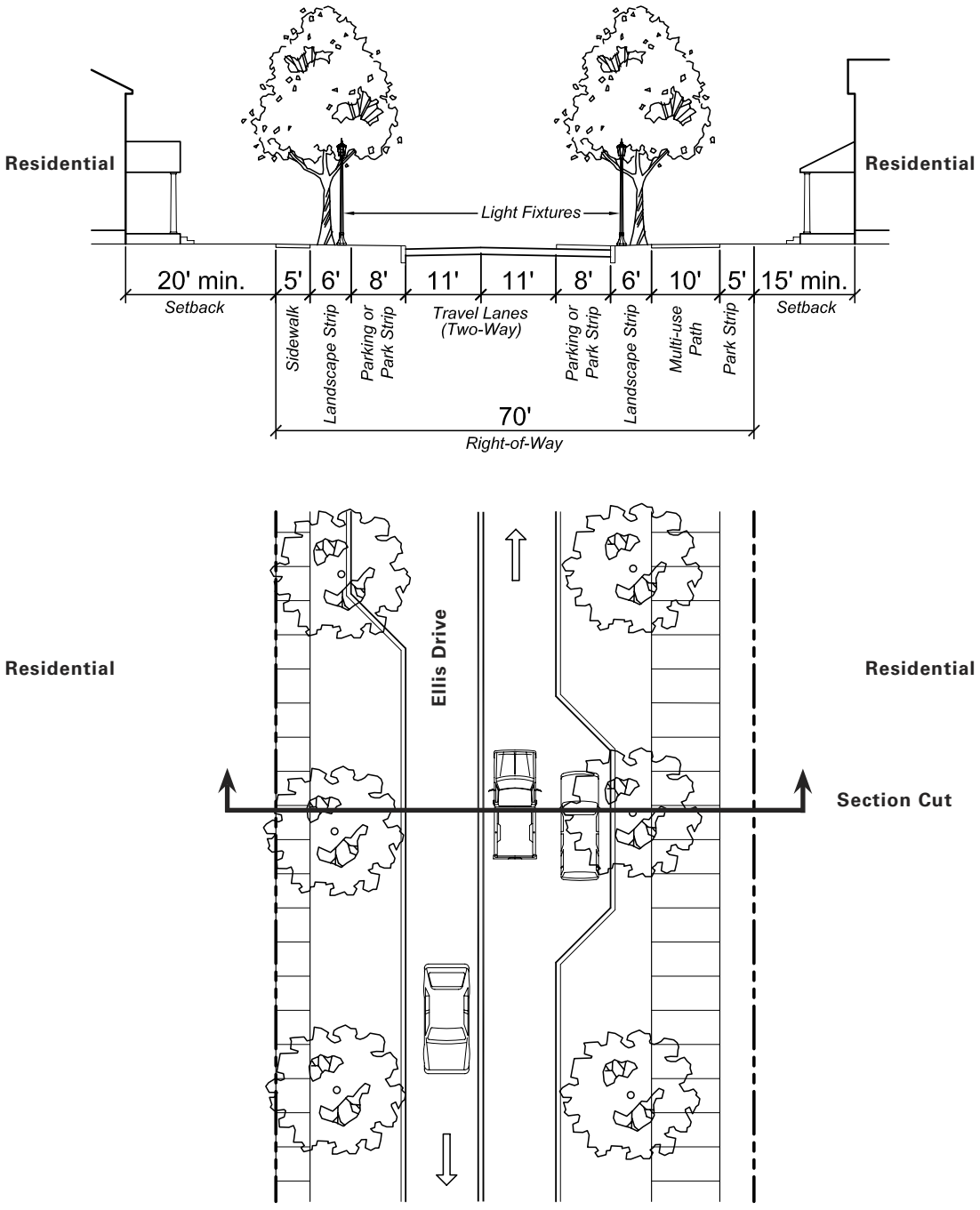


FIGURE 4.31 Proposed Section and Plan: Community Street B

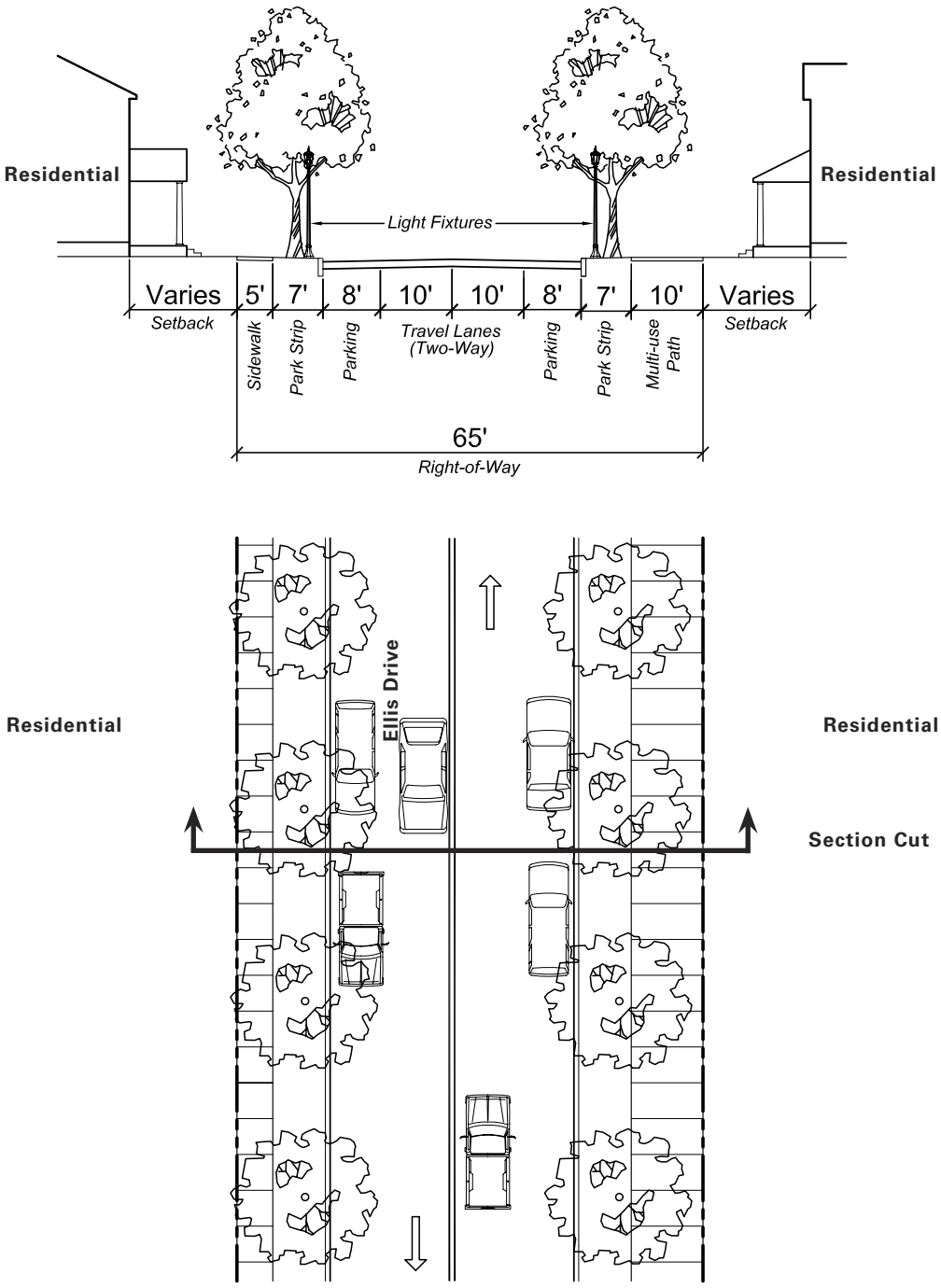


FIGURE 4.33 Proposed Section and Plan: Community Street C

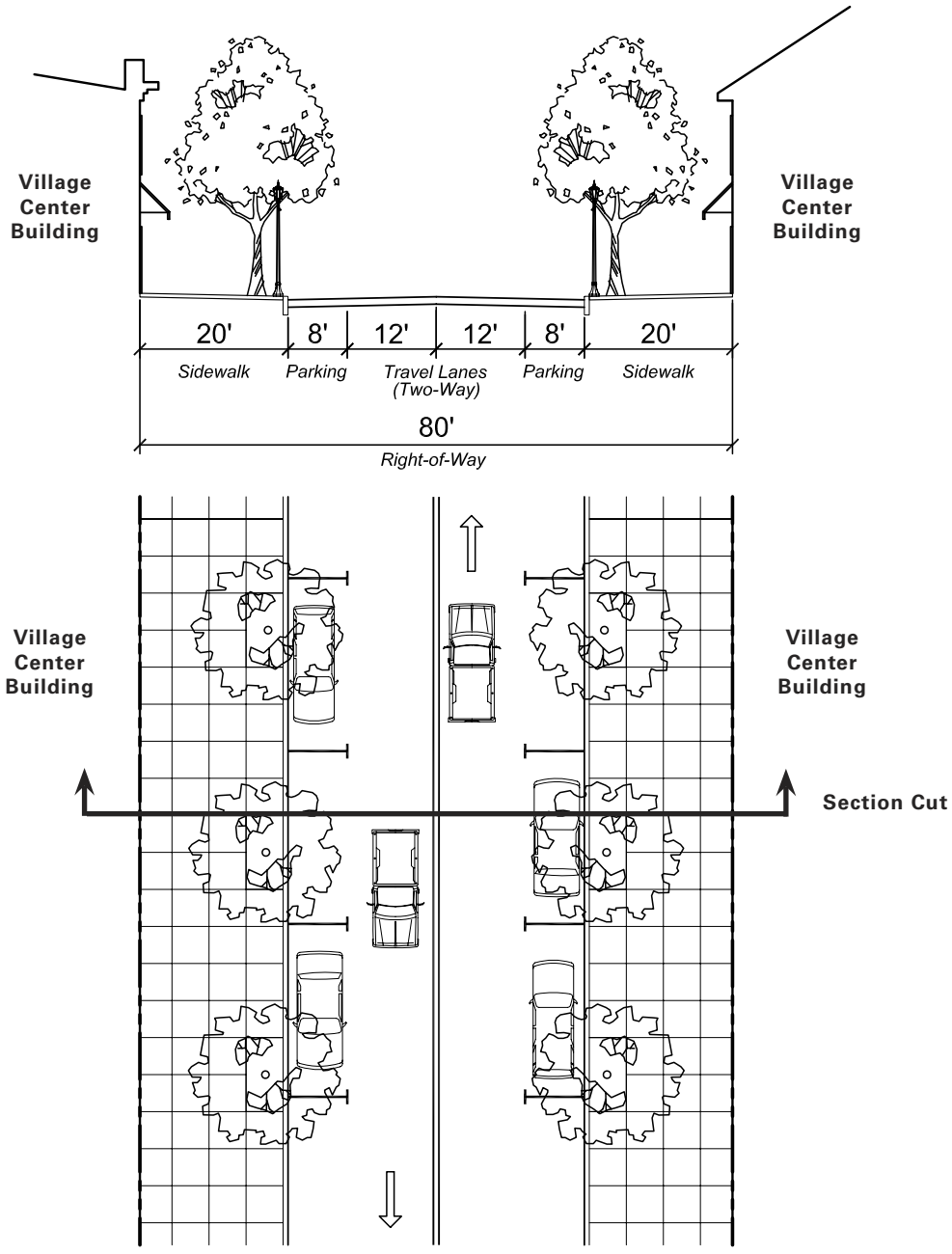


FIGURE 4.35 Proposed Section and Plan: Village Center Street A

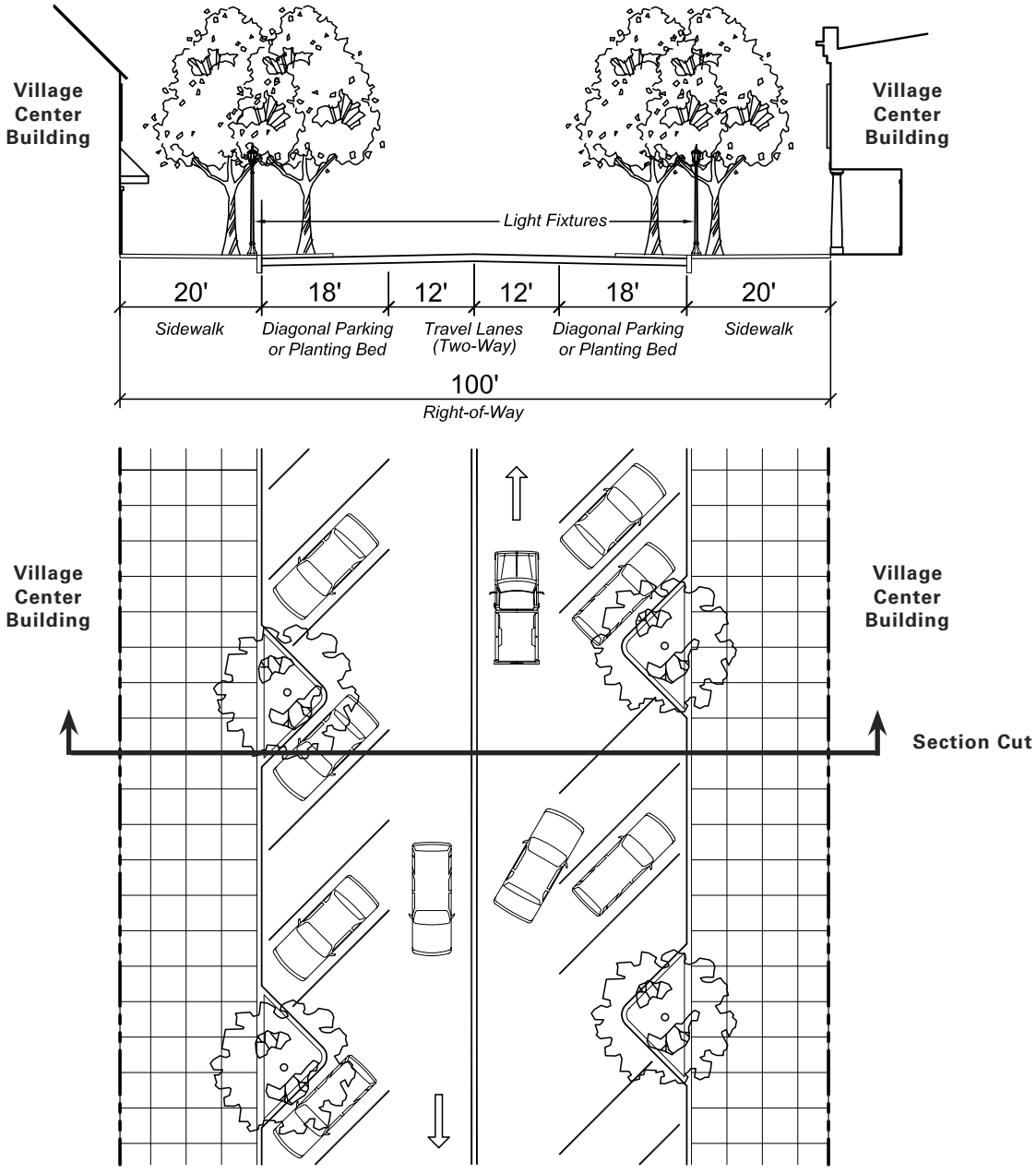


FIGURE 4.37 Proposed Section and Plan: Village Center Street A (Alternate)

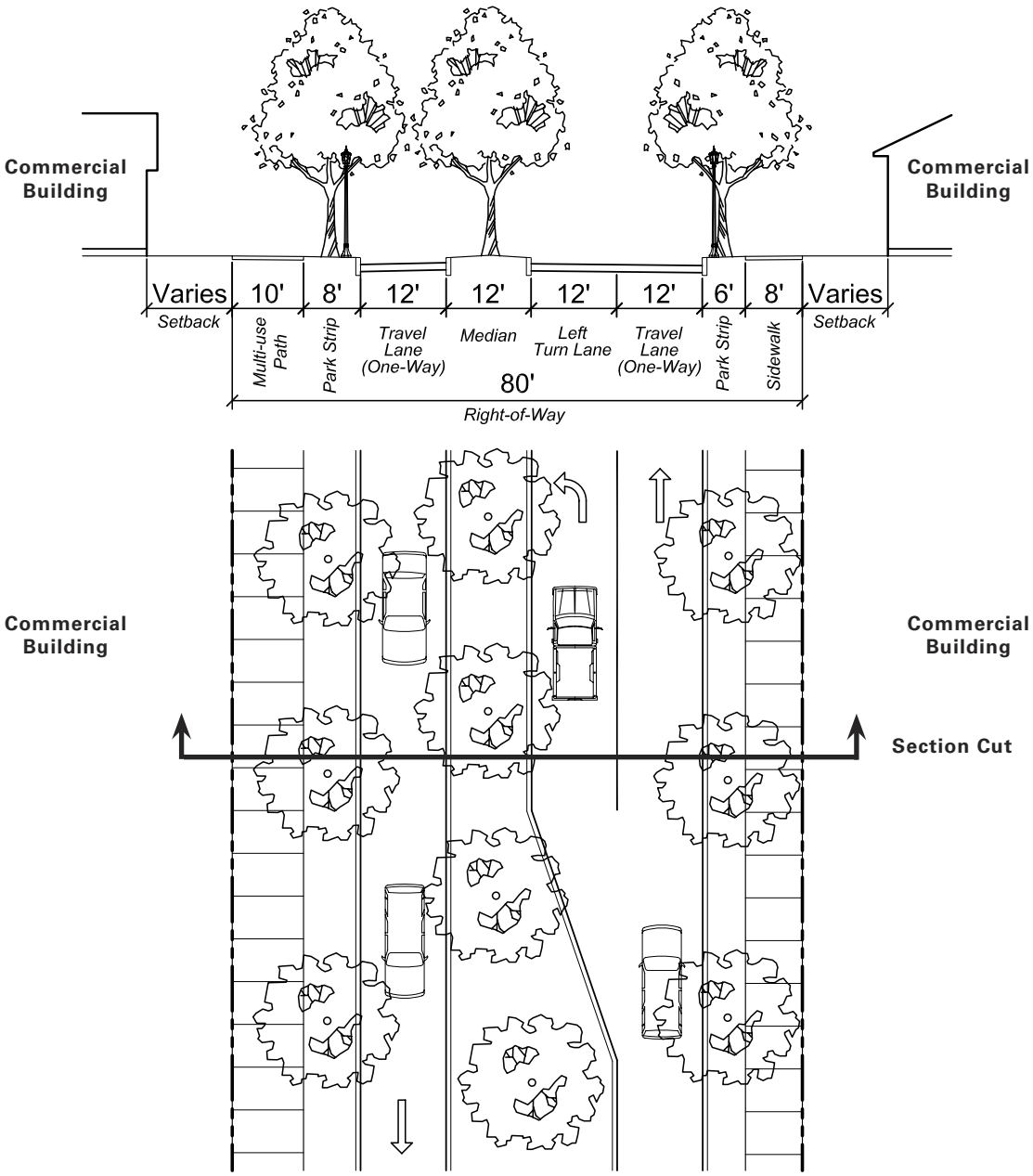


FIGURE 4.39 Proposed Section and Plan: Village Center Street B

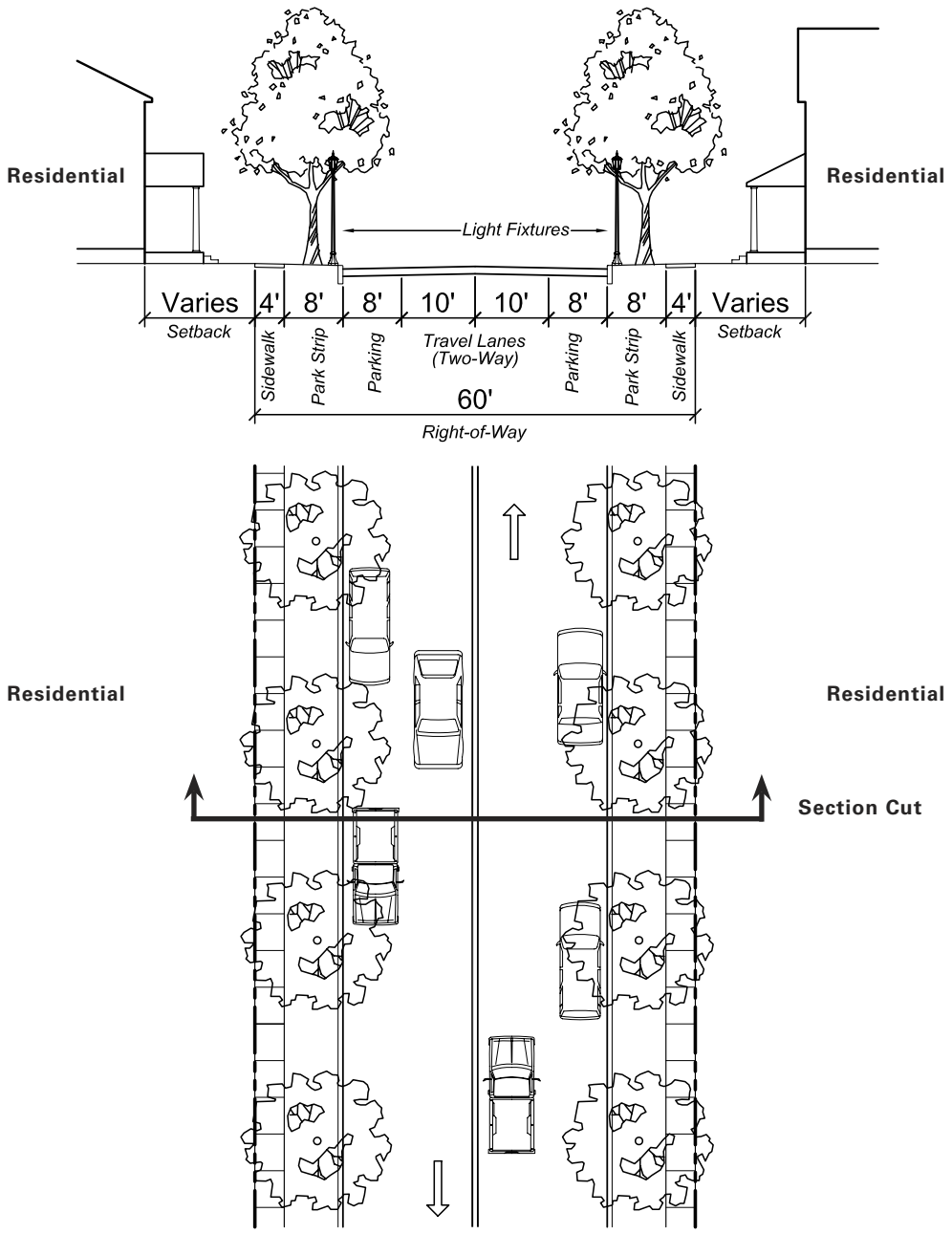


FIGURE 4.41 Proposed Section and Plan: Neighborhood Street A

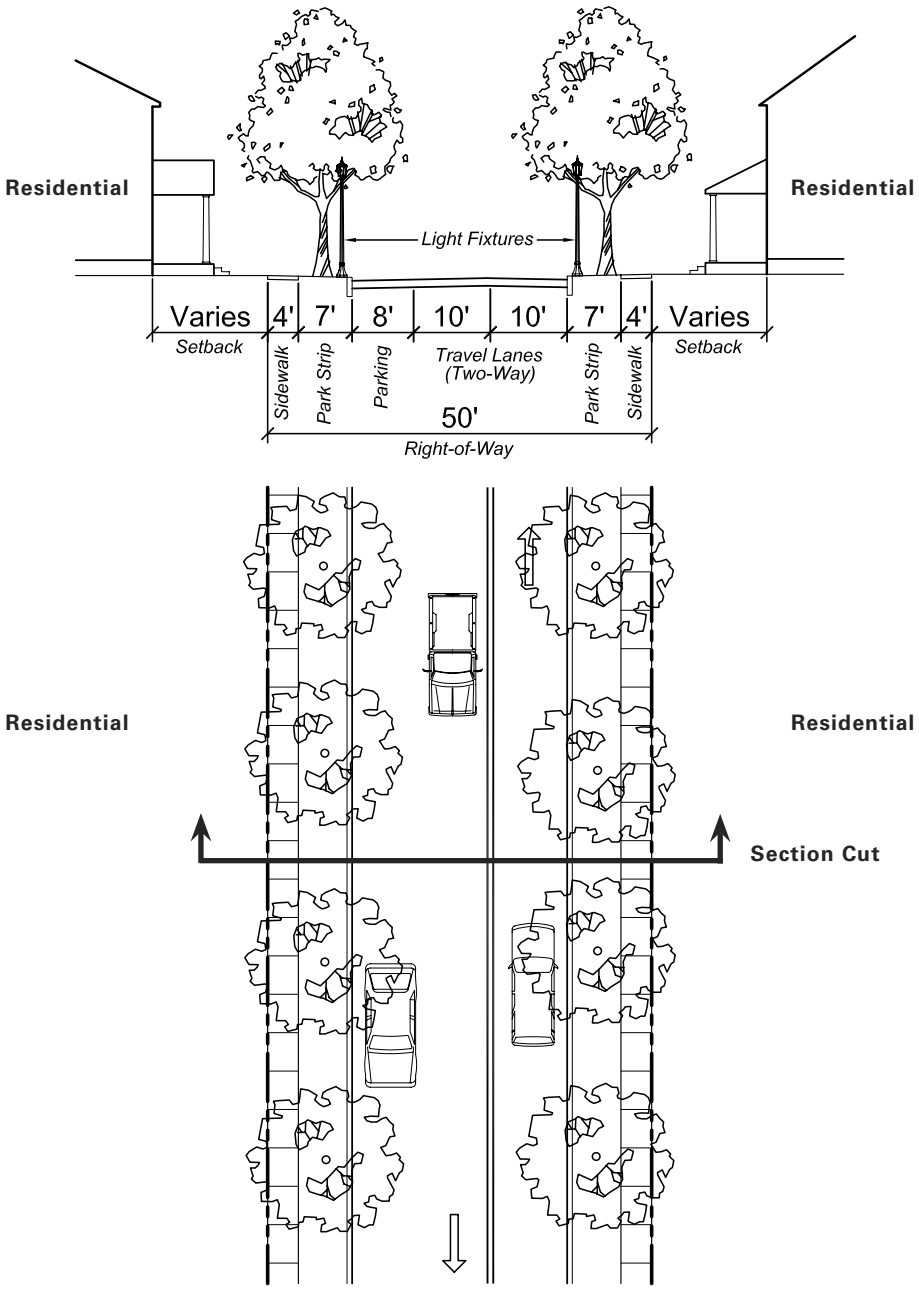


FIGURE 4.43 Proposed Section and Plan: Neighborhood Street B

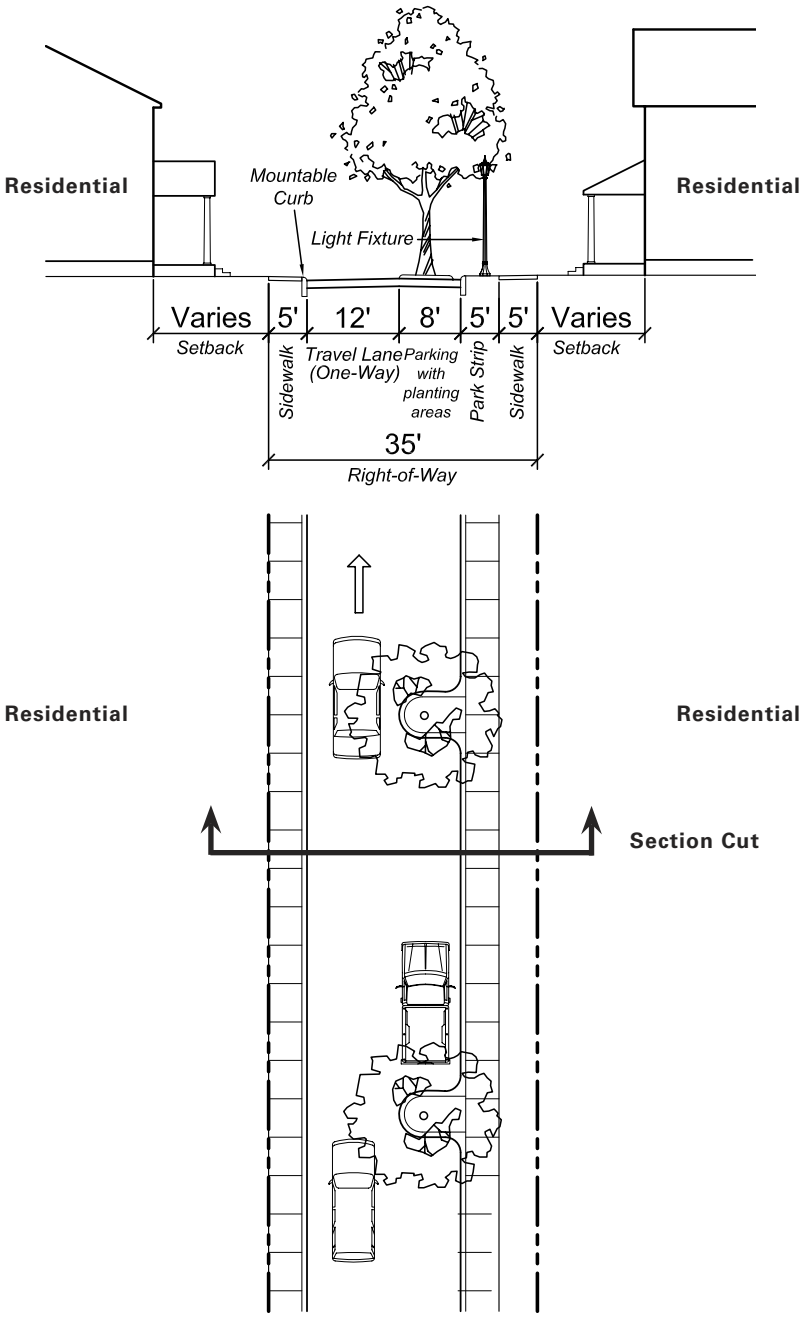


FIGURE 4.45 Proposed Section and Plan: Neighborhood Street C

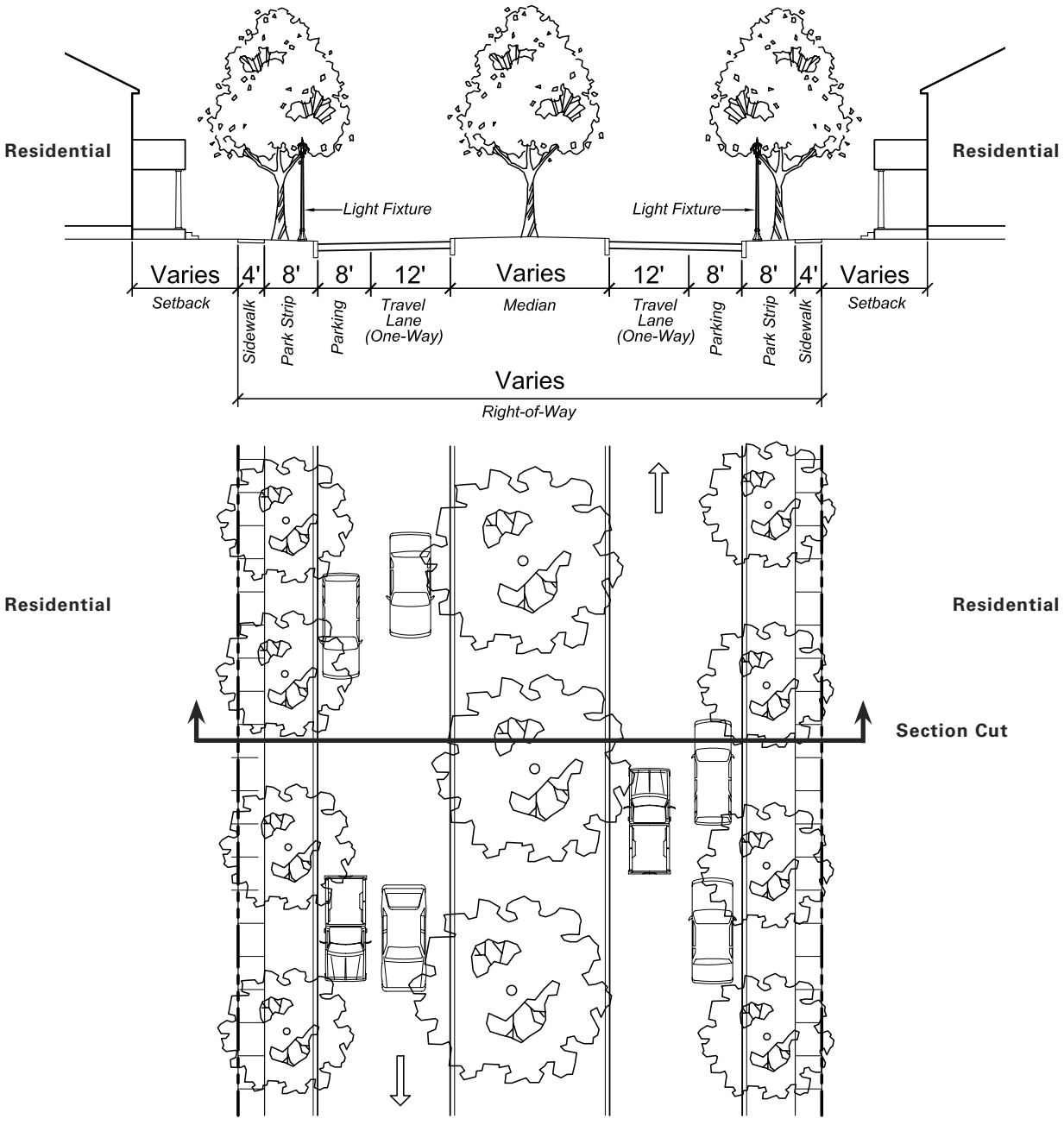


FIGURE 4.47 Proposed Section and Plan: Neighborhood Street D

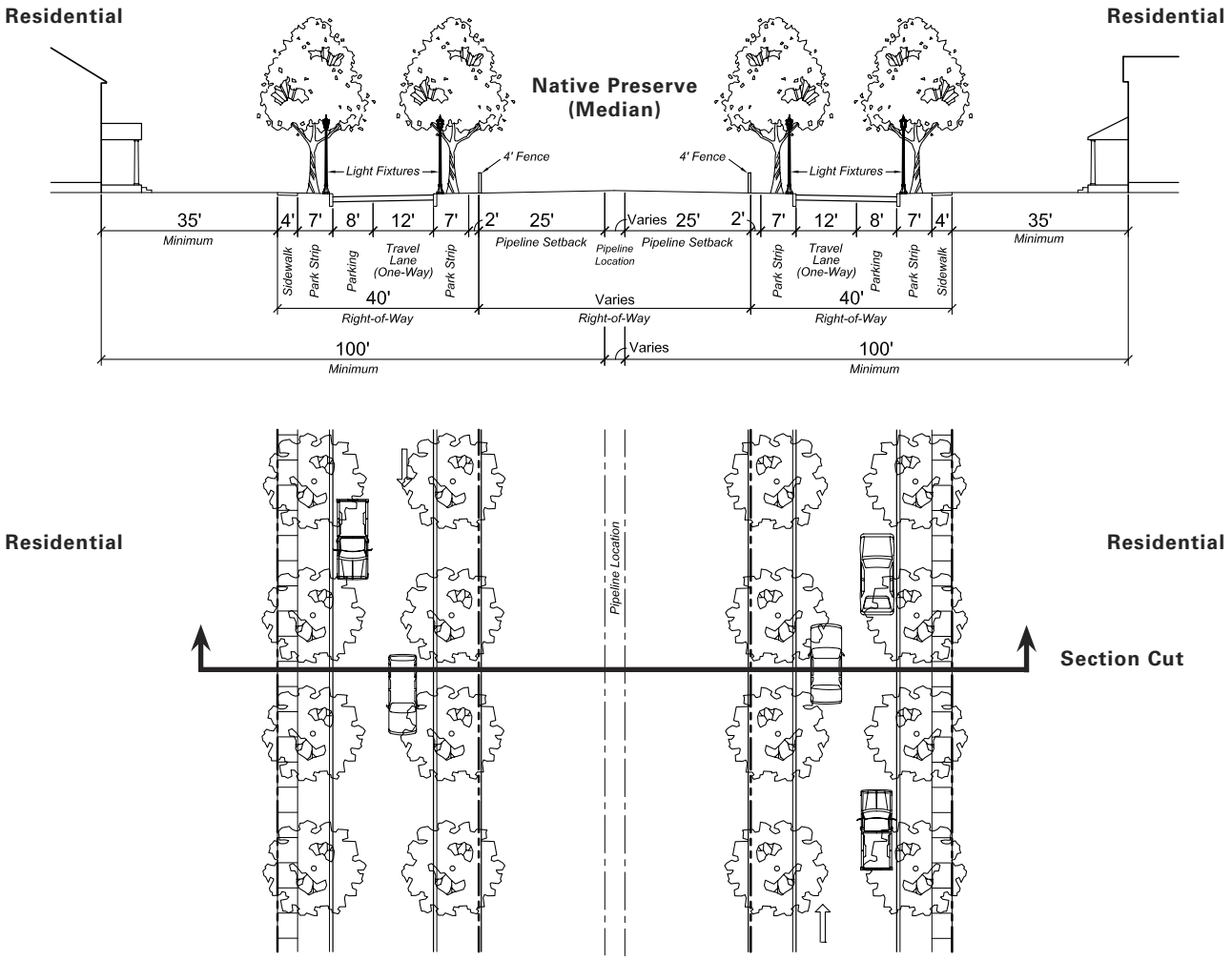


FIGURE 4.49 Proposed Section and Plan: Neighborhood Street E

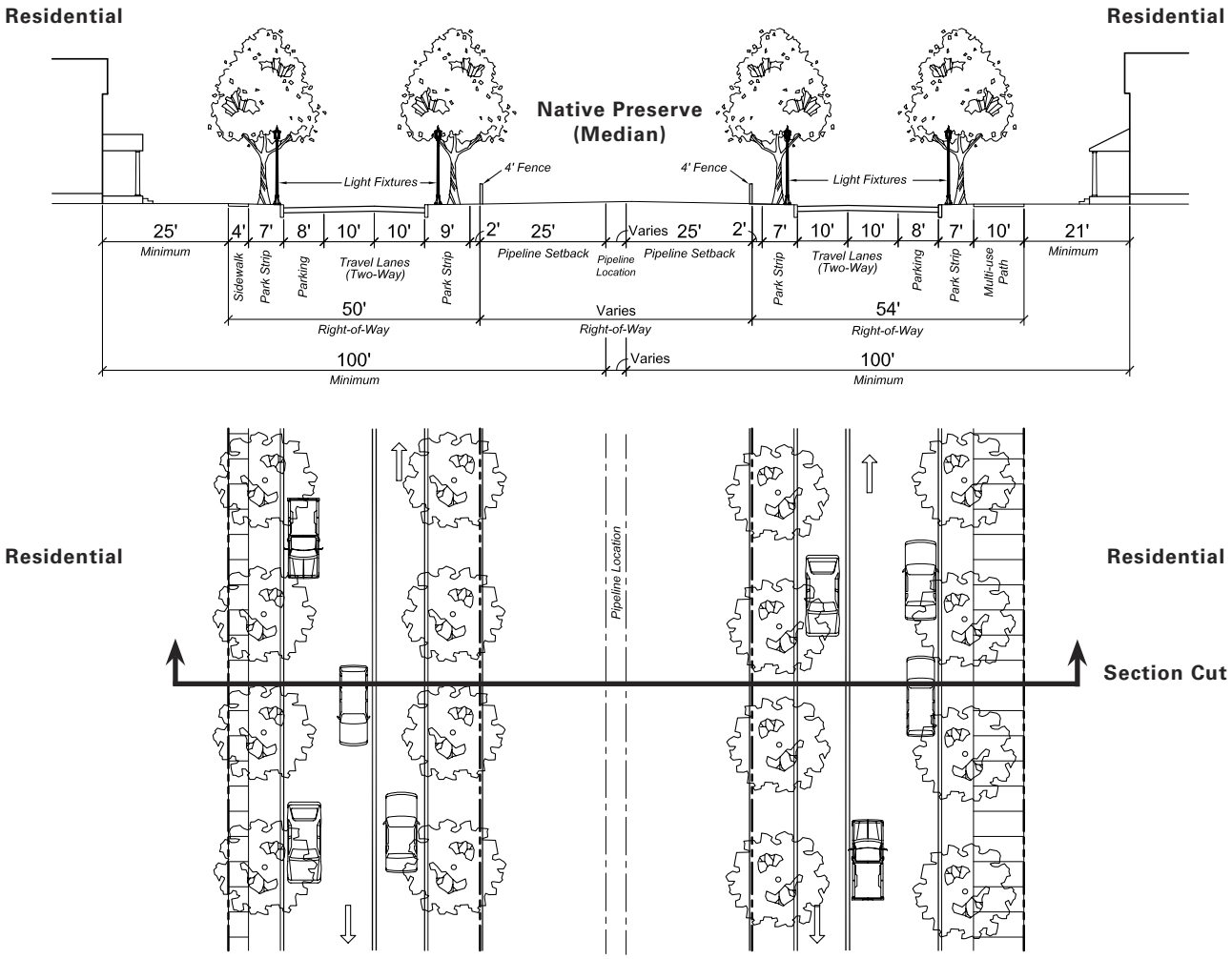


FIGURE 4.51 Proposed Section and Plan: Neighborhood Street F

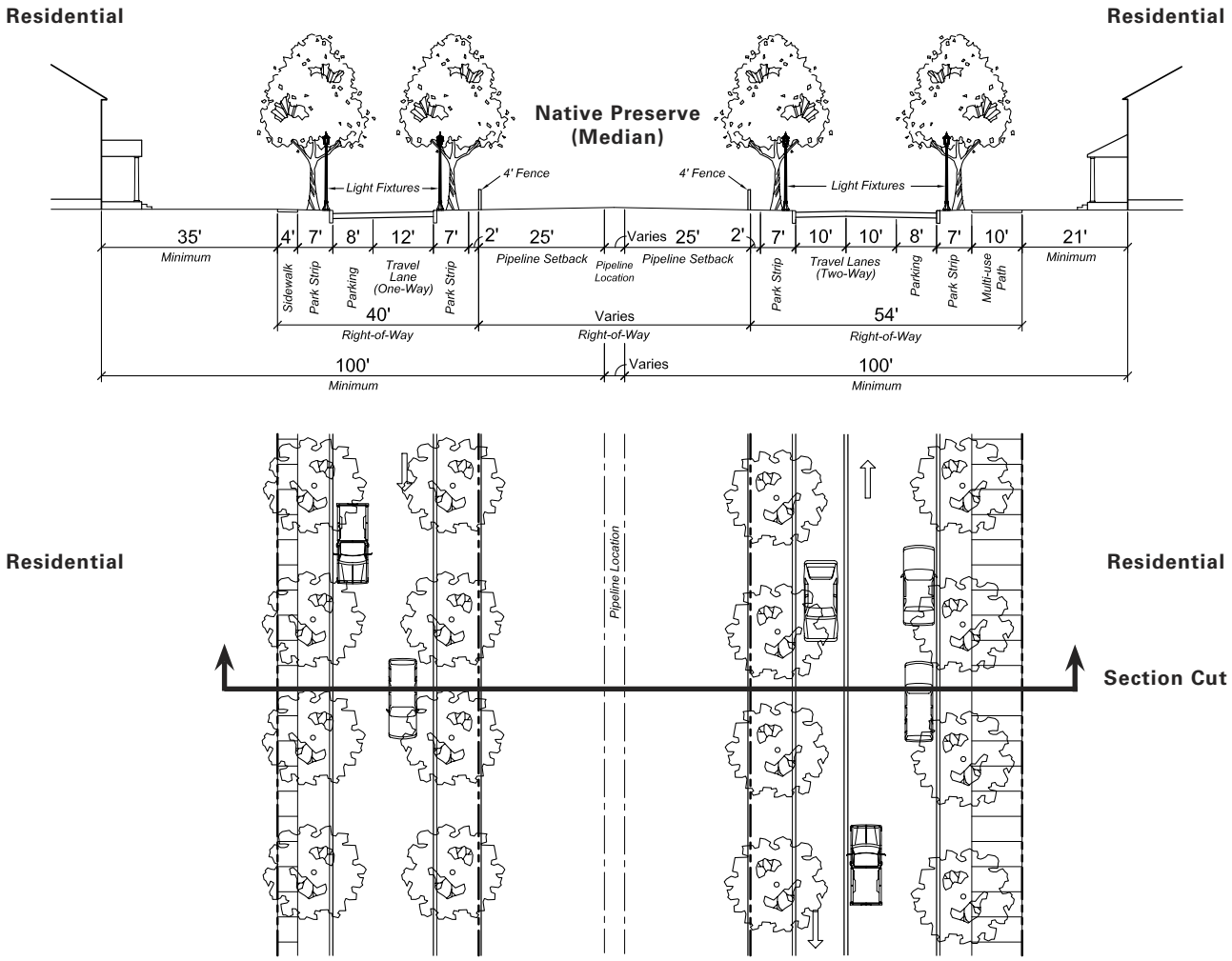


FIGURE 4.53 Proposed Section and Plan: Neighborhood Street G

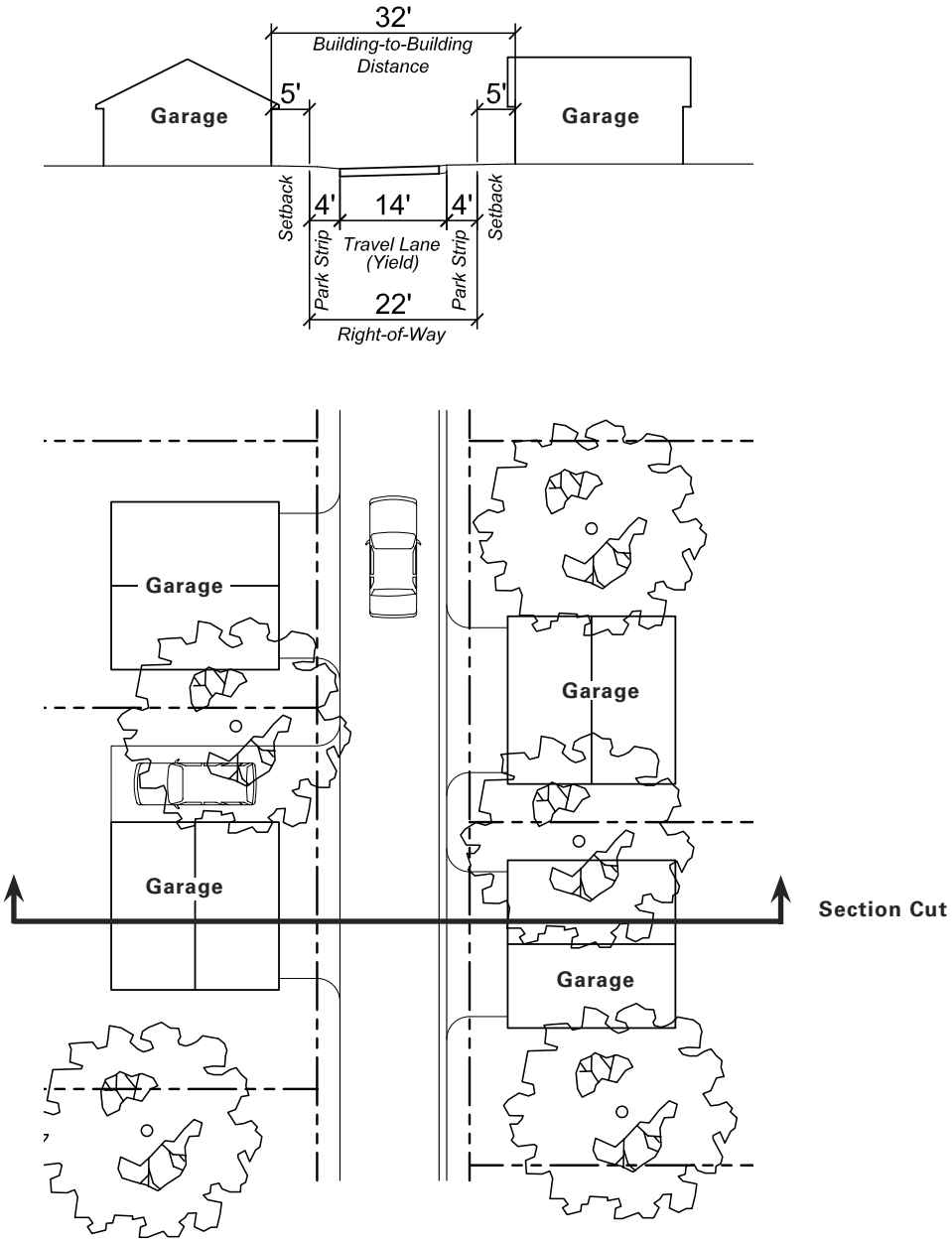


FIGURE 4.55 Proposed Section and Plan: Lane A

APPENDIX F

ILLUSTRATIONS OF TYPICAL TRAFFIC CIRCLES (MINI-ROUNDABOUTS) AND ROUNDABOUTS

SOURCE: ROUNDABOUTS: AN INFORMATIONAL GUIDE

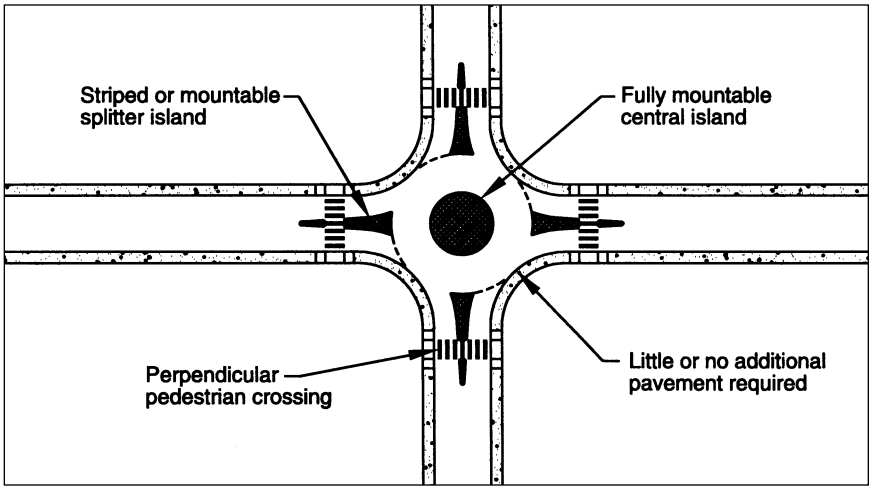
(FEDERAL HIGHWAY ADMINISTRATION)

1.6.2 Mini-roundabouts

Mini-roundabouts can be useful in low-speed urban environments with right-of-way constraints.

Mini-roundabouts are small roundabouts used in low-speed urban environments, with average operating speeds of 60km/h (35mph) or less. Exhibit 1-8 provides an example of a typical mini-roundabout. They can be useful in low-speed urban environments in cases where conventional roundabout design is precluded by right-of-way constraints. In retrofit applications, mini-roundabouts are relatively inexpensive because they typically require minimal additional pavement at the intersecting roads-for example, minor widening at the corner curbs. They are mostly recommended when there is insufficient right-of-way for an urban compact roundabout. Because they are small, mini-roundabouts are perceived as pedestrian-friendly with short crossing distances and very low vehicle speeds on approaches and exits. The mini-roundabout is designed to accommodate passenger cars without requiring them to drive over the central island. To maintain its perceived compactness and low speed characteristics, the yield lines are positioned just outside of the swept path of the largest expected vehicle. However, the central island is mountable, and larger vehicles may cross over the central island, but not to the left of it. Speed control around the mountable central island should be provided in the design by requiring horizontal deflection. Capacity for this type of roundabout is expected to be similar to that of the compact urban roundabout. The recommended design of these roundabouts is based on the German method, with some influence from the United Kingdom.

Exhibit 1-8. Typical mini-roundabout.



1.6.3 Urban compact roundabouts

Urban compact roundabouts are intended to be pedestrian-friendly; capacity should not be a critical issue when considering this type.

Like mini-roundabouts, urban compact roundabouts are intended to be pedestrian- and bicyclist-friendly because their perpendicular approach legs require very low vehicle speeds to make a distinct right turn into and out of the circulatory roadway. All legs have single-lane entries. However, the urban compact treatment meets all the design requirements of effective roundabouts. The principal objective of this design is to enable pedestrians to have safe and effective use of the intersection. Capacity should not be a critical issue for this type of roundabout to be considered. The geometric design includes raised splitter islands that incorporate at-grade pedestrian storage areas, and a nonmountable central island. There is usually an apron surrounding the nonmountable part of the compact central island to accommodate large vehicles. The recommended design of these roundabouts is similar to those in Germany and other northern European countries. Exhibit 1-9 provides an example of a typical urban compact roundabout.

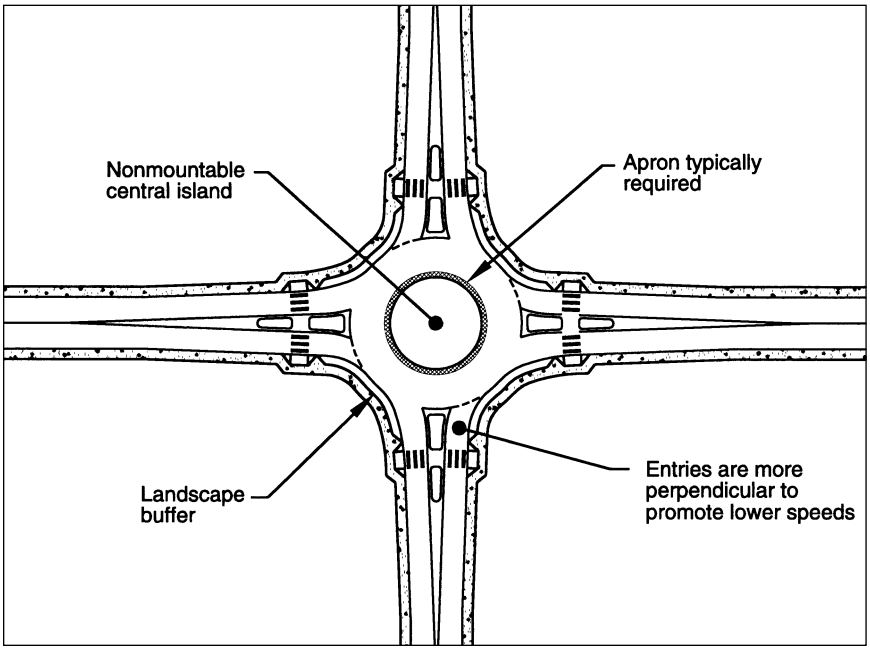


Exhibit 1-9. Typical urban compact roundabout.

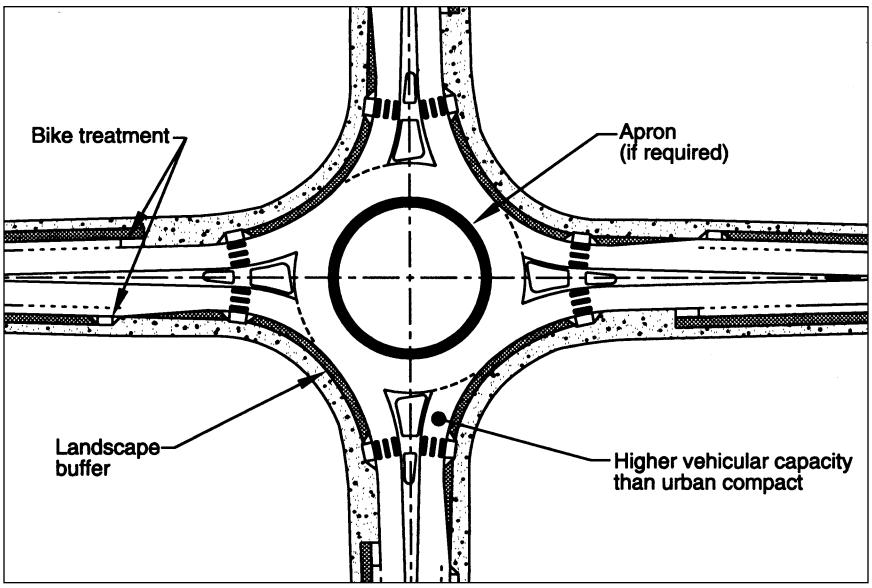
1.6.4 Urban single-lane roundabouts

Urban single-lane roundabouts have slightly higher speeds and capacities than urban compact roundabouts.

This type of roundabout is characterized as having a single lane entry at all legs and one circulatory lane. Exhibit 1-10 provides an example of a typical urban single-lane roundabout. They are distinguished from urban compact roundabouts by their larger inscribed circle diameters and more tangential entries and exits, resulting in higher capacities. Their design allows slightly higher speeds at the entry, on the circulatory roadway, and at the exit. Notwithstanding the larger inscribed circle diameters than compact roundabouts, the speed ranges recommended in this guide are somewhat lower than those used in other countries, in order to enhance safety for bicycles and pedestrians. The roundabout design is focused on achieving consistent entering and circulating vehicle speeds. The geometric design includes raised splitter islands, a nonmountable central island, and preferably, no apron. The design of these roundabouts is similar to those in Australia, France, and the United Kingdom.

The design focuses on consistent entering and exiting speeds.

Exhibit 1-10. Typical urban single-lane roundabout.



1.6.5 Urban double-lane roundabouts

The urban double-lane roundabout category includes roundabouts with one or more entries that flare from one to two lanes.

Urban double-lane roundabouts include all roundabouts in urban areas that have at least one entry with two lanes. They include roundabouts with entries on one or more approaches that flare from one to two lanes. These require wider circulatory roadways to accommodate more than one vehicle traveling side by side. Exhibit 1-11 provides an example of a typical urban multilane roundabout. The speeds at the entry, on the circulatory roadway, and at the exit are similar to those for the urban single-lane roundabouts. Again, it is important that the vehicular speeds be consistent throughout the roundabout. The geometric design will include raised splitter islands, no truck apron, a nonmountable central island, and appropriate horizontal deflection.

See Chapters 6 and 7 for special design considerations for pedestrians and bicycles.

Alternate routes may be provided for bicyclists who choose to bypass the roundabout. Bicycle and pedestrian pathways must be clearly delineated with sidewalk construction and landscaping to direct users to the appropriate crossing locations and alignment. Urban double-lane roundabouts located in areas with high pedestrian or bicycle volumes may have special design recommendations such as those provided in Chapters 6 and 7. The design of these roundabouts is based on the methods used in the United Kingdom, with influences from Australia and France.

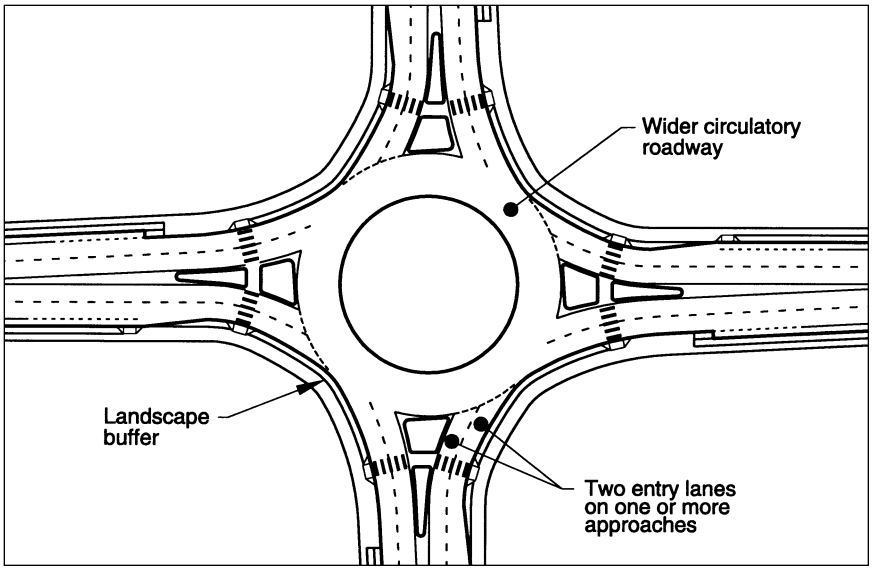


Exhibit 1-11. Typical urban double-lane roundabout.

1.6.6 Rural single-lane roundabouts

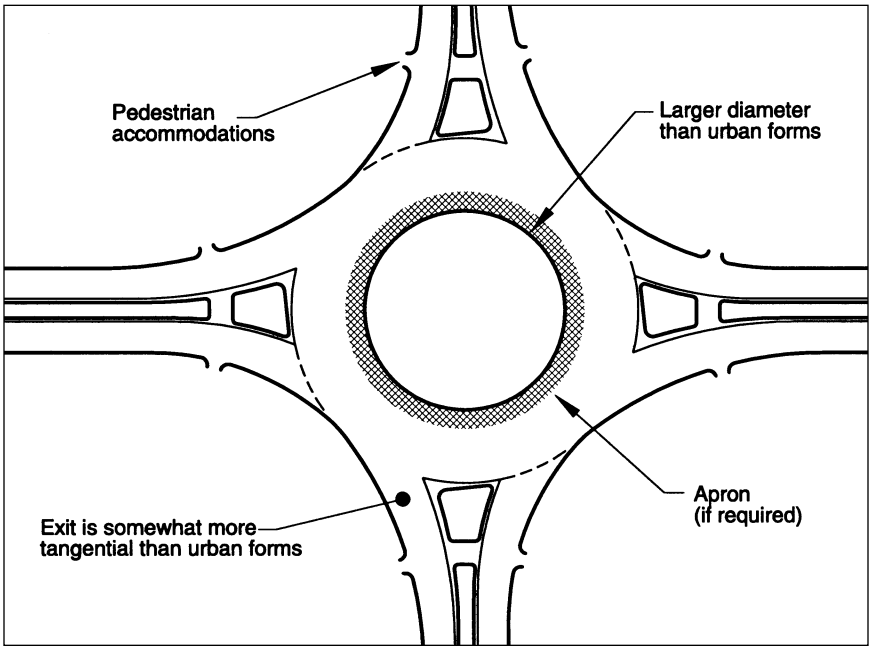
Because of their higher approach speeds, rural single-lane roundabouts require supplementary geometric and traffic control device treatments on the approaches.

Rural single-lane roundabouts generally have high average approach speeds in the range of 80 to 100 km/h (50 to 60 mph). They require supplementary geometric and traffic control device treatments on approaches to encourage drivers to slow to an appropriate speed before entering the roundabout. Rural roundabouts may have larger diameters than urban roundabouts to allow slightly higher speeds at the entries, on the circulatory roadway, and at the exits. This is possible if few pedestrians are expected at these intersections, currently and in future. There is preferably no apron because their larger diameters should accommodate larger vehicles. Supplemental geometric design elements include extended and raised splitter islands, a nonmountable central island, and adequate horizontal deflection. The design of these roundabouts is based primarily on the methods used by Australia, France, and the United Kingdom. Exhibit 1-12 provides an example of a typical rural single-lane roundabout.

Rural roundabouts that may become part of an urbanized area should include urban roundabout design features.

Rural roundabouts that may one day become part of an urbanized area should be designed as urban roundabouts, with slower speeds and pedestrian treatments. However, in the interim, they should be designed with supplementary approach and entry features to achieve safe speed reduction.

Exhibit 1-12. Typical rural single-lane roundabout.



1.6.7 Rural double-lane roundabouts

Rural double-lane roundabouts have higher entry speeds and larger diameters than their urban counterparts.

Rural double-lane roundabouts have speed characteristics similar to rural single-lane roundabouts with average approach speeds in the range of 80 to 100 km/h (50 to 60 mph). They differ in having two entry lanes, or entries flared from one to two lanes, on one or more approaches. Consequently, many of the characteristics and design features of rural double-lane roundabouts mirror those of their urban counterparts. The main design differences are designs with higher entry speeds and larger diameters, and recommended supplementary approach treatments. The design of these roundabouts is based on the methods used by the United Kingdom, Australia, and France. Exhibit 1-13 provides an example of a typical rural double-lane roundabout. Rural roundabouts that may one day become part of an urbanized area should be designed for slower speeds, with design details that fully accommodate pedestrians and bicyclists. However, in the interim they should be designed with approach and entry features to achieve safe speed reduction.

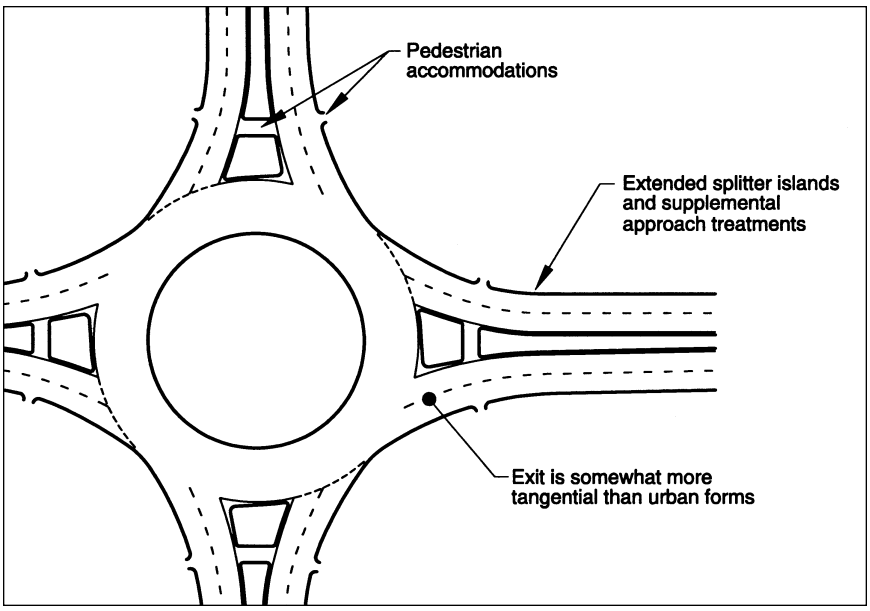
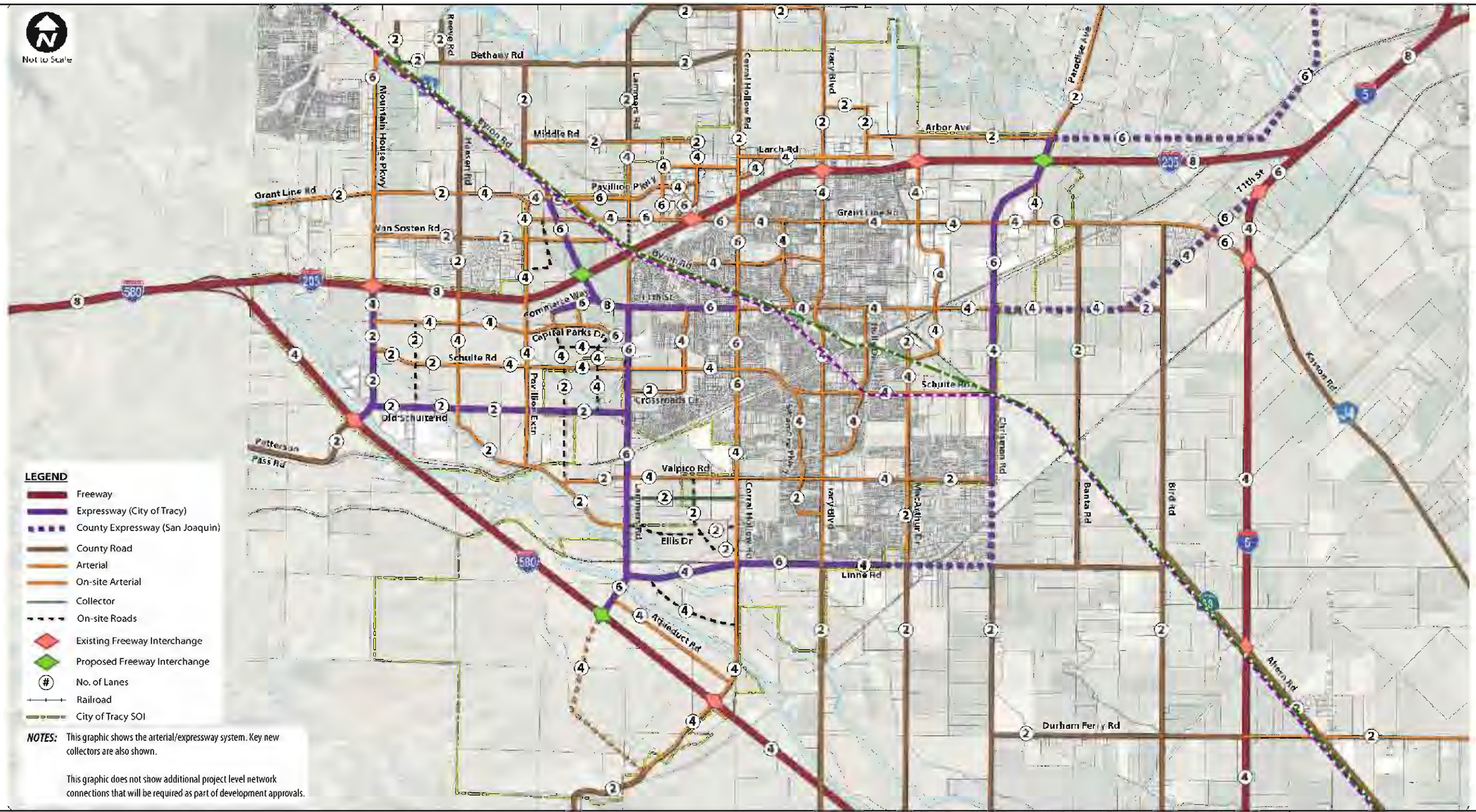


Exhibit 1-13. Typical rural double-lane roundabout.

APPENDIX G

PIPELINES LOCATION MAPS



Source: City of Tracy, "City of Tracy Citywide Roadway & Transportation Master Plan," September 2010.

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CALIFORNIA LOCATION MAP

Historical Old Valley Pipeline (OVP)

Historical Tidewater Associated Oil Company (TAOC) Pipeline

HISTORICAL PIPELINE RIGHTS OF WAYS

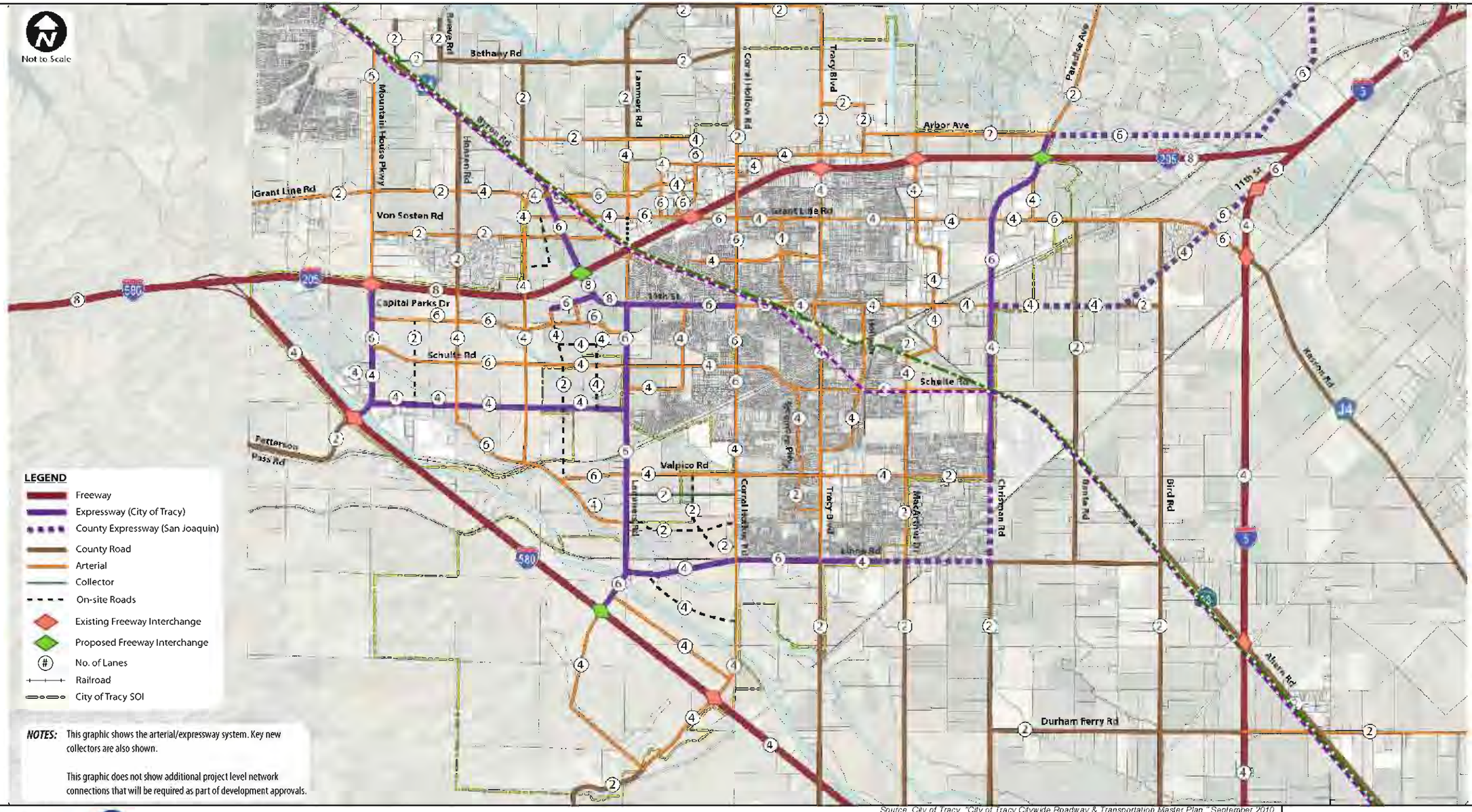
2035 ROADWAY NETWORK

Tracy, California

DATE 12/17/2010 | ANALYST HOANGTA | FIGURE 1

SAIC The Benham Companies, LLC A Wholly Owned Subsidiary

FILE: \\SACGIS\GIS\CADD\HPPBTRM\MANAGEMENTSTRATEGY\STAKEHOLDER CONTACT\PROJECTS\SAN JOAQUIN\2010\HPPMS_FIG1_TRACYTRANSPORTMP_2010_12.MXD



Source: City of Tracy, "City of Tracy Citywide Roadway & Transportation Master Plan," September 2010.

Historical Old Valley Pipeline (OVP)

Historical Tidewater Associated Oil Company (TAOC) Pipeline

HISTORICAL PIPELINE RIGHTS OF WAYS

BUILDOUT ROADWAY NETWORK

Tracy, California

DATE 12/17/2010 | ANALYST HOANGTA | FIGURE 2

The Benham Companies, LLC
A Wholly Owned Subsidiary

FILE: N:\SAC\GIS\GIS\CAD\HPPBTR\MANAGEMENTSTRATEGY\STAKEHOLDER CONTACT\PROJECTS\SAN JOAQUIN\2010\HPPMS_FIG2_TRACYTRANSPORTMP_2010_12.MXD



#	Existing Locations	Existing Crossing Type	Future Crossing Type	Existing Lanes	2035 Lanes
1	Lammers Road south of Valpico Road	At-Grade	At-Grade	2	6
2	Lammers Road north of Linne Road	At-Grade	Grade Separated	2	6
5	Corral Hollow Road north of Linne Road	At-Grade	At-Grade	2	4
8	Tracy Boulevard north of Linne Road	At-Grade	At-Grade	2	4
15	MacArthur Dr south of 6th Street	At-Grade	Close	2	Maintain Ped & Bike Access Only
16	Chrisman Road at Schulte Road	At-Grade	At-Grade	2	4
25	Grant Line Road at Byron Road	At-Grade	Relocate to 26	2	No Crossing

	Future Locations	Existing Crossing Type	Future Crossing Type	Existing Lanes	2035 Lanes
9	North MacArthur Drive at 11th Street (N-S)	Grade Separated	Grade Separated	4	4
21	MacArthur Drive Extension	No Crossing	At-Grade	0	4
22	Chrisman Road north of 11th Street	No Crossing	Grade Separated	0	4
23	Hansen Road east of Pavillion Parkway Ext.	No Crossing	Grade Separated	0	4
24	Pavillion Parkway east of Lammers Road	No Crossing	Grade Separated	0	8
26	Lammers Road at Byron Road	No Crossing	Relocate from 25	0	2

Source: City of Tracy, "City of Tracy Citywide Roadway & Transportation Master Plan," September 2010.

Historical Old Valley Pipeline (OVP)

Historical Tidewater Associated Oil Company (TAOC) Pipeline

HISTORICAL PIPELINE RIGHTS OF WAYS

RAILROAD CROSSINGS - IMPROVEMENTS AND FUTURE LOCATIONS

Tracy, California

DATE 12/17/2010 | ANALYST HOANGTA | FIGURE 3

The Benham Companies, LLC
A Wholly Owned Subsidiary

FILE: \\SACGIS\GIS\CAD\HPBTR\MANAGEMENTSTRATEGY\STAKEHOLDER COMTACT\PROJECTS\SANJOAQUIN\2010\HPPMS_FIG3_TRACYTRANSPORTMP_2010_12.MXD

APPENDIX H

CONCEPTUAL LAYOUTS OF INTERSECTION IMPROVEMENTS



CONCEPT PLANS FOR INTERSECTION
#67 PAVILLION PARKWAY & BYRON ROAD (SHT 1 OF 4)
UPDATED 11-05-2010

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
3180 MAIN ROAD, SUITE 90
MARINA, CA 93933-911
PH 831.883.0107 • FAX 831.883.0107 • www.RBF.com



KEY MAP

SCALE: 1"=200'

PAVILLION PARKWAY

GRANT LINE RD

#56

LEGEND:

CONCEPT PLANS FOR INTERSECTION
#56 PAVILLION PARKWAY & GRANT LINE ROAD (SHT 2 OF 4)
UPDATED 11-05-2010

RBF CONSULTING
PLANNING | DESIGN | CONSTRUCTION
3180 MAIN ROAD, SUITE 90
MARINA, CA 93933-6111
PH 831.883.0167 • FAX 831.883.0167 • www.RBF.com

SCALE: 1"=200'

BYRON ROAD EXTENSION

PAVILLION PARKWAY EXTENSION

TWO LANE DIVIDED ARTERIAL
(SEE FIGURE 4.7-2a ARTERIAL STREET ROADWAY CROSS SECTIONS)

TWO LANE DIVIDED ARTERIAL
(SEE FIGURE 4.7-2a ARTERIAL STREET ROADWAY CROSS SECTIONS)

BYRON ROAD

BYRON ROAD EXTENSION

PAVILLION PARKWAY
(SEE FIGURE 4.7-2c ROADWAY CROSS SECTIONS)



KEY MAP

LEGEND:

- CITY LIMIT
- CITY SPHERE OF INFLUENCE
- PROPOSED RIGHT OF WAY
- PROPOSED IMPROVEMENT
- PROPOSED BRIDGE

CONCEPT PLANS FOR INTERSECTIONS
BYRON ROAD & PAVILLION PARKWAY EXTENSION AND BYRON ROAD& BYRON ROAD EXTENSION (SHT 3 OF 4)

UPDATED 11-05-2010

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
3180 IMJIN ROAD, SUITE 90
MARINA, CA 93933-911
PH 831.883.0167 • FAX 831.883.0407 • www.RBF.com



CONCEPT PLANS FOR INTERSECTIONS

BYRON ROAD & PAVILLION PARKWAY EXTENSION AND BYRON ROAD& BYRON ROAD EXTENSION (SHT 4 OF 4)

UPDATED 11-05-2010

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
3180 MAIN ROAD, SUITE 2B
MARINA, CA 93933-611
PH 831.883.0167 • FAX 831.883.0167 • www.RBF.com



CONCEPT PLANS FOR INTERSECTIONS
#44 LINNE ROAD & CORRAL HOLLOW AND #45 LINNE ROAD & TRACY BOULEVARD

UPDATED 11-05-2010

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
3180 IMJIN ROAD, SUITE 110
MARINA, CA 93933-5111
PH 831.883.8187 ■ FAX 831.883.9967 ■ www.RBF.com

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CONCEPT PLANS FOR INTERSECTION
#32 MACARTHUR DRIVE & 11TH STREET
UPDATED 11-05-2010

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
3180 MAIN ROAD, SUITE 110
MARINA, CA 93933-338
PH 831.883.0157 • FAX 831.883.0867 • www.RBF.com

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APPENDIX I

COST ESTIMATE WORKSHEETS

OVERPASS/UNDERPASS/BRIDGES/CULVERTS/

Overpass/Underpass/Bridges/Culvert/Railroad Cost Estimates

Type/Location	Replace or Widen	Length (ft)	Existing Width (ft)	Water Channel/ Freeway Length (ft)	Future (BUILDOUT)						BO/Horizon Year	Future Area (ft^2)	Structure and Earthwork Cost	ROW Area (ft^2)	ROW/Easement Cost	CIP Funding		Total Cost	CIP Funding	
					Travel Width	# Lanes	Sidewalks	Bike Facility	Bike Width	K rail & Sep	Total Width					Project #	Amount (c)		Project #	Amount (c)
Overpass/Underpass																				
I-580/Corral Hollow Road	Replace Bridge	350	34	155	52	4	5	lanes	10	4	80	28,000	$ 12,600,000	8,970	$ 31,000			$ 12,631,000		
I-580/Lammers Road	New Overcrossing	350	0	0	86	6	5	path	10	6	107	37,450	$ 16,853,000	37,450	$ 129,000			$ 16,982,000		
I-205 Pavilion Parkway overcrossing	New Overcrossing	350	0	155	52	4	5	path	10	6	80	28,000	$ 12,600,000	15,600	$ 54,000			$ 12,654,000		
I-580/Mountain House overcrossing	New Overcrossing	350	0	155	52	4	5	path	10	6	80	28,000	$ 12,600,000	15,600	$ 54,000			$ 12,654,000		
I-205/Paradise Road	Replace Bridge	290	34	155	52	4	5	path	10	6	80	23,200	$ 10,440,000	6,210	$ 21,000			$ 10,461,000		
Railroad Crossings																				
Lammers Road Railroad Crossing #2	New Bridge	100	0	100	86	6	5	path	10	6	107	10,700	$ 6,420,000	10,700	$ 37,000			$ 6,457,000		
11th Street/MacArthur Drive #9	New Bridge																	$ 29,000,000		$ 20,000,000
Chrisman Road Railroad Crossing at #22	New Bridge	100	0	100	86	6	5	path	10	6	107	10,700	$ 6,420,000	10,700	$ 37,000			$ 6,457,000		
Hansen Road Railroad Crossing #23	New Bridge	100	0	100	86	6	5	path	10	6	107	10,700	$ 6,420,000	10,700	$ 37,000			$ 6,457,000		
Lammers Road at Valpico Road #1	Widen from 2-4 lanes																	$ 300,000		
Corral Hollow Road north of Linne Road # 5	Widen from 2-4 lanes																	$ 300,000		
Tracy Boulevard north of Linne Road #8	Widen from 2-4 lanes																	$ 300,000		
MacArthur Drive south of 6th Street #15	Close, keep bike, ped																	$ 150,000		
Chrisman Road at Schulte Road #16	Widen from 2-4 lanes																	$ 300,000		
MacArthur Drive Extension #21	New 4 lane crossing																	$ 500,000		
Lammers Road at Byron Road #26 relocate: Grant Line	Relocate 2 Lane Crossing																	$ 300,000		
Bridges																				
Delta Mendota Canal/Mountain House Parkway	Widen	335	36	115	64	4	0	path	10	4	78	14,070	$ 4,925,000	14,070	$ 16,000			$ 4,941,000		
California Aqueduct/Mountain House Parkway	Widen	350	72	115	86	6	0	path	10	4	100	9,800	$ 2,940,000	6,580	$ 23,000			$ 2,963,000		
Delta Mendota Canal/Old Schulte Road	Widen	325	49	110	71	4	0	path	10	4	85	11,700	$ 4,095,000	11,700	$ 13,000			$ 4,108,000		
Delta Mendota Aqueduct/Lammers Road	Replace	130	26	105	86	6	0	path	10	4	100	13,000	$ 3,900,000	9,620	$ 11,000			$ 3,911,000		
California Aqueduct/Lammers Road	Replace	170	24	130	86	6	0	path	10	4	100	17,000	$ 5,100,000	12,920	$ 15,000			$ 5,115,000		
Delta Mendota Canal/Corral Hollow Road	Replace	130	29	105	52	4	0	path	10	4	66	8,580	$ 2,574,000	4,810	$ 6,000			$ 2,580,000	73PP-054	$ 446,000
California Aqueduct/Corral Hollow Road	Replace	220	35	150	52	4	0	path	10	4	66	14,520	$ 4,356,000	6,820	$ 8,000			$ 4,364,000		
Culvert																				
Upper Main Canal/Lammers Road	Widen	65	93	30	86	4	0	path	10	4	100	455	$ 239,000	455	$ 1,000			$ 240,000		
Upper Main Canal/Corral Hollow Roac	none	60	0	0	0	4	0	path	0	0	0	-	$ -	0	$ -			$ -		
Subtotal													**$ 112,482,000**		**$ 493,000**			**$ 144,125,000**		**$ 20,446,000**
Contingencies (20%)																		$ 28,825,000		
Engineering Design and Planing (10%)																		$ 14,413,000		
Construction Management (10%)																		$ 14,413,000		
Program Administration (5%)																		$ 7,206,000		
Grand Total																		**$ 208,982,000**		
Grand Total (With CIP Funding)																		**$ 188,536,000**		

Notes:
RR Bridge crossing : include 100% of bridge cost for earthwork estimate.
RR Crossing #24, Pavillion Parkway east of Lammerss cost included in intersection improvements.
RR Crossing #9, MacArthur Drive at 11th RR crossing included in Overpass.
Freeway overpasses and Lammer canal widening include 50% cost for earthwork/approaches
Length includes tapers/transition to main roadway
ROW cost of $150,000/acre assumed for overpass/underpass. Construction easement cost of $50,000/acre assumed for bridges and culverts.
New structure cost of $300/s.f. includes includes both the superstructure and substructure and assumes low structure height, no environmental constraints or aesthetic issues, dry conditions, no bridge skews, spread footings, and no stage construction.
Widening structure cost of $350/s.f.

INTERSECTIONS

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: AT

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	AC		$ 10,000.00	$0.00
1.2	Excavation & Compaction	CY		$ 20.00	$0.00
	SUBTOTAL				**$0.00**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON		$ 80.00	$0.00
2.2	Aggregate Base, Class 2 (18")	CY		$ 60.00	$0.00
2.3	Miscellaneous Curbs	LF		$ 16.00	$0.00
2.4	PCC Sidewalk	SF		$ 5.00	$0.00
2.5	Soil Stabalization (50% of roadways at $1 per SF)	SF		$ 0.50	$0.00
	SUBTOTAL				**$0.00**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF		$ 12.00	$0.00
3.2	Utility Coordination	LS		$ 25,000.00	$0.00
4.5	Utilities- SS, DW, etc. (Budget Allowance)	LS		$ 200,000.00	$0.00
	SUBTOTAL				**$0.00**
4	**DRAINAGE**				
4.1	18" RCP, Class III	LF		$ 120.00	$0.00
4.2	48" RCP, Class III	LF		$ 200.00	$0.00
4.3	Catch Basin	EA		$ 4,000.00	$0.00
4.4	Storm Drain MH	EA		$ 5,000.00	$0.00
	SUBTOTAL				**$0.00**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LS		$ 1.00	$0.00
5.2	Roadway Striping	LS		$ 4.00	$0.00
5.3	Traffic Signal & Lighting	LS		$ 250,000.00	$0.00
5.4	Street Lighting Improvements	EA		$ 5,000.00	$0.00
	Traffic Signal Modification	LS		$ 25,000.00	$0.00
	SUBTOTAL				**$0.00**
	SUBTOTAL (ITEMS 1-5)				**$0.00**
6	**MISCELLANEOUS**				
6.1	Traffic Control System	LS		$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$0.00	$0.00
	SUBTOTAL				**$0.00**
	SUBTOTAL (ITEMS 1-6)				**$0.00**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$0.00	$0.00
7.2	Engineering Design and Planning (10% ITEMS 1-6)		10%	$0.00	$0.00
7.3	Construction Management (10% ITEMS 1-6)		10%	$0.00	$0.00
7.4	Program Administration (5% ITEMS 1-6)		5%	$0.00	$0.00
	SUBTOTAL				**$0.00**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	AC		$ 150,000.00	$0.00
8.2	Construction Easement	AC		$ 50,000.00	$0.00
	SUBTOTAL				**$0.00**
	GRAND TOTAL (ITEMS 1-8)				**$0.00**

3/20/2012

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	AC	0	$ 10,000.00	$0.00
1.2	Excavation & Compaction	CY	0	$ 20.00	$0.00
	SUBTOTAL				**$0.00**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0	$ 80.00	$0.00
2.2	Aggregate Base, Class 2 (18")	CY	0	$ 50.00	$0.00
2.3	Miscellaneous Curbs	LF	0	$ 16.00	$0.00
2.4	PCC Sidewalk	SF	0	$ 5.00	$0.00
	SUBTOTAL				**$0.00**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	0	$ 12.00	$0.00
3.2	Utility Coordination	LS	0	$ 25,000.00	$0.00
4.5	Utilities- SS, DW, etc. (Budget Allowance)	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$0.00**
4	**DRAINAGE**				
4.1	18" RCP, Class III	LF	0	$ 120.00	$0.00
4.2	48" RCP, Class III	LF	0	$ 200.00	$0.00
4.3	Catch Basin	EA	0	$ 4,000.00	$0.00
4.4	Storm Drain MH	EA	0	$ 5,000.00	$0.00
	SUBTOTAL				**$0.00**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	EA	1.0	$ 250.00	$250.00
5.2	Roadway Striping	LS	250.0	$ 4.00	$1,000.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	1	$ 25,000.00	$25,000.00
	SUBTOTAL				**$26,250.00**
	SUBTOTAL (ITEMS 1-5)				**$26,250.00**
6	**MISCELLANEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$2,625.00	$2,625.00
	SUBTOTAL				**$2,625.00**
	SUBTOTAL (ITEMS 1-6)				**$28,875.00**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$5,775.00	$5,775.00
7.2	Engineering Design and Planning (10% ITEMS 1-6)		10%	$2,887.50	$2,887.50
7.3	Construction Management (10% ITEMS 1-6)		10%	$2,887.50	$2,887.50
7.4	Program Administration (5% ITEMS 1-6)		5%	$1,443.75	$1,443.75
	SUBTOTAL				**$12,993.75**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	AC	0.0	$ 150,000.00	$0.00
8.2	Construction Easement	AC	0.0	$ 50,000.00	$0.00
	SUBTOTAL				**$0.00**
	GRAND TOTAL (ITEMS 1-8)				**$41,868.75**

Use $45,000

Typical Lane Add with Restriping - No ROW take or widening required
Assume 250' of striping required and minor signal modification

Typical Cost for RBF Restripe only-No ROW

3/20/2012

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	AC	0.07	$ 10,000.00	$688.71
1.2	Excavation & Compaction	CY	444.4	$ 20.00	$8,888.89
	SUBTOTAL				**$9,577.59**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	116.3	$ 80.00	$9,300.00
2.2	Aggregate Base, Class 2 (18")	CY	166.7	$ 30.00	$5,000.00
2.3	Miscellaneous Curbs	LF	250.0	$ 16.00	$4,000.00
2.4	PCC Sidewalk	SF	0	$ 5.00	$0.00
	SUBTOTAL				**$18,300.00**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	0	$ 12.00	$0.00
	SUBTOTAL				**$0.00**
4	**DRAINAGE (costs under ITEM 6.3)**				
4.1	18" RCP, Class III	LF	0	$ 120.00	$0.00
4.2	48" RCP, Class III	LF	0	$ 200.00	$0.00
4.3	Catch Basin	EA	0	$ 4,000.00	$0.00
4.4	Storm Drain MH	EA	0	$ 5,000.00	$0.00
	SUBTOTAL				**$0.00**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	EA	2.0	$ 250.00	$500.00
5.2	Roadway Striping	LS	250.0	$ 4.00	$1,000.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	1	$ 50,000.00	$50,000.00
	SUBTOTAL				**$51,500.00**
	SUBTOTAL (ITEMS 1-5)				**$79,377.59**
6	**MISCELLANEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$7,937.76	$7,937.76
6.3	Utility and drainage	LS	20%	$15,875.52	$15,875.52
	SUBTOTAL				**$23,813.28**
	SUBTOTAL (ITEMS 1-6)				**$103,190.87**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$20,638.17	$20,638.17
7.2	Engineering Design and Planning (10% ITEMS 1-6)		10%	$10,319.09	$10,319.09
7.3	Construction Management (10% ITEMS 1-6)		10%	$10,319.09	$10,319.09
7.4	Program Administration (5% ITEMS 1-6)		5%	$5,159.54	$5,159.54
	SUBTOTAL				**$46,435.89**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	AC	0.07	$ 150,000.00	$10,330.58
8.2	Construction Easement	AC	0.1	$ 50,000.00	$3,443.53
	SUBTOTAL				**$13,774.10**
	GRAND TOTAL (ITEMS 1-8)				**$163,400.87**

Use $205,000

Typical Lane Add - ROW take or widening required (assume 12' width)
Assume 250' of striping required and moderate signal modification

Typical Cost for RBF Lane Add w ROW

3/20/2012

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	AC	0.005	$ 10,000.00	$45.91
1.2	Excavation & Compaction	CY	14.8	$ 20.00	$296.30
	SUBTOTAL				**$342.21**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	7.8	$ 80.00	$620.00
2.2	Aggregate Base, Class 2 (18")	CY	11.1	$ 30.00	$333.33
2.3	Miscellaneous Curbs	LF	68.0	$ 16.00	$1,088.00
2.4	PCC Sidewalk	SF	0	$ 5.00	$0.00
	SUBTOTAL				**$2,041.33**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	200.0	$ 12.00	$2,400.00
	SUBTOTAL				**$2,400.00**
4	**DRAINAGE**				
4.1	18" RCP, Class III	LF	0	$ 120.00	$0.00
4.2	48" RCP, Class III	LF	0	$ 200.00	$0.00
4.3	Catch Basin	EA	0	$ 4,000.00	$0.00
4.4	Storm Drain MH	EA	0	$ 5,000.00	$0.00
	SUBTOTAL				**$0.00**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	EA	1.0	$ 250.00	$250.00
5.2	Roadway Striping	LS	250.0	$ 4.00	$1,000.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	1	$ 25,000.00	$25,000.00
	SUBTOTAL				**$26,250.00**
	SUBTOTAL (ITEMS 1-5)				**$31,033.54**
6	**MISCELLANEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$3,103.35	$3,103.35
	SUBTOTAL				**$3,103.35**
	SUBTOTAL (ITEMS 1-6)				**$34,136.90**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$6,827.38	$6,827.38
7.2	Engineering Design and Planning (10% ITEMS 1-6)		10%	$3,413.69	$3,413.69
7.3	Construction Management (10% ITEMS 1-6)		10%	$3,413.69	$3,413.69
7.4	Program Administration (5% ITEMS 1-6)		5%	$1,706.84	$1,706.84
	SUBTOTAL				**$15,361.60**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	AC	0	$ 150,000.00	$0.00
8.2	Construction Easement	AC	0	$ 50,000.00	$0.00
	SUBTOTAL				**$0.00**
	GRAND TOTAL (ITEMS 1-8)				**$49,498.50**

Use $52,000

Add Free RT island - assume triangle (20' base, ht)
Assume 250' of striping required and minor signal modification

Typical Cost for RBF Add Free RT island

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	AC	0	$ 10,000.00	$0.00
1.2	Excavation & Compaction	CY	0	$ 40.00	$0.00
	SUBTOTAL				**$0.00**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0	$ 100.00	$0.00
2.2	Aggregate Base, Class 2 (18")	CY	0	$ 80.00	$0.00
2.3	Miscellaneous Curbs	LF	0	$ 25.00	$0.00
2.4	PCC Sidewalk	SF	0	$ 6.00	$0.00
	SUBTOTAL				**$0.00**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	0	$ 20.00	$0.00
	SUBTOTAL				**$0.00**
4	**DRAINAGE**				
4.1	18" RCP, Class III	LF	0	$ 120.00	$0.00
4.2	48" RCP, Class III	LF	0	$ 200.00	$0.00
4.3	Catch Basin	EA	0	$ 4,000.00	$0.00
4.4	Storm Drain MH	EA	0	$ 5,000.00	$0.00
	SUBTOTAL				**$0.00**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	EA	0	$ 250.00	$0.00
5.2	Roadway Striping	LS	0	$ 4.00	$0.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements	EA	0	$ 5,000.00	$0.00
	Roundabout	LS	1	$ 300,000.00	$300,000.00
	SUBTOTAL				**$300,000.00**
	SUBTOTAL (ITEMS 1-5)				**$300,000.00**
6	**MISCELLANEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$30,000.00	$30,000.00
	SUBTOTAL				**$30,000.00**
	SUBTOTAL (ITEMS 1-6)				**$330,000.00**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$66,000.00	$66,000.00
7.2	Engineering Design and Planning (10% ITEMS 1-6)		10%	$33,000.00	$33,000.00
7.3	Construction Management (10% ITEMS 1-6)		10%	$33,000.00	$33,000.00
7.4	Program Administration (5% ITEMS 1-6)		5%	$16,500.00	$16,500.00
	SUBTOTAL				**$148,500.00**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition (10% ITEMS 1-6)	AC	10%	$33,000.00	$33,000.00
8.2	Construction Easement	AC	0.0	$ 50,000.00	$0.00
	SUBTOTAL				**$33,000.00**
	GRAND TOTAL (ITEMS 1-8)				**$511,500.00**

Cost to construct roundabout obtained from other studies **Use $515,000**

Assume ROW costs are 10% of costs before contingencies

Typical Cost for Roundabout

7/25/2011

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	AC	0	$ 10,000.00	$0.00
1.2	Excavation & Compaction	CY	0	$ 40.00	$0.00
	SUBTOTAL				**$0.00**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0	$ 100.00	$0.00
2.2	Aggregate Base, Class 2 (18")	CY	0	$ 80.00	$0.00
2.3	Miscellaneous Curbs	LF	0	$ 25.00	$0.00
2.4	PCC Sidewalk	SF	0	$ 6.00	$0.00
	SUBTOTAL				**$0.00**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	0	$ 20.00	$0.00
	SUBTOTAL				**$0.00**
4	**DRAINAGE**				
4.1	18" RCP, Class III	LF	0	$ 120.00	$0.00
4.2	48" RCP, Class III	LF	0	$ 200.00	$0.00
4.3	Catch Basin	EA	0	$ 4,000.00	$0.00
4.4	Storm Drain MH	EA	0	$ 5,000.00	$0.00
	SUBTOTAL				**$0.00**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LS	0	$ 1.00	$0.00
5.2	Roadway Striping	LS	0	$ 4.00	$0.00
5.3	Traffic Signal & Lighting	LS	1	$ 250,000.00	$250,000.00
5.4	Street Lighting Improvements	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 25,000.00	$0.00
	SUBTOTAL				**$250,000.00**
	SUBTOTAL (ITEMS 1-5)				**$250,000.00**
6	**MISCELLANEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$25,000.00	$25,000.00
	SUBTOTAL				**$25,000.00**
	SUBTOTAL (ITEMS 1-6)				**$275,000.00**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$55,000.00	$55,000.00
7.2	Engineering Design and Planning (10% ITEMS 1-6)		10%	$27,500.00	$27,500.00
7.3	Construction Management (10% ITEMS 1-6)		10%	$27,500.00	$27,500.00
7.4	Program Administration (5% ITEMS 1-6)		5%	$13,750.00	$13,750.00
	SUBTOTAL				**$123,750.00**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	AC	0	$ 150,000.00	$0.00
8.2	Construction Easement	AC	0	$ 50,000.00	$0.00
	SUBTOTAL				**$0.00**
	GRAND TOTAL (ITEMS 1-8)				**$398,750.00**

Cost to construct signal obtained from other studies **Use $400,000**

Typical Cost for Signal

ROADWAY SEGMENTS

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0022	$ 10,000.00	$22.50
1.2	Excavation & Compaction	CY	5.4	$ 20.00	$108.89
	SUBTOTAL				**$131.39**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	2.6	$ 80.00	$204.60
2.2	Aggregate Base, Class 2 (18")	CY	4.6	$ 60.00	$273.33
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12") (Assume 50% of roads will require)	SF	120.0	$ 0.50	$60.00
	SUBTOTAL				**$569.93**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance) - calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 333.33	$333.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$333.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	6.0	$ 1.00	$6.00
5.2	Roadway Striping	LF	6.0	$ 4.00	$24.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements - calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$30.00**
	SUBTOTAL (ITEMS 1-5)				**$1,256.65**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$125.66	$125.66
	SUBTOTAL				**$125.66**
	SUBTOTAL (ITEMS 1-6)				**$1,382.31**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$276.46	$276.46
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$138.23	$138.23
7.3	Construction Management (10% ITEMS 1-6)		10%	$138.23	$138.23
7.4	Program Administration (5% ITEMS 1-6)		5%	$69.12	$69.12
	SUBTOTAL				**$622.04**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.0037	$ 150,000.00	$547.52
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$570.48**
	GRAND TOTAL (ITEMS 1-8)				**$2,574.83**

TIF Costs

new 8L Parkway per LF

Utility & streetlight costs calculated separately

Assumptions:

clear/grub - 3 travel lanes plus median - 82' + two 8' shoulders	AC	0.0022
excavate/compact - 82' at 18" + two 8' shoulders	CY	5.44
66' travel lanes		
Hot Mix Asphalt Concrete Pavement (6")	TON	2.6
Aggregate Base, Class 2 (18") + two 8' unpaved shoulders	CY	4.6
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk -	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x 6 lines (4 travel lane, 2 median stripes)	LF	30
Right-of-Way Acquisition (159' ROW line to ROW line)	Ac	0.0037
construction easement - 10' each side outside of ROW	Ac	0.0005

*Updated 1.26.

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0017	$ 10,000.00	$17.45
1.2	Excavation & Compaction	CY	4.2	$ 40.00	$168.89
	SUBTOTAL				**$186.34**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	1.7	$ 60.00	$102.30
2.2	Aggregate Base, Class 2 (18")	CY	3.3	$ 60.00	$200.00
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12") (Assume 50% of roads will require)	SF	120.0	$ 0.50	$60.00
	SUBTOTAL				**$394.30**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance) - calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 303.33	$303.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$303.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	4.0	$ 1.00	$4.00
5.2	Roadway Striping	LF	4.0	$ 4.00	$16.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements - calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$20.00**
	SUBTOTAL (ITEMS 1-5)				**$1,095.97**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$109.60	$109.60
	SUBTOTAL				**$109.60**
	SUBTOTAL (ITEMS 1-6)				**$1,205.56**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$241.11	$241.11
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$120.56	$120.56
7.3	Construction Management (10% ITEMS 1-6)		10%	$120.56	$120.56
7.4	Program Administration (5% ITEMS 1-6)		5%	$60.28	$60.28
	SUBTOTAL				**$542.50**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.0031	$ 150,000.00	$471.76
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$494.72**
	GRAND TOTAL (ITEMS 1-8)				**$2,242.79**

TIF Costs

new 6L Parkway per LF

Utility & streetlight costs calculated separately

Assumptions:

clear/grub - 2 travel lanes plus median - 60' + two 8' shoulders	AC	0.0017
excavate/compact - 60' at 18" + two 8' shoulders	CY	4.22
44' travel lanes		
Hot Mix Asphalt Concrete Pavement (6")	TON	1.7
Aggregate Base, Class 2 (18") + two 8' shoulders	CY	3.3
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk -	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x 4 lines (2 travel lane, 2 median stripes)	LF	20
Right-of-Way Acquisition (137' ROW line to ROW line)	Ac	0.0031

*Updated 1.2

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0012	$ 10,000.00	$12.40
1.2	Excavation & Compaction	CY	3.0	$ 20.00	$60.00
	SUBTOTAL				**$72.40**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	1.0	$ 80.00	$80.60
2.2	Aggregate Base, Class 2 (18")	CY	2.3	$ 60.00	$140.00
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	76.0	$ 0.50	$38.00
	SUBTOTAL				**$290.60**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance) - calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 259.33	$259.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$259.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	4.0	$ 1.00	$4.00
5.2	Roadway Striping	LF	4.0	$ 4.00	$16.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements - calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$20.00**
	SUBTOTAL (ITEMS 1-5)				**$834.33**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$83.43	$83.43
	SUBTOTAL				**$83.43**
	SUBTOTAL (ITEMS 1-6)				**$917.76**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$183.55	$183.55
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$91.78	$91.78
7.3	Construction Management (10% ITEMS 1-6)		10%	$91.78	$91.78
7.4	Program Administration (5% ITEMS 1-6)		5%	$45.89	$45.89
	SUBTOTAL				**$412.99**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.0026	$ 150,000.00	$396.01
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$418.96**
	GRAND TOTAL (ITEMS 1-8)				**$1,749.71**

TIF Costs

new 4L Parkway per LF

Utility & streetlight costs calculated separately

Assumptions:

clear/grub - travel lanes plus median - 38' + two 8' shoulders	AC	0.0012
excavate/compact - 38' at 18"+ two 8' shoulders	CY	3.00
Hot Mix Asphalt Concrete Pavement (6") 2 x13' Travel Lanes	TON	1.0
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	2.3
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x 4 lines (2 travel lane, 2 median stripes)	LF	20
Right-of-Way Acquisition (115' total width)	Ac	0.0026 *Updated 1.2

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0013	$ 10,000.00	$13.31
1.2	Excavation & Compaction	CY	3.2	$ 20.00	$64.44
	SUBTOTAL				**$77.76**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	1.0	$ 80.00	$80.60
2.2	Aggregate Base, Class 2 (18")	CY	2.3	$ 60.00	$140.00
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	42.0	$ 0.50	$21.00
	SUBTOTAL				**$273.60**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination- calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance)- calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 259.33	$259.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$259.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	2.0	$ 1.00	$2.00
5.2	Roadway Striping	LF	2.0	$ 4.00	$8.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements- calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$10.00**
	SUBTOTAL (ITEMS 1-5)				**$812.69**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$81.27	$81.27
	SUBTOTAL				**$81.27**
	SUBTOTAL (ITEMS 1-6)				**$893.96**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$178.79	$178.79
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$89.40	$89.40
7.3	Construction Management (10% ITEMS 1-6)		10%	$89.40	$89.40
7.4	Program Administration (5% ITEMS 1-6)		5%	$44.70	$44.70
	SUBTOTAL				**$402.28**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.0017	$ 150,000.00	$254.82
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$277.78**
	GRAND TOTAL (ITEMS 1-8)				**$1,574.02**

2L Arterial per LF Utility & streetlight costs calculated separately

Assumptions

clear/grub - median 16'	AC	0.0013
excavate/compact - 16' at 18"	CY	3.22
26' travel lanes		
Hot Mix Asphalt Concrete Pavement (6")	TON	1.0
Aggregate Base, Class 2 (18")	CY	2.3
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x2 median stripes	LF	2
Right-of-Way Acquisition (74' ROW to ROW line)	Ac	0.0017 *Updated 1.2

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0012	$ 10,000.00	$11.94
1.2	Excavation & Compaction	CY	3.0	$ 20.00	$60.00
	SUBTOTAL				**$71.94**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0.9	$ 80.00	$68.20
2.2	Aggregate Base, Class 2 (18")	CY	2.1	$ 60.00	$126.67
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	64.0	$ 0.50	$32.00
	SUBTOTAL				**$258.87**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance) - calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 259.33	$259.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$259.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	2.0	$ 1.00	$2.00
5.2	Roadway Striping	LF	2.0	$ 4.00	$8.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements - calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$10.00**
	SUBTOTAL (ITEMS 1-5)				**$792.13**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$79.21	$79.21
	SUBTOTAL				**$79.21**
	SUBTOTAL (ITEMS 1-6)				**$871.35**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$174.27	$174.27
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$87.13	$87.13
7.3	Construction Management (10% ITEMS 1-6)		10%	$87.13	$87.13
7.4	Program Administration (5% ITEMS 1-6)		5%	$43.57	$43.57
	SUBTOTAL				**$392.11**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.00227	$ 150,000.00	$340.91
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$363.87**
	GRAND TOTAL (ITEMS 1-8)				**$1,627.32**

TIF Costs

4L Major Arterial with Median per LF

Utility & streetlight costs calculated separately

Assumptions:

clear/grub - travel lanes plus median - 38'+ two 8' shoulders	AC	0.0012
excavate/compact - 38' at 18"+ two 8' shoulders	CY	3.00
22' travel lanes		
Hot Mix Asphalt Concrete Pavement (6")	TON	0.9
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	2.1
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x2 lanes stripes	LF	10
Right-of-Way Acquisition (99' ROW line to ROW line)	Ac	0.0023 *Updated 1.2(
construction easement - 10' each side outside of ROW	Ac	0.0005

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0009	$ 10,000.00	$8.72
1.2	Excavation & Compaction	CY	2.1	$ 20.00	$42.22
	SUBTOTAL				**$50.95**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0.9	$ 80.00	$68.20
2.2	Aggregate Base, Class 2 (18")	CY	2.1	$ 60.00	$126.67
2.3	Miscelaneous Curbs	LF	0.0	$ 16.00	$0.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	48.0	$ 0.50	$24.00
	SUBTOTAL				**$218.87**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	0.0	$ 12.00	$0.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance) - calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$0.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 227.33	$227.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$227.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	3.0	$ 1.00	$3.00
5.2	Roadway Striping	LF	3.0	$ 4.00	$12.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements - calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$15.00**
	SUBTOTAL (ITEMS 1-5)				**$512.14**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$51.21	$51.21
	SUBTOTAL				**$51.21**
	SUBTOTAL (ITEMS 1-6)				**$563.36**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$112.67	$112.67
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$56.34	$56.34
7.3	Construction Management (10% ITEMS 1-6)		10%	$56.34	$56.34
7.4	Program Administration (5% ITEMS 1-6)		5%	$28.17	$28.17
	SUBTOTAL				**$253.51**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.00191	$ 150,000.00	$285.81
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$308.77**
	GRAND TOTAL (ITEMS 1-8)				**$1,125.64**

TIF Costs

4L undivided Arterial per LF

Utility & streetlight costs calculated separately

Assumptions:

clear/grub - travel lanes plus median - 22'+ two 8' shoulders	AC	0.0009
excavate/compact - 22' at 18"+ two 8' shoulders	CY	2.11
22' travel lanes		
Hot Mix Asphalt Concrete Pavement (6")	TON	0.9
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	2.1
Miscelaneous Curbs x 0	LF	0.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - none	SF	0.0
drainage based on Linne costs	LF	1.0
signs and striping x3 lanes stripes	LF	15
Right-of-Way Acquisition (83' ROW line to ROW line)	Ac	0.0019

*Updated 1.26.12

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0017	$ 10,000.00	$17.45
1.2	Excavation & Compaction	CY	4.2	$ 20.00	$84.44
	SUBTOTAL				**$101.89**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	1.7	$ 80.00	$136.40
2.2	Aggregate Base, Class 2 (18")	CY	3.3	$ 60.00	$200.00
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	86.0	$ 0.50	$43.00
	SUBTOTAL				**$411.40**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance) - calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$303.33	$303.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$303.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	4.0	$ 1.00	$4.00
5.2	Roadway Striping	LF	4.0	$ 4.00	$16.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements - calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$20.00**
	SUBTOTAL (ITEMS 1-5)				**$1,028.62**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$102.86	$102.86
	SUBTOTAL				**$102.86**
	SUBTOTAL (ITEMS 1-6)				**$1,131.49**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$226.30	$226.30
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$113.15	$113.15
7.3	Construction Management (10% ITEMS 1-6)		10%	$113.15	$113.15
7.4	Program Administration (5% ITEMS 1-6)		5%	$56.57	$56.57
	SUBTOTAL				**$509.17**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.003	$ 150,000.00	$416.67
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$439.62**
	GRAND TOTAL (ITEMS 1-8)				**$2,080.28**

TIF Costs

6L Arterial per LF

Utility & streetlight costs calculated separately

Assumptions:

clear/grub - travel lanes plus median - 60'+ two 8' shoulders	AC	0.0017
excavate/compact - 60' at 18"+ two 8' shoulders	CY	4.22
44' travel lanes		
Hot Mix Asphalt Concrete Pavement (6")	TON	1.7
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	3.3
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x4 lanes stripes (2 travel lanes and 2 median)	LF	20
Right-of-Way Acquisition (121' ROW line to ROW line)	Ac	0.0028 *Updated 1.26
construction easement - 10' each side outside of ROW	Ac	0.0005

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0000	$ 10,000.00	$0.00
1.2	Excavation & Compaction	CY	0.0	$ 20.00	$0.00
	SUBTOTAL				**$0.00**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0.0	$ 80.00	$0.00
2.2	Aggregate Base, Class 2 (18")	CY	0.0	$ 60.00	$0.00
2.3	Miscelaneous Curbs	LF	0.0	$ 16.00	$0.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	30.0	$ 0.50	$15.00
	SUBTOTAL				**$0.00**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	0.0	$ 10.00	$0.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance) - calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$0.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$259.33	$259.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$259.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	1.0	$ 1.00	$1.00
5.2	Roadway Striping	LF	1.0	$ 4.00	$4.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements - calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$5.00**
	SUBTOTAL (ITEMS 1-5)				**$264.33**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$26.43	$26.43
	SUBTOTAL				**$26.43**
	SUBTOTAL (ITEMS 1-6)				**$290.77**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$58.15	$58.15
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$29.08	$29.08
7.3	Construction Management (10% ITEMS 1-6)		10%	$29.08	$29.08
7.4	Program Administration (5% ITEMS 1-6)		5%	$14.54	$14.54
	SUBTOTAL				**$130.85**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.0000	$ 150,000.00	$0.00
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$22.96**
	GRAND TOTAL (ITEMS 1-8)				**$444.57**

use $500 per LF

2L collector <2k vehicles per day per LF (construct median only)

Utility & streetlight costs calculated separately

Assumptions

clear/grub - median 0'	AC	0.0000
excavate/compact - 0' at 18"	CY	0.00
32' travel lanes		
Hot Mix Asphalt Concrete Pavement (6")	TON	0.0
Aggregate Base, Class 2 (18")	CY	0.0
Miscelaneous Curbs x 2	LF	0.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - none	SF	0.0
drainage based on Linne costs	LF	1.0
signs and striping x3 (2 bike, one centerline)	LF	5
Right-of-Way Acquisition (curb to curb)	Ac	0.0000
construction easement - 10' each side outside of ROW	Ac	0.0005

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

Program Costs (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0017	$ 10,000.00	$17.45
1.2	Excavation & Compaction	CY	4.2	$ 20.00	$84.44
	SUBTOTAL				**$101.89**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	2.6	$ 80.00	$204.60
2.2	Aggregate Base, Class 2 (18")	CY	4.6	$ 60.00	$273.33
2.3	Miscelaneous Curbs	LF	4.0	$ 16.00	$64.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	120.0	$ 0.50	$60.00
	SUBTOTAL				**$601.93**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance)- calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 333.33	$333.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$333.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	6.0	$ 1.00	$6.00
5.2	Roadway Striping	LF	6.0	$ 4.00	$24.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements- calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$30.00**
	SUBTOTAL (ITEMS 1-5)				**$1,259.15**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$125.92	$125.92
	SUBTOTAL				**$125.92**
	SUBTOTAL (ITEMS 1-6)				**$1,385.07**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$277.01	$277.01
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$138.51	$138.51
7.3	Construction Management (10% ITEMS 1-6)		10%	$138.51	$138.51
7.4	Program Administration (5% ITEMS 1-6)		5%	$69.25	$69.25
	SUBTOTAL				**$623.28**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.00000	$ 150,000.00	$0.00
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$22.96**
	GRAND TOTAL (ITEMS 1-8)				**$2,031.31**

TIF Costs

use $2,000 per LF

Widen 2L (for 20-25 travel width - no sidewalks) to 6L Parkway

Utility & streetlight calculated separately

Assumptions

clear/grub - future travel/median 60'+ two 8' shoulders	AC	0.0017
excavate/compact - future travel/median 60' + two 8' shoulders	CY	4.22
66' travel lanes - 20' existing = 46' new travel		
Hot Mix Asphalt Concrete Pavement (6")	TON	2.6
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	4.6
Miscelaneous Curbs x 2	LF	4.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x 6 lines (2 travel, 2 median stripes)	LF	30
Right-of-Way Acquisition (with Existing 60' ROW) - no add'l req (only need 60')	Ac	0.0000
construction easement - 10' each side outside of ROW	Ac	0.0005

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

Program Costs (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0013	$ 10,000.00	$12.86
1.2	Excavation & Compaction	CY	3.1	$ 20.00	$62.22
	SUBTOTAL				**$75.08**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0.9	$ 80.00	$68.20
2.2	Aggregate Base, Class 2 (18")	CY	2.1	$ 60.00	$126.67
2.3	Miscelaneous Curbs	LF	4.0	$ 16.00	$64.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	98.0	$ 0.50	$49.00
	SUBTOTAL				**$307.87**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance)- calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 303.33	$303.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$303.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	6.0	$ 1.00	$6.00
5.2	Roadway Striping	LF	6.0	$ 4.00	$24.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements- calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$30.00**
	SUBTOTAL (ITEMS 1-5)				**$908.27**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$90.83	$90.83
	SUBTOTAL				**$90.83**
	SUBTOTAL (ITEMS 1-6)				**$999.10**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$199.82	$199.82
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$99.91	$99.91
7.3	Construction Management (10% ITEMS 1-6)		10%	$99.91	$99.91
7.4	Program Administration (5% ITEMS 1-6)		5%	$49.96	$49.96
	SUBTOTAL				**$449.60**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.00000	$ 150,000.00	$0.00
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$22.96**
	GRAND TOTAL (ITEMS 1-8)				**$1,471.66**

$1,448.70

TIF Costs

use $2,000 per LF

Utility & streetlight calculated separately

Widen 4L (for 20-25 travel width - no sidewalks) to 6L Parkway

Assumptions

clear/grub - future travel/median 60'+ two 8' shoulders	AC	0.0013
excavate/compact - future travel/median 60' + two 8' shoulders	CY	3.11
44' travel lanes - 20' existing = 24' new travel		
Hot Mix Asphalt Concrete Pavement (6")	TON	0.9
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	2.1
Miscelaneous Curbs x 2	LF	4.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x 6 lines (2 travel, 2 median stripes)	LF	30
Right-of-Way Acquisition (with Existing 60' ROW) - no add'l req (only need 60')	Ac	0.0000
construction easement - 10' each side outside of ROW	Ac	0.0005

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0000	$ 10,000.00	$0.00
1.2	Excavation & Compaction	CY	3.0	$ 20.00	$60.00
	SUBTOTAL				**$60.00**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0.9	$ 80.00	$68.20
2.2	Aggregate Base, Class 2 (18")	CY	2.1	$ 60.00	$126.67
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	98.0	$ 0.50	$49.00
	SUBTOTAL				**$275.87**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance)- calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 259.33	$259.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$259.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	4.0	$ 1.00	$4.00
5.2	Roadway Striping	LF	4.0	$ 4.00	$16.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements- calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$20.00**
	SUBTOTAL (ITEMS 1-5)				**$807.20**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$80.72	$80.72
	SUBTOTAL				**$80.72**
	SUBTOTAL (ITEMS 1-6)				**$887.92**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$177.58	$177.58
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$88.79	$88.79
7.3	Construction Management (10% ITEMS 1-6)		10%	$88.79	$88.79
7.4	Program Administration (5% ITEMS 1-6)		5%	$44.40	$44.40
	SUBTOTAL				**$399.56**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.0000	$ 150,000.00	$0.00
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$22.96**
	GRAND TOTAL (ITEMS 1-8)				**$1,310.44**

TIF Costs

use $1,500 per LF

new 4L Parkway per LF

Utility & streetlight calculated separately

Assumptions

clear/grub - future travel/median 38' + two 8' shoulders	AC	0.0012
excavate/compact - future travel/median 38' + two 8' shoulders	CY	3.00
22' travel lanes - 25' exist = no add'l needed		
Hot Mix Asphalt Concrete Pavement (6")	TON	0.9
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	2.1
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x 4 lines (2 travel, 2 median stripes)	LF	20
Right-of-Way Acquisition (with Existing 60' ROW) - no add'l req (only need 38')	Ac	0.0000
construction easement - 10' each side outside of ROW	Ac	0.0005

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0012	$ 10,000.00	$12.40
1.2	Excavation & Compaction	CY	3.0	$ 20.00	$60.00
	SUBTOTAL				**$72.40**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0.9	$ 80.00	$68.20
2.2	Aggregate Base, Class 2 (18")	CY	2.1	$ 60.00	$126.67
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	98.0	$ 0.50	$49.00
	SUBTOTAL				**$275.87**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance)- calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 259.33	$259.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$259.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	4.0	$ 1.00	$4.00
5.2	Roadway Striping	LF	4.0	$ 4.00	$16.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements- calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$20.00**
	SUBTOTAL (ITEMS 1-5)				**$819.59**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$81.96	$81.96
	SUBTOTAL				**$81.96**
	SUBTOTAL (ITEMS 1-6)				**$901.55**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$180.31	$180.31
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$90.16	$90.16
7.3	Construction Management (10% ITEMS 1-6)		10%	$90.16	$90.16
7.4	Program Administration (5% ITEMS 1-6)		5%	$45.08	$45.08
	SUBTOTAL				**$405.70**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.00000	$ 150,000.00	$0.00
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$22.96**
	GRAND TOTAL (ITEMS 1-8)				**$1,330.21**

Widen 2L (for 20-25 travel width - no sidewalks) to 4L Art Utility & streetlight calculated separately

Assumptions

clear/grub - future travel/median 38' + two 8' shoulders	AC	0.0012
excavate/compact - future travel/median 38' + two 8' shoulders	CY	3.00
22' travel lanes - 25' exist = no add'l needed		
Hot Mix Asphalt Concrete Pavement (6")	TON	0.9
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	2.1
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x 4 lines (2 travel, 2 median stripes)	LF	20
Right-of-Way Acquisition (with Existing 60' ROW) - no add'l req (only need 38')	Ac	0.0000
construction easement - 10' each side outside of ROW	Ac	0.0005

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0009	$ 10,000.00	$8.72
1.2	Excavation & Compaction	CY	2.1	$ 20.00	$42.22
	SUBTOTAL				**$50.95**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	0.9	$ 80.00	$68.20
2.2	Aggregate Base, Class 2 (18")	CY	2.1	$ 60.00	$126.67
2.3	Miscelaneous Curbs	LF	0.0	$ 16.00	$0.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	98.0	$ 0.50	$49.00
	SUBTOTAL				**$243.87**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	0.0	$ 12.00	$0.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance)- calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$0.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 227.33	$227.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$227.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	5.0	$ 1.00	$5.00
5.2	Roadway Striping	LF	5.0	$ 4.00	$20.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements- calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$25.00**
	SUBTOTAL (ITEMS 1-5)				**$547.14**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$54.71	$54.71
	SUBTOTAL				**$54.71**
	SUBTOTAL (ITEMS 1-6)				**$601.86**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$120.37	$120.37
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$60.19	$60.19
7.3	Construction Management (10% ITEMS 1-6)		10%	$60.19	$60.19
7.4	Program Administration (5% ITEMS 1-6)		5%	$30.09	$30.09
	SUBTOTAL				**$270.84**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.00000	$ 150,000.00	$0.00
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$22.96**
	GRAND TOTAL (ITEMS 1-8)				**$895.65**

TIF Costs

use $1,100 per LF

Widen 2L (for 20-25 travel width - no sidewalks) to 4L undiv Art Utility & streetlight calculated separately

Assumptions

clear/grub - future travel/median 22' + two 8' shoulders	AC	0.0009
excavate/compact - future travel/median 22' + two 8' shoulders	CY	2.11
22' Travel - 20' existing = 2 new travel		
Hot Mix Asphalt Concrete Pavement (6")	TON	0.9
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	2.1
Miscelaneous Curbs x 0	LF	0.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - none	SF	0.0
drainage based on Linne costs	LF	1.0
signs and striping x5 lanes stripes (4 travel, 1 med)	LF	25
Right-of-Way Acquisition (with Existing 40' ROW) - no add'l req (only need 22')	Ac	0.0000

ENGINEER'S ESTIMATE

City of Tracy

City of Tracy Citywide Roadway & Transportation Master Plan

PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0017	$ 10,000.00	$17.45
1.2	Excavation & Compaction	CY	4.2	$ 20.00	$84.44
	SUBTOTAL				**$101.89**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	1.7	$ 80.00	$136.40
2.2	Aggregate Base, Class 2 (18")	CY	3.3	$ 60.00	$200.00
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	98.0	$ 0.50	$49.00
	SUBTOTAL				**$417.40**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance)- calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 303.33	$303.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$303.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	6.0	$ 1.00	$6.00
5.2	Roadway Striping	LF	6.0	$ 4.00	$24.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements- calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$30.00**
	SUBTOTAL (ITEMS 1-5)				**$1,044.62**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$104.46	$104.46
	SUBTOTAL				**$104.46**
	SUBTOTAL (ITEMS 1-6)				**$1,149.08**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$229.82	$229.82
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$114.91	$114.91
7.3	Construction Management (10% ITEMS 1-6)		10%	$114.91	$114.91
7.4	Program Administration (5% ITEMS 1-6)		5%	$57.45	$57.45
	SUBTOTAL				**$517.09**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.000	$ 150,000.00	$0.00
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$22.96**
	GRAND TOTAL (ITEMS 1-8)				**$1,689.13**

TIF Costs

use $1950 per LF

Utility & streetlight calculated separately

Widen 2L to 6L Arterial per LF (existing 60' ROW)

Assumptions

clear/grub - future travel/median 60' + two 8' shoulders	AC	0.0017
excavate/compact - future travel/median 60' + two 8' shoulders	CY	4.22
44' travel - 20' existing = 24 new travel		
Hot Mix Asphalt Concrete Pavement (6")	TON	1.7
Aggregate Base, Class 2 (18")+ two 8' shoulders	CY	3.3
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x6 lanes stripes (4 travel lanes and 2 median)	LF	30
Right-of-Way Acquisition (with Existing 60' ROW) - no add'l req (only need 60')	Ac	0.0000
construction easement - 10' each side outside of ROW	Ac	0.0005

ENGINEER'S ESTIMATE

City of Tracy

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PRELIMINARY COST ESTIMATE 20%

Prepared By: NW

PROGRAM COSTS (Inside Travel lanes + median + shoulders; Outside curb lanes, landscape, sidewalk, lighting = developer)

ITEM	DESCRIPTION	UNIT	QUANTITY	UNIT COST	COST
	GENERAL				
1	**EARTHWORK**				
1.1	Clearing & Grubbing	Ac	0.0017	$ 10,000.00	$17.45
1.2	Excavation & Compaction	CY	4.2	$ 20.00	$84.44
	SUBTOTAL				**$101.89**
2	**STRUCTURAL SECTION**				
2.1	Hot Mix Asphalt Concrete Pavement (6")	TON	1.7	$ 80.00	$136.40
2.2	Aggregate Base, Class 2 (18")	CY	3.3	$ 60.00	$200.00
2.3	Miscelaneous Curbs	LF	2.0	$ 16.00	$32.00
2.4	PCC Sidewalk	SF	0.0	$ 5.00	$0.00
2.5	Soil Stabilization - Lime Treatment (12")	SF	98.0	$ 0.50	$49.00
	SUBTOTAL				**$417.40**
3	**SPECIALTY ITEMS**				
3.1	Median/Parkway Landscaping/Irrigation	SF	16.0	$ 12.00	$192.00
3.2	Utility Coordination - calculated separately	LS	0	$ 25,000.00	$0.00
4.5	Untilities- SS, DW, etc. (Budget Allowance)- calculated separately	LS	0	$ 200,000.00	$0.00
	SUBTOTAL				**$192.00**
4	**DRAINAGE**				
4.1	Total drainage (18", 48", manholes) based on Linne cost	LF	1.0	$ 303.33	$303.33
4.2					$0.00
4.3					$0.00
4.4					$0.00
	SUBTOTAL				**$303.33**
5	**TRAFFIC ITEMS**				
5.1	Roadway Signs	LF	6.0	$ 1.00	$6.00
5.2	Roadway Striping	LF	6.0	$ 4.00	$24.00
5.3	Traffic Signal & Lighting	LS	0	$ 250,000.00	$0.00
5.4	Street Lighting Improvements- calculated separately	EA	0	$ 5,000.00	$0.00
	Traffic Signal Modification	LS	0	$ 50,000.00	$0.00
	SUBTOTAL				**$30.00**
	SUBTOTAL (ITEMS 1-5)				**$1,044.62**
6	**MISCALLENEOUS**				
6.1	Traffic Control System	LS	0	$ 250,000.00	$0.00
6.2	Mobilization (10% ITEMS 1-5)	LS	10%	$104.46	$104.46
	SUBTOTAL				**$104.46**
	SUBTOTAL (ITEMS 1-6)				**$1,149.08**
7	**FEES**				
7.1	Contingencies (20% ITEMS 1-6)		20%	$229.82	$229.82
7.2	Engineering Design and Planing (10% ITEMS 1-6)		10%	$114.91	$114.91
7.3	Construction Management (10% ITEMS 1-6)		10%	$114.91	$114.91
7.4	Program Administration (5% ITEMS 1-6)		5%	$57.45	$57.45
	SUBTOTAL				**$517.09**
8	**RIGHT-OF-WAY**				
8.1	Right-of-Way Acquisition	Ac	0.000	$ 150,000.00	$0.00
8.2	Construction Easement	Ac	0.0005	$ 50,000.00	$22.96
	SUBTOTAL				**$22.96**
	GRAND TOTAL (ITEMS 1-8)				**$1,689.13**

TIF Costs

use $1950 per LF

Widen 4L to 6L Arterial per LF (existing 100' ROW)

Utility & streetlight calculated separately

Assumptions

clear/grub - future travel/median 60' + two 8' shoulders	AC	0.0017
excavate/compact - future travel/median 60'+ two 8' shoulders	CY	4.22
70' Curb-Curb - (existing travel lane > future curb so no new pavement)		
Hot Mix Asphalt Concrete Pavement (6")	TON	1.7
Aggregate Base, Class 2 (18")	CY	3.3
Miscelaneous Curbs x 2 (incl median)	LF	2.0
PCC Sidewalk - none	SF	0.0
Median/Parkway Landscaping - median only	SF	16.0
drainage based on Linne costs	LF	1.0
signs and striping x6 lanes stripes (4 travel lanes and 2 median)	LF	30
Right-of-Way Acquisition (with Existing 100' ROW) - no add'l req (only need 60')	Ac	0.0000

APPENDIX C:

AIR QUALITY AND GREENHOUSE GAS EMISSIONS DATA

Existing

San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	3215	1000sqft
Industrial Park	10850	1000sqft
Apartments Low Rise	6594	Dwelling Unit
Single Family Housing	20195	Dwelling Unit
Regional Shopping Center	1805	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	2	**Precipitation Freq (Days)**	51		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction modeled. Model used for area sources only.

Off-road Equipment -

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2011	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.47	3.47	0.00	0.00	3.48
Total	**0.00**	**0.04**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.47**	**3.47**	**0.00**	**0.00**	**3.48**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2011	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.47	3.47	0.00	0.00	3.48
Total	**0.00**	**0.04**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**3.47**	**3.47**	**0.00**	**0.00**	**3.48**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	523.50	31.76	2,004.33	5.85		0.00	295.49		0.00	295.47	39,099.76	35,144.19	74,243.95	183.85	0.64	78,302.69
Energy	5.80	50.27	26.41	0.32		0.00	4.01		0.00	4.01	0.00	158,170.46	158,170.46	5.66	2.78	159,151.27
Mobile	608.62	2,268.99	5,705.85	5.55	525.41	74.86	600.27	22.98	74.86	97.84	0.00	582,604.44	582,604.44	37.27	0.00	583,387.18
Waste						0.00	0.00		0.00	0.00	33,395.70	0.00	33,395.70	1,973.63	0.00	74,841.91
Water						0.00	0.00		0.00	0.00	0.00	90,021.16	90,021.16	1,707.29	43.77	139,443.96
Total	**1,137.92**	**2,351.02**	**7,736.59**	**11.72**	**525.41**	**74.86**	**899.77**	**22.98**	**74.86**	**397.32**	**72,495.46**	**865,940.25**	**938,435.71**	**3,907.70**	**47.19**	**1,035,127.01**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	523.50	31.76	2,004.33	5.85		0.00	295.49		0.00	295.47	39,099.76	35,144.19	74,243.95	183.85	0.64	78,302.69
Energy	5.80	50.27	26.41	0.32		0.00	4.01		0.00	4.01	0.00	158,170.46	158,170.46	5.66	2.78	159,151.27
Mobile	608.62	2,268.99	5,705.85	5.55	525.41	74.86	600.27	22.98	74.86	97.84	0.00	582,604.44	582,604.44	37.27	0.00	583,387.18
Waste						0.00	0.00		0.00	0.00	33,395.70	0.00	33,395.70	1,973.63	0.00	74,841.91
Water						0.00	0.00		0.00	0.00	0.00	90,021.16	90,021.16	1,707.29	43.77	139,443.96
Total	**1,137.92**	**2,351.02**	**7,736.59**	**11.72**	**525.41**	**74.86**	**899.77**	**22.98**	**74.86**	**397.32**	**72,495.46**	**865,940.25**	**938,435.71**	**3,907.70**	**47.19**	**1,035,127.01**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	3.41	3.41	0.00	0.00	3.41
Total	**0.00**	**0.04**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.41**	**3.41**	**0.00**	**0.00**	**3.41**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00	0.07
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.07**	**0.07**	**0.00**	**0.00**	**0.07**

3.2 Demolition - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.00	0.04	0.02	0.00		0.00	0.00		0.00	0.00	0.00	3.41	3.41	0.00	0.00	3.41
Total	**0.00**	**0.04**	**0.02**	**0.00**		**0.00**	**0.00**		**0.00**	**0.00**	**0.00**	**3.41**	**3.41**	**0.00**	**0.00**	**3.41**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.07	0.00	0.00	0.07
Total	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.07**	**0.07**	**0.00**	**0.00**	**0.07**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	608.62	2,268.99	5,705.85	5.55	525.41	74.86	600.27	22.98	74.86	97.84	0.00	582,604.44	582,604.44	37.27	0.00	583,387.18
Unmitigated	608.62	2,268.99	5,705.85	5.55	525.41	74.86	600.27	22.98	74.86	97.84	0.00	582,604.44	582,604.44	37.27	0.00	583,387.18
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	43,454.46	47,213.04	40025.58	126,059,549	126,059,549
Industrial Park	75,516.00	27,016.50	7920.50	154,506,964	154,506,964
Office Park	36,715.30	5,272.60	2443.40	68,489,475	68,489,475
Regional Shopping Center	77,506.70	90,195.85	45558.20	131,068,941	131,068,941
Single Family Housing	193,266.15	203,565.60	177110.15	557,625,426	557,625,426
Total	426,458.61	373,263.59	273,057.83	1,037,750,355	1,037,750,355

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.80	7.30	7.50	45.60	19.00	35.40

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Office Park	9.50	7.30	7.30	33.00	48.00	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	100,792.39	100,792.39	4.56	1.73	101,424.00
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	100,792.39	100,792.39	4.56	1.73	101,424.00
NaturalGas Mitigated	5.80	50.27	26.41	0.32		0.00	4.01		0.00	4.01	0.00	57,378.08	57,378.08	1.10	1.05	57,727.27
NaturalGas Unmitigated	5.80	50.27	26.41	0.32		0.00	4.01		0.00	4.01	0.00	57,378.08	57,378.08	1.10	1.05	57,727.27
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.43465e+007	0.51	4.35	1.85	0.03		0.00	0.35		0.00	0.35	0.00	5,034.69	5,034.69	0.10	0.09	5,065.33
Industrial Park	1.87705e+008	1.01	9.20	7.73	0.06		0.00	0.70		0.00	0.70	0.00	10,016.65	10,016.65	0.19	0.18	10,077.61
Office Park	3.69082e+007	0.20	1.81	1.52	0.01		0.00	0.14		0.00	0.14	0.00	1,969.56	1,969.56	0.04	0.04	1,981.55
Regional Shopping Center	2.21835e+007	0.12	1.09	0.91	0.01		0.00	0.08		0.00	0.08	0.00	1,183.79	1,183.79	0.02	0.02	1,191.00
Single Family Housing	7.34081e+008	3.96	33.83	14.39	0.22		0.00	2.73		0.00	2.73	0.00	39,173.38	39,173.38	0.75	0.72	39,411.78
Total		**5.80**	**50.28**	**26.40**	**0.33**		**0.00**	**4.00**		**0.00**	**4.00**	**0.00**	**57,378.07**	**57,378.07**	**1.10**	**1.05**	**57,727.27**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	9.43465e+007	0.51	4.35	1.85	0.03		0.00	0.35		0.00	0.35	0.00	5,034.69	5,034.69	0.10	0.09	5,065.33
Industrial Park	1.87705e+008	1.01	9.20	7.73	0.06		0.00	0.70		0.00	0.70	0.00	10,016.65	10,016.65	0.19	0.18	10,077.61
Office Park	3.69082e+007	0.20	1.81	1.52	0.01		0.00	0.14		0.00	0.14	0.00	1,969.56	1,969.56	0.04	0.04	1,981.55
Regional Shopping Center	2.21835e+007	0.12	1.09	0.91	0.01		0.00	0.08		0.00	0.08	0.00	1,183.79	1,183.79	0.02	0.02	1,191.00
Single Family Housing	7.34081e+008	3.96	33.83	14.39	0.22		0.00	2.73		0.00	2.73	0.00	39,173.38	39,173.38	0.75	0.72	39,411.78
Total		**5.80**	**50.28**	**26.40**	**0.33**		**0.00**	**4.00**		**0.00**	**4.00**	**0.00**	**57,378.07**	**57,378.07**	**1.10**	**1.05**	**57,727.27**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	2.52244e+007					7,338.05	0.33	0.13	7,384.04
Industrial Park	1.21195e+008					35,256.87	1.59	0.60	35,477.81
Office Park	3.74548e+007					10,896.02	0.49	0.19	10,964.30
Regional Shopping Center	2.4169e+007					7,031.02	0.32	0.12	7,075.08
Single Family Housing	1.38428e+008					40,270.42	1.82	0.69	40,522.78
Total						**100,792.38**	**4.55**	**1.73**	**101,424.01**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	2.52244e+007					7,338.05	0.33	0.13	7,384.04
Industrial Park	1.21195e+008					35,256.87	1.59	0.60	35,477.81
Office Park	3.74548e+007					10,896.02	0.49	0.19	10,964.30
Regional Shopping Center	2.4169e+007					7,031.02	0.32	0.12	7,075.08
Single Family Housing	1.38428e+008					40,270.42	1.82	0.69	40,522.78
Total						**100,792.38**	**4.55**	**1.73**	**101,424.01**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	523.50	31.76	2,004.33	5.85		0.00	295.49		0.00	295.47	39,099.76	35,144.19	74,243.95	183.85	0.64	78,302.69
Unmitigated	523.50	31.76	2,004.33	5.85		0.00	295.49		0.00	295.47	39,099.76	35,144.19	74,243.95	183.85	0.64	78,302.69
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	85.49					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	229.70					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	200.62	29.20	1,790.19	5.84		0.00	294.44		0.00	294.41	39,099.76	34,815.58	73,915.34	183.45	0.64	77,965.67
Landscaping	7.68	2.56	214.14	0.01		0.00	1.06		0.00	1.06	0.00	328.61	328.61	0.40	0.00	337.02
Total	**523.49**	**31.76**	**2,004.33**	**5.85**		**0.00**	**295.50**		**0.00**	**295.47**	**39,099.76**	**35,144.19**	**74,243.95**	**183.85**	**0.64**	**78,302.69**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	85.49					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	229.70					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	200.62	29.20	1,790.19	5.84		0.00	294.44		0.00	294.41	39,099.76	34,815.58	73,915.34	183.45	0.64	77,965.67
Landscaping	7.68	2.56	214.14	0.01		0.00	1.06		0.00	1.06	0.00	328.61	328.61	0.40	0.00	337.02
Total	**523.49**	**31.76**	**2,004.33**	**5.85**		**0.00**	**295.50**		**0.00**	**295.47**	**39,099.76**	**35,144.19**	**74,243.95**	**183.85**	**0.64**	**78,302.69**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					90,021.16	1,707.29	43.77	139,443.96
Unmitigated					90,021.16	1,707.29	43.77	139,443.96
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	429.626 / 270.851					956.88	13.16	0.34	1,339.06
Industrial Park	53348.8 / 0					84,575.84	1,632.24	41.83	131,818.80
Office Park	571.414 / 350.221					1,262.48	17.50	0.45	1,770.73
Regional Shopping Center	133.701 / 81.9457					295.40	4.09	0.11	414.32
Single Family Housing	1315.79 / 829.517					2,930.57	40.30	1.05	4,101.06
Total						**90,021.17**	**1,707.29**	**43.78**	**139,443.97**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	429.626 / 270.851					956.88	13.16	0.34	1,339.06
Industrial Park	53348.8 / 0					84,575.84	1,632.24	41.83	131,818.80
Office Park	571.414 / 350.221					1,262.48	17.50	0.45	1,770.73
Regional Shopping Center	133.701 / 81.9457					295.40	4.09	0.11	414.32
Single Family Housing	1315.79 / 829.517					2,930.57	40.30	1.05	4,101.06
Total						**90,021.17**	**1,707.29**	**43.78**	**139,443.97**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					33,395.70	1,973.63	0.00	74,841.91
Unmitigated					33,395.70	1,973.63	0.00	74,841.91
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	3033.24					615.72	36.39	0.00	1,379.87
Industrial Park	133538					27,107.10	1,601.98	0.00	60,748.76
Office Park	2989.95					606.93	35.87	0.00	1,360.18
Regional Shopping Center	1895.25					384.72	22.74	0.00	862.18
Single Family Housing	23061.2					4,681.22	276.65	0.00	10,490.92
Total						**33,395.69**	**1,973.63**	**0.00**	**74,841.91**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	3033.24					615.72	36.39	0.00	1,379.87
Industrial Park	133538					27,107.10	1,601.98	0.00	60,748.76
Office Park	2989.95					606.93	35.87	0.00	1,360.18
Regional Shopping Center	1895.25					384.72	22.74	0.00	862.18
Single Family Housing	23061.2					4,681.22	276.65	0.00	10,490.92
Total						**33,395.69**	**1,973.63**	**0.00**	**74,841.91**

9.0 Vegetation

Existing

San Joaquin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	3215	1000sqft
Industrial Park	10850	1000sqft
Apartments Low Rise	6594	Dwelling Unit
Single Family Housing	20195	Dwelling Unit
Regional Shopping Center	1805	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	2	**Precipitation Freq (Days)**	51		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction modeled. Model used for area sources only.

Off-road Equipment -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	9.96	79.99	47.35	0.07	0.20	4.11	4.30	0.01	4.11	4.11	0.00	7,669.36	0.00	0.89	0.00	7,688.12
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	9.96	79.99	47.35	0.07	0.01	4.11	4.11	0.01	4.11	4.11	0.00	7,669.36	0.00	0.89	0.00	7,688.12
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6,648.52	740.66	46,041.57	142.56		0.00	7,153.59		0.00	7,153.39	1,051,222.16	316,041.03		4,925.14	5.72	1,472,464.35
Energy	31.77	275.45	144.69	1.73		0.00	21.95		0.00	21.95		346,567.13		6.64	6.35	348,676.28
Mobile	4,000.01	14,135.89	35,939.99	37.09	3,897.93	459.67	4,357.60	142.99	459.67	602.66		4,252,273.75		247.15		4,257,463.80
Total	**10,680.30**	**15,152.00**	**82,126.25**	**181.38**	**3,897.93**	**459.67**	**11,533.14**	**142.99**	**459.67**	**7,778.00**	**1,051,222.16**	**4,914,881.91**		**5,178.93**	**12.07**	**6,078,604.43**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6,648.52	740.66	46,041.57	142.56		0.00	7,153.59		0.00	7,153.39	1,051,222.16	316,041.03		4,925.14	5.72	1,472,464.35
Energy	31.77	275.45	144.69	1.73		0.00	21.95		0.00	21.95		346,567.13		6.64	6.35	348,676.28
Mobile	4,000.01	14,135.89	35,939.99	37.09	3,897.93	459.67	4,357.60	142.99	459.67	602.66		4,252,273.75		247.15		4,257,463.80
Total	**10,680.30**	**15,152.00**	**82,126.25**	**181.38**	**3,897.93**	**459.67**	**11,533.14**	**142.99**	**459.67**	**7,778.00**	**1,051,222.16**	**4,914,881.91**		**5,178.93**	**12.07**	**6,078,604.43**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	9.84	79.87	45.95	0.07		4.10	4.10		4.10	4.10		7,510.82		0.88		7,529.33
Total	**9.84**	**79.87**	**45.95**	**0.07**		**4.10**	**4.10**		**4.10**	**4.10**		**7,510.82**		**0.88**		**7,529.33**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.12	1.40	0.00	0.20	0.01	0.20	0.01	0.01	0.01		158.54		0.01		158.79
Total	**0.12**	**0.12**	**1.40**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**		**158.54**		**0.01**		**158.79**

3.2 Demolition - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	9.84	79.87	45.95	0.07		4.10	4.10		4.10	4.10	0.00	7,510.82		0.88		7,529.33
Total	**9.84**	**79.87**	**45.95**	**0.07**		**4.10**	**4.10**		**4.10**	**4.10**	**0.00**	**7,510.82**		**0.88**		**7,529.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.12	1.40	0.00	0.01	0.01	0.01	0.01	0.01	0.01		158.54		0.01		158.79
Total	**0.12**	**0.12**	**1.40**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**		**158.54**		**0.01**		**158.79**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4,000.01	14,135.89	35,939.99	37.09	3,897.93	459.67	4,357.60	142.99	459.67	602.66		4,252,273.75		247.15		4,257,463.80
Unmitigated	4,000.01	14,135.89	35,939.99	37.09	3,897.93	459.67	4,357.60	142.99	459.67	602.66		4,252,273.75		247.15		4,257,463.80
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	43,454.46	47,213.04	40025.58	126,059,549	126,059,549
Industrial Park	75,516.00	27,016.50	7920.50	154,506,964	154,506,964
Office Park	36,715.30	5,272.60	2443.40	68,489,475	68,489,475
Regional Shopping Center	77,506.70	90,195.85	45558.20	131,068,941	131,068,941
Single Family Housing	193,266.15	203,565.60	177110.15	557,625,426	557,625,426
Total	426,458.61	373,263.59	273,057.83	1,037,750,355	1,037,750,355

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.80	7.30	7.50	45.60	19.00	35.40

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Office Park	9.50	7.30	7.30	33.00	48.00	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	31.77	275.45	144.69	1.73		0.00	21.95		0.00	21.95		346,567.13		6.64	6.35	348,676.28
NaturalGas Unmitigated	31.77	275.45	144.69	1.73		0.00	21.95		0.00	21.95		346,567.13		6.64	6.35	348,676.28
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	258484	2.79	23.82	10.14	0.15		0.00	1.93		0.00	1.93		30,409.83		0.58	0.56	30,594.90
Industrial Park	514260	5.55	50.42	42.35	0.30		0.00	3.83		0.00	3.83		60,501.21		1.16	1.11	60,869.41
Office Park	101118	1.09	9.91	8.33	0.06		0.00	0.75		0.00	0.75		11,896.28		0.23	0.22	11,968.68
Regional Shopping Center	60776.6	0.66	5.96	5.01	0.04		0.00	0.45		0.00	0.45		7,150.19		0.14	0.13	7,193.70
Single Family Housing	2.01118e+006	21.69	185.34	78.87	1.18		0.00	14.99		0.00	14.99		236,609.63		4.54	4.34	238,049.60
Total		**31.78**	**275.45**	**144.70**	**1.73**		**0.00**	**21.95**		**0.00**	**21.95**		**346,567.14**		**6.65**	**6.36**	**348,676.29**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	258.484	2.79	23.82	10.14	0.15		0.00	1.93		0.00	1.93		30,409.83		0.58	0.56	30,594.90
Industrial Park	514.26	5.55	50.42	42.35	0.30		0.00	3.83		0.00	3.83		60,501.21		1.16	1.11	60,869.41
Office Park	101.118	1.09	9.91	8.33	0.06		0.00	0.75		0.00	0.75		11,896.28		0.23	0.22	11,968.68
Regional Shopping Center	60.7766	0.66	5.96	5.01	0.04		0.00	0.45		0.00	0.45		7,150.19		0.14	0.13	7,193.70
Single Family Housing	2011.18	21.69	185.34	78.87	1.18		0.00	14.99		0.00	14.99		236,609.63		4.54	4.34	238,049.60
Total		**31.78**	**275.45**	**144.70**	**1.73**		**0.00**	**21.95**		**0.00**	**21.95**		**346,567.14**		**6.65**	**6.36**	**348,676.29**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6,648.52	740.66	46,041.57	142.56		0.00	7,153.59		0.00	7,153.39	1,051,222.16	316,041.03		4,925.14	5.72	1,472,464.35
Unmitigated	6,648.52	740.66	46,041.57	142.56		0.00	7,153.59		0.00	7,153.39	1,051,222.16	316,041.03		4,925.14	5.72	1,472,464.35
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	468.47					0.00	0.00		0.00	0.00						0.00
Consumer Products	1,258.64					0.00	0.00		0.00	0.00						0.00
Hearth	4,836.02	712.21	43,660.04	142.44		0.00	7,141.86		0.00	7,141.65	1,051,222.16	312,013.06		4,920.23	5.72	1,468,333.32
Landscaping	85.40	28.45	2,381.53	0.12		0.00	11.73		0.00	11.73		4,027.97		4.91		4,131.03
Total	**6,648.53**	**740.66**	**46,041.57**	**142.56**		**0.00**	**7,153.59**		**0.00**	**7,153.38**	**1,051,222.16**	**316,041.03**		**4,925.14**	**5.72**	**1,472,464.35**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	468.47					0.00	0.00		0.00	0.00						0.00
Consumer Products	1,258.64					0.00	0.00		0.00	0.00						0.00
Hearth	4,836.02	712.21	43,660.04	142.44		0.00	7,141.86		0.00	7,141.65	1,051,222.16	312,013.06		4,920.23	5.72	1,468,333.32
Landscaping	85.40	28.45	2,381.53	0.12		0.00	11.73		0.00	11.73		4,027.97		4.91		4,131.03
Total	**6,648.53**	**740.66**	**46,041.57**	**142.56**		**0.00**	**7,153.59**		**0.00**	**7,153.38**	**1,051,222.16**	**316,041.03**		**4,925.14**	**5.72**	**1,472,464.35**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Existing

San Joaquin County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	3215	1000sqft
Industrial Park	10850	1000sqft
Apartments Low Rise	6594	Dwelling Unit
Single Family Housing	20195	Dwelling Unit
Regional Shopping Center	1805	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	2	**Precipitation Freq (Days)**	51		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction modeled. Model used for area sources only.

Off-road Equipment -

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	9.97	80.01	47.25	0.07	0.20	4.11	4.30	0.01	4.11	4.11	0.00	7,649.87	0.00	0.89	0.00	7,668.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2011	9.97	80.01	47.25	0.07	0.01	4.11	4.11	0.01	4.11	4.11	0.00	7,649.87	0.00	0.89	0.00	7,668.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6,648.52	740.66	46,041.57	142.56		0.00	7,153.59		0.00	7,153.39	1,051,222.16	316,041.03		4,925.14	5.72	1,472,464.35
Energy	31.77	275.45	144.69	1.73		0.00	21.95		0.00	21.95		346,567.13		6.64	6.35	348,676.28
Mobile	4,016.27	14,599.71	36,559.21	33.71	3,897.93	472.65	4,370.58	142.99	472.65	615.64		3,881,333.31		255.32		3,886,694.94
Total	**10,696.56**	**15,615.82**	**82,745.47**	**178.00**	**3,897.93**	**472.65**	**11,546.12**	**142.99**	**472.65**	**7,790.98**	**1,051,222.16**	**4,543,941.47**		**5,187.10**	**12.07**	**5,707,835.57**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	6,648.52	740.66	46,041.57	142.56		0.00	7,153.59		0.00	7,153.39	1,051,222.16	316,041.03		4,925.14	5.72	1,472,464.35
Energy	31.77	275.45	144.69	1.73		0.00	21.95		0.00	21.95		346,567.13		6.64	6.35	348,676.28
Mobile	4,016.27	14,599.71	36,559.21	33.71	3,897.93	472.65	4,370.58	142.99	472.65	615.64		3,881,333.31		255.32		3,886,694.94
Total	**10,696.56**	**15,615.82**	**82,745.47**	**178.00**	**3,897.93**	**472.65**	**11,546.12**	**142.99**	**472.65**	**7,790.98**	**1,051,222.16**	**4,543,941.47**		**5,187.10**	**12.07**	**5,707,835.57**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2011

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	9.84	79.87	45.95	0.07		4.10	4.10		4.10	4.10		7,510.82		0.88		7,529.33
Total	**9.84**	**79.87**	**45.95**	**0.07**		**4.10**	**4.10**		**4.10**	**4.10**		**7,510.82**		**0.88**		**7,529.33**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.14	1.30	0.00	0.20	0.01	0.20	0.01	0.01	0.01		139.05		0.01		139.29
Total	**0.12**	**0.14**	**1.30**	**0.00**	**0.20**	**0.01**	**0.20**	**0.01**	**0.01**	**0.01**		**139.05**		**0.01**		**139.29**

3.2 Demolition - 2011

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	9.84	79.87	45.95	0.07		4.10	4.10		4.10	4.10	0.00	7,510.82		0.88		7,529.33
Total	**9.84**	**79.87**	**45.95**	**0.07**		**4.10**	**4.10**		**4.10**	**4.10**	**0.00**	**7,510.82**		**0.88**		**7,529.33**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.14	1.30	0.00	0.01	0.01	0.01	0.01	0.01	0.01		139.05		0.01		139.29
Total	**0.12**	**0.14**	**1.30**	**0.00**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**	**0.01**		**139.05**		**0.01**		**139.29**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	4,016.27	14,599.71	36,559.21	33.71	3,897.93	472.65	4,370.58	142.99	472.65	615.64		3,881,333.31		255.32		3,886,694.94
Unmitigated	4,016.27	14,599.71	36,559.21	33.71	3,897.93	472.65	4,370.58	142.99	472.65	615.64		3,881,333.31		255.32		3,886,694.94
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	43,454.46	47,213.04	40025.58	126,059,549	126,059,549
Industrial Park	75,516.00	27,016.50	7920.50	154,506,964	154,506,964
Office Park	36,715.30	5,272.60	2443.40	68,489,475	68,489,475
Regional Shopping Center	77,506.70	90,195.85	45558.20	131,068,941	131,068,941
Single Family Housing	193,266.15	203,565.60	177110.15	557,625,426	557,625,426
Total	426,458.61	373,263.59	273,057.83	1,037,750,355	1,037,750,355

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.80	7.30	7.50	45.60	19.00	35.40

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Office Park	9.50	7.30	7.30	33.00	48.00	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	31.77	275.45	144.69	1.73		0.00	21.95		0.00	21.95		346,567.13		6.64	6.35	348,676.28
NaturalGas Unmitigated	31.77	275.45	144.69	1.73		0.00	21.95		0.00	21.95		346,567.13		6.64	6.35	348,676.28
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	258484	2.79	23.82	10.14	0.15		0.00	1.93		0.00	1.93		30,409.83		0.58	0.56	30,594.90
Industrial Park	514260	5.55	50.42	42.35	0.30		0.00	3.83		0.00	3.83		60,501.21		1.16	1.11	60,869.41
Office Park	101118	1.09	9.91	8.33	0.06		0.00	0.75		0.00	0.75		11,896.28		0.23	0.22	11,968.68
Regional Shopping Center	60776.6	0.66	5.96	5.01	0.04		0.00	0.45		0.00	0.45		7,150.19		0.14	0.13	7,193.70
Single Family Housing	2.01118e+006	21.69	185.34	78.87	1.18		0.00	14.99		0.00	14.99		236,609.63		4.54	4.34	238,049.60
Total		**31.78**	**275.45**	**144.70**	**1.73**		**0.00**	**21.95**		**0.00**	**21.95**		**346,567.14**		**6.65**	**6.36**	**348,676.29**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	258.484	2.79	23.82	10.14	0.15		0.00	1.93		0.00	1.93		30,409.83		0.58	0.56	30,594.90
Industrial Park	514.26	5.55	50.42	42.35	0.30		0.00	3.83		0.00	3.83		60,501.21		1.16	1.11	60,869.41
Office Park	101.118	1.09	9.91	8.33	0.06		0.00	0.75		0.00	0.75		11,896.28		0.23	0.22	11,968.68
Regional Shopping Center	60.7766	0.66	5.96	5.01	0.04		0.00	0.45		0.00	0.45		7,150.19		0.14	0.13	7,193.70
Single Family Housing	2011.18	21.69	185.34	78.87	1.18		0.00	14.99		0.00	14.99		236,609.63		4.54	4.34	238,049.60
Total		**31.78**	**275.45**	**144.70**	**1.73**		**0.00**	**21.95**		**0.00**	**21.95**		**346,567.14**		**6.65**	**6.36**	**348,676.29**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	6,648.52	740.66	46,041.57	142.56		0.00	7,153.59		0.00	7,153.39	1,051,222.16	316,041.03		4,925.14	5.72	1,472,464.35
Unmitigated	6,648.52	740.66	46,041.57	142.56		0.00	7,153.59		0.00	7,153.39	1,051,222.16	316,041.03		4,925.14	5.72	1,472,464.35
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	468.47					0.00	0.00		0.00	0.00						0.00
Consumer Products	1,258.64					0.00	0.00		0.00	0.00						0.00
Hearth	4,836.02	712.21	43,660.04	142.44		0.00	7,141.86		0.00	7,141.65	1,051,222.16	312,013.06		4,920.23	5.72	1,468,333.32
Landscaping	85.40	28.45	2,381.53	0.12		0.00	11.73		0.00	11.73		4,027.97		4.91		4,131.03
Total	**6,648.53**	**740.66**	**46,041.57**	**142.56**		**0.00**	**7,153.59**		**0.00**	**7,153.38**	**1,051,222.16**	**316,041.03**		**4,925.14**	**5.72**	**1,472,464.35**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	468.47					0.00	0.00		0.00	0.00						0.00
Consumer Products	1,258.64					0.00	0.00		0.00	0.00						0.00
Hearth	4,836.02	712.21	43,660.04	142.44		0.00	7,141.86		0.00	7,141.65	1,051,222.16	312,013.06		4,920.23	5.72	1,468,333.32
Landscaping	85.40	28.45	2,381.53	0.12		0.00	11.73		0.00	11.73		4,027.97		4.91		4,131.03
Total	**6,648.53**	**740.66**	**46,041.57**	**142.56**		**0.00**	**7,153.59**		**0.00**	**7,153.38**	**1,051,222.16**	**316,041.03**		**4,925.14**	**5.72**	**1,472,464.35**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Tracy GP

San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	5072	1000sqft
Industrial Park	21777	1000sqft
Apartments Low Rise	9858	Dwelling Unit
Single Family Housing	29068	Dwelling Unit
Regional Shopping Center	5750	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	2	**Precipitation Freq (Days)**	51		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction modeled. Model used for area sources only.

Off-road Equipment -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	723.80	33.70	2,152.36	6.09		0.00	308.69		0.00	308.65	40,644.69	51,066.58	91,711.27	191.43	0.93	96,018.80
Energy	9.18	79.97	44.30	0.50		0.00	6.35		0.00	6.35	0.00	270,180.14	270,180.14	9.85	4.74	271,856.80
Mobile	361.48	1,380.63	3,050.74	10.57	925.11	52.24	977.35	16.50	50.08	66.57	0.00	827,004.31	827,004.31	23.15	0.00	827,490.42
Waste						0.00	0.00		0.00	0.00	64,248.10	0.00	64,248.10	3,796.95	0.00	143,984.14
Water						0.00	0.00		0.00	0.00	0.00	178,333.29	178,333.29	3,394.39	87.02	276,591.26
Total	**1,094.46**	**1,494.30**	**5,247.40**	**17.16**	**925.11**	**52.24**	**1,292.39**	**16.50**	**50.08**	**381.57**	**104,892.79**	**1,326,584.32**	**1,431,477.11**	**7,415.77**	**92.69**	**1,615,941.42**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	723.80	33.70	2,152.36	6.09		0.00	308.69		0.00	308.65	40,644.69	51,066.58	91,711.27	191.43	0.93	96,018.80
Energy	9.18	79.97	44.30	0.50		0.00	6.35		0.00	6.35	0.00	270,180.14	270,180.14	9.85	4.74	271,856.80
Mobile	361.48	1,380.63	3,050.74	10.57	925.11	52.24	977.35	16.50	50.08	66.57	0.00	827,004.31	827,004.31	23.15	0.00	827,490.42
Waste						0.00	0.00		0.00	0.00	64,248.10	0.00	64,248.10	3,796.95	0.00	143,984.14
Water						0.00	0.00		0.00	0.00	0.00	178,333.29	178,333.29	3,394.39	87.02	276,591.26
Total	**1,094.46**	**1,494.30**	**5,247.40**	**17.16**	**925.11**	**52.24**	**1,292.39**	**16.50**	**50.08**	**381.57**	**104,892.79**	**1,326,584.32**	**1,431,477.11**	**7,415.77**	**92.69**	**1,615,941.42**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	361.48	1,380.63	3,050.74	10.57	925.11	52.24	977.35	16.50	50.08	66.57	0.00	827,004.31	827,004.31	23.15	0.00	827,490.42
Unmitigated	361.48	1,380.63	3,050.74	10.57	925.11	52.24	977.35	16.50	50.08	66.57	0.00	827,004.31	827,004.31	23.15	0.00	827,490.42
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	64,964.22	70,583.28	59838.06	188,458,452	188,458,452
Industrial Park	151,567.92	54,224.73	15897.21	310,110,428	310,110,428
Office Park	57,922.24	8,318.08	3854.72	108,049,337	108,049,337
Regional Shopping Center	246,905.00	287,327.50	145130.00	417,532,637	417,532,637
Single Family Housing	278,180.76	293,005.44	254926.36	802,627,180	802,627,180
Total	799,540.14	713,459.03	479,646.35	1,826,778,034	1,826,778,034

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.80	7.30	7.50	45.60	19.00	35.40

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Office Park	9.50	7.30	7.30	33.00	48.00	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	179,285.80	179,285.80	8.11	3.07	180,409.29
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	179,285.80	179,285.80	8.11	3.07	180,409.29
NaturalGas Mitigated	9.18	79.97	44.30	0.50		0.00	6.35		0.00	6.35	0.00	90,894.34	90,894.34	1.74	1.67	91,447.51
NaturalGas Unmitigated	9.18	79.97	44.30	0.50		0.00	6.35		0.00	6.35	0.00	90,894.34	90,894.34	1.74	1.67	91,447.51
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	1.41048e+008	0.76	6.50	2.77	0.04		0.00	0.53		0.00	0.53	0.00	7,526.84	7,526.84	0.14	0.14	7,572.64
Industrial Park	3.76742e+008	2.03	18.47	15.51	0.11		0.00	1.40		0.00	1.40	0.00	20,104.39	20,104.39	0.39	0.37	20,226.75
Office Park	5.82266e+007	0.31	2.85	2.40	0.02		0.00	0.22		0.00	0.22	0.00	3,107.19	3,107.19	0.06	0.06	3,126.10
Regional Shopping Center	7.06675e+007	0.38	3.46	2.91	0.02		0.00	0.26		0.00	0.26	0.00	3,771.09	3,771.09	0.07	0.07	3,794.04
Single Family Housing	1.05661e+009	5.70	48.69	20.72	0.31		0.00	3.94		0.00	3.94	0.00	56,384.84	56,384.84	1.08	1.03	56,727.98
Total		**9.18**	**79.97**	**44.31**	**0.50**		**0.00**	**6.35**		**0.00**	**6.35**	**0.00**	**90,894.35**	**90,894.35**	**1.74**	**1.67**	**91,447.51**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	1.41048e+008	0.76	6.50	2.77	0.04		0.00	0.53		0.00	0.53	0.00	7,526.84	7,526.84	0.14	0.14	7,572.64
Industrial Park	3.76742e+008	2.03	18.47	15.51	0.11		0.00	1.40		0.00	1.40	0.00	20,104.39	20,104.39	0.39	0.37	20,226.75
Office Park	5.82266e+007	0.31	2.85	2.40	0.02		0.00	0.22		0.00	0.22	0.00	3,107.19	3,107.19	0.06	0.06	3,126.10
Regional Shopping Center	7.06675e+007	0.38	3.46	2.91	0.02		0.00	0.26		0.00	0.26	0.00	3,771.09	3,771.09	0.07	0.07	3,794.04
Single Family Housing	1.05661e+009	5.70	48.69	20.72	0.31		0.00	3.94		0.00	3.94	0.00	56,384.84	56,384.84	1.08	1.03	56,727.98
Total		**9.18**	**79.97**	**44.31**	**0.50**		**0.00**	**6.35**		**0.00**	**6.35**	**0.00**	**90,894.35**	**90,894.35**	**1.74**	**1.67**	**91,447.51**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	3.77103e+007					10,970.36	0.50	0.19	11,039.10
Industrial Park	2.43249e+008					70,763.95	3.20	1.21	71,207.39
Office Park	5.90888e+007					17,189.61	0.78	0.29	17,297.33
Regional Shopping Center	7.69925e+007					22,398.00	1.01	0.38	22,538.36
Single Family Housing	1.99249e+008					57,963.88	2.62	0.99	58,327.11
Total						**179,285.80**	**8.11**	**3.06**	**180,409.29**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	3.77103e+007					10,970.36	0.50	0.19	11,039.10
Industrial Park	2.43249e+008					70,763.95	3.20	1.21	71,207.39
Office Park	5.90888e+007					17,189.61	0.78	0.29	17,297.33
Regional Shopping Center	7.69925e+007					22,398.00	1.01	0.38	22,538.36
Single Family Housing	1.99249e+008					57,963.88	2.62	0.99	58,327.11
Total						**179,285.80**	**8.11**	**3.06**	**180,409.29**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	723.80	33.70	2,152.36	6.09		0.00	308.69		0.00	308.65	40,644.69	51,066.58	91,711.27	191.43	0.93	96,018.80
Unmitigated	723.80	33.70	2,152.36	6.09		0.00	308.69		0.00	308.65	40,644.69	51,066.58	91,711.27	191.43	0.93	96,018.80
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	134.93					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	370.16					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	210.00	30.35	1,861.00	6.07		0.00	307.08		0.00	307.04	40,644.69	50,589.09	91,233.78	190.98	0.93	95,531.78
Landscaping	8.71	3.35	291.36	0.02		0.00	1.61		0.00	1.61	0.00	477.49	477.49	0.45	0.00	487.03
Total	**723.80**	**33.70**	**2,152.36**	**6.09**		**0.00**	**308.69**		**0.00**	**308.65**	**40,644.69**	**51,066.58**	**91,711.27**	**191.43**	**0.93**	**96,018.81**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	134.93					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	370.16					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	210.00	30.35	1,861.00	6.07		0.00	307.08		0.00	307.04	40,644.69	50,589.09	91,233.78	190.98	0.93	95,531.78
Landscaping	8.71	3.35	291.36	0.02		0.00	1.61		0.00	1.61	0.00	477.49	477.49	0.45	0.00	487.03
Total	**723.80**	**33.70**	**2,152.36**	**6.09**		**0.00**	**308.69**		**0.00**	**308.65**	**40,644.69**	**51,066.58**	**91,711.27**	**191.43**	**0.93**	**96,018.81**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					178,333.29	3,394.39	87.02	276,591.26
Unmitigated					178,333.29	3,394.39	87.02	276,591.26
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	642.288 / 404.921					1,430.53	19.67	0.51	2,001.89
Industrial Park	107076 / 0					169,751.89	3,276.07	83.95	264,573.09
Office Park	901.466 / 552.511					1,991.69	27.61	0.72	2,793.51
Regional Shopping Center	425.917 / 261.046					941.02	13.04	0.34	1,319.85
Single Family Housing	1893.9 / 1193.98					4,218.16	58.00	1.51	5,902.92
Total						**178,333.29**	**3,394.39**	**87.03**	**276,591.26**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	642.288 / 404.921					1,430.53	19.67	0.51	2,001.89
Industrial Park	107076 / 0					169,751.89	3,276.07	83.95	264,573.09
Office Park	901.466 / 552.511					1,991.69	27.61	0.72	2,793.51
Regional Shopping Center	425.917 / 261.046					941.02	13.04	0.34	1,319.85
Single Family Housing	1893.9 / 1193.98					4,218.16	58.00	1.51	5,902.92
Total						**178,333.29**	**3,394.39**	**87.03**	**276,591.26**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					64,248.10	3,796.95	0.00	143,984.14
Unmitigated					64,248.10	3,796.95	0.00	143,984.14
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	4534.68					920.50	54.40	0.00	2,062.90
Industrial Park	268025					54,406.58	3,215.34	0.00	121,928.64
Office Park	4716.96					957.50	56.59	0.00	2,145.82
Regional Shopping Center	6037.5					1,225.56	72.43	0.00	2,746.55
Single Family Housing	33193.4					6,737.97	398.20	0.00	15,100.22
Total						**64,248.11**	**3,796.96**	**0.00**	**143,984.13**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	4534.68					920.50	54.40	0.00	2,062.90
Industrial Park	268025					54,406.58	3,215.34	0.00	121,928.64
Office Park	4716.96					957.50	56.59	0.00	2,145.82
Regional Shopping Center	6037.5					1,225.56	72.43	0.00	2,746.55
Single Family Housing	33193.4					6,737.97	398.20	0.00	15,100.22
Total						**64,248.11**	**3,796.96**	**0.00**	**143,984.13**

9.0 Vegetation

Tracy GP

San Joaquin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	5072	1000sqft
Industrial Park	21777	1000sqft
Apartments Low Rise	9858	Dwelling Unit
Single Family Housing	29068	Dwelling Unit
Regional Shopping Center	5750	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	2	**Precipitation Freq (Days)**	51		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction modeled. Model used for area sources only.

Off-road Equipment -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7,903.38	777.57	48,625.98	148.24		0.00	7,450.17		0.00	7,449.87	1,092,758.50	459,226.30		5,122.68	8.31	1,662,137.77
Energy	50.33	438.20	242.76	2.75		0.00	34.77		0.00	34.77		549,007.46		10.52	10.07	552,348.63
Mobile	2,434.52	8,919.42	19,429.91	71.92	6,968.47	328.94	7,297.41	104.23	315.26	419.49		6,107,215.35		177.16		6,110,935.76
Total	**10,388.23**	**10,135.19**	**68,298.65**	**222.91**	**6,968.47**	**328.94**	**14,782.35**	**104.23**	**315.26**	**7,904.13**	**1,092,758.50**	**7,115,449.11**		**5,310.36**	**18.38**	**8,325,422.16**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7,903.38	777.57	48,625.98	148.24		0.00	7,450.17		0.00	7,449.87	1,092,758.50	459,226.30		5,122.68	8.31	1,662,137.77
Energy	50.33	438.20	242.76	2.75		0.00	34.77		0.00	34.77		549,007.46		10.52	10.07	552,348.63
Mobile	2,434.52	8,919.42	19,429.91	71.92	6,968.47	328.94	7,297.41	104.23	315.26	419.49		6,107,215.35		177.16		6,110,935.76
Total	**10,388.23**	**10,135.19**	**68,298.65**	**222.91**	**6,968.47**	**328.94**	**14,782.35**	**104.23**	**315.26**	**7,904.13**	**1,092,758.50**	**7,115,449.11**		**5,310.36**	**18.38**	**8,325,422.16**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2,434.52	8,919.42	19,429.91	71.92	6,968.47	328.94	7,297.41	104.23	315.26	419.49		6,107,215.35		177.16		6,110,935.76
Unmitigated	2,434.52	8,919.42	19,429.91	71.92	6,968.47	328.94	7,297.41	104.23	315.26	419.49		6,107,215.35		177.16		6,110,935.76
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	64,964.22	70,583.28	59838.06	188,458,452	188,458,452
Industrial Park	151,567.92	54,224.73	15897.21	310,110,428	310,110,428
Office Park	57,922.24	8,318.08	3854.72	108,049,337	108,049,337
Regional Shopping Center	246,905.00	287,327.50	145130.00	417,532,637	417,532,637
Single Family Housing	278,180.76	293,005.44	254926.36	802,627,180	802,627,180
Total	799,540.14	713,459.03	479,646.35	1,826,778,034	1,826,778,034

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.80	7.30	7.50	45.60	19.00	35.40

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Office Park	9.50	7.30	7.30	33.00	48.00	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	50.33	438.20	242.76	2.75		0.00	34.77		0.00	34.77		549,007.46		10.52	10.07	552,348.63
NaturalGas Unmitigated	50.33	438.20	242.76	2.75		0.00	34.77		0.00	34.77		549,007.46		10.52	10.07	552,348.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	386432	4.17	35.61	15.15	0.23		0.00	2.88		0.00	2.88		45,462.55		0.87	0.83	45,739.23
Industrial Park	1.03217e+006	11.13	101.19	85.00	0.61		0.00	7.69		0.00	7.69		121,431.78		2.33	2.23	122,170.79
Office Park	159525	1.72	15.64	13.14	0.09		0.00	1.19		0.00	1.19		18,767.63		0.36	0.34	18,881.84
Regional Shopping Center	193610	2.09	18.98	15.94	0.11		0.00	1.44		0.00	1.44		22,777.60		0.44	0.42	22,916.22
Single Family Housing	2.89483e+006	31.22	266.78	113.52	1.70		0.00	21.57		0.00	21.57		340,567.90		6.53	6.24	342,640.54
Total		**50.33**	**438.20**	**242.75**	**2.74**		**0.00**	**34.77**		**0.00**	**34.77**		**549,007.46**		**10.53**	**10.06**	**552,348.62**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	386.432	4.17	35.61	15.15	0.23		0.00	2.88		0.00	2.88		45,462.55		0.87	0.83	45,739.23
Industrial Park	1032.17	11.13	101.19	85.00	0.61		0.00	7.69		0.00	7.69		121,431.78		2.33	2.23	122,170.79
Office Park	159.525	1.72	15.64	13.14	0.09		0.00	1.19		0.00	1.19		18,767.63		0.36	0.34	18,881.84
Regional Shopping Center	193.61	2.09	18.98	15.94	0.11		0.00	1.44		0.00	1.44		22,777.60		0.44	0.42	22,916.22
Single Family Housing	2894.83	31.22	266.78	113.52	1.70		0.00	21.57		0.00	21.57		340,567.90		6.53	6.24	342,640.54
Total		**50.33**	**438.20**	**242.75**	**2.74**		**0.00**	**34.77**		**0.00**	**34.77**		**549,007.46**		**10.53**	**10.06**	**552,348.62**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7,903.38	777.57	48,625.98	148.24		0.00	7,450.17		0.00	7,449.87	1,092,758.50	459,226.30		5,122.68	8.31	1,662,137.77
Unmitigated	7,903.38	777.57	48,625.98	148.24		0.00	7,450.17		0.00	7,449.87	1,092,758.50	459,226.30		5,122.68	8.31	1,662,137.77
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	739.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	2,028.28					0.00	0.00		0.00	0.00						0.00
Hearth	5,038.93	740.35	45,385.80	148.07		0.00	7,432.23		0.00	7,431.92	1,092,758.50	453,373.41		5,117.11	8.31	1,656,167.97
Landscaping	96.84	37.22	3,240.18	0.17		0.00	17.94		0.00	17.94		5,852.88		5.57		5,969.80
Total	**7,903.38**	**777.57**	**48,625.98**	**148.24**		**0.00**	**7,450.17**		**0.00**	**7,449.86**	**1,092,758.50**	**459,226.29**		**5,122.68**	**8.31**	**1,662,137.77**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	739.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	2,028.28					0.00	0.00		0.00	0.00						0.00
Hearth	5,038.93	740.35	45,385.80	148.07		0.00	7,432.23		0.00	7,431.92	1,092,758.50	453,373.41		5,117.11	8.31	1,656,167.97
Landscaping	96.84	37.22	3,240.18	0.17		0.00	17.94		0.00	17.94		5,852.88		5.57		5,969.80
Total	**7,903.38**	**777.57**	**48,625.98**	**148.24**		**0.00**	**7,450.17**		**0.00**	**7,449.86**	**1,092,758.50**	**459,226.29**		**5,122.68**	**8.31**	**1,662,137.77**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Tracy GP

San Joaquin County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	5072	1000sqft
Industrial Park	21777	1000sqft
Apartments Low Rise	9858	Dwelling Unit
Single Family Housing	29068	Dwelling Unit
Regional Shopping Center	5750	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	2	**Precipitation Freq (Days)**	51		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction modeled. Model used for area sources only.

Off-road Equipment -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7,903.38	777.57	48,625.98	148.24		0.00	7,450.17		0.00	7,449.87	1,092,758.50	459,226.30		5,122.68	8.31	1,662,137.77
Energy	50.33	438.20	242.76	2.75		0.00	34.77		0.00	34.77		549,007.46		10.52	10.07	552,348.63
Mobile	2,431.44	8,748.66	19,967.23	65.09	6,968.47	331.53	7,300.00	104.23	317.85	422.08		5,602,344.96		161.01		5,605,726.10
Total	**10,385.15**	**9,964.43**	**68,835.97**	**216.08**	**6,968.47**	**331.53**	**14,784.94**	**104.23**	**317.85**	**7,906.72**	**1,092,758.50**	**6,610,578.72**		**5,294.21**	**18.38**	**7,820,212.50**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	7,903.38	777.57	48,625.98	148.24		0.00	7,450.17		0.00	7,449.87	1,092,758.50	459,226.30		5,122.68	8.31	1,662,137.77
Energy	50.33	438.20	242.76	2.75		0.00	34.77		0.00	34.77		549,007.46		10.52	10.07	552,348.63
Mobile	2,431.44	8,748.66	19,967.23	65.09	6,968.47	331.53	7,300.00	104.23	317.85	422.08		5,602,344.96		161.01		5,605,726.10
Total	**10,385.15**	**9,964.43**	**68,835.97**	**216.08**	**6,968.47**	**331.53**	**14,784.94**	**104.23**	**317.85**	**7,906.72**	**1,092,758.50**	**6,610,578.72**		**5,294.21**	**18.38**	**7,820,212.50**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2,431.44	8,748.66	19,967.23	65.09	6,968.47	331.53	7,300.00	104.23	317.85	422.08		5,602,344.96		161.01		5,605,726.10
Unmitigated	2,431.44	8,748.66	19,967.23	65.09	6,968.47	331.53	7,300.00	104.23	317.85	422.08		5,602,344.96		161.01		5,605,726.10
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	64,964.22	70,583.28	59838.06	188,458,452	188,458,452
Industrial Park	151,567.92	54,224.73	15897.21	310,110,428	310,110,428
Office Park	57,922.24	8,318.08	3854.72	108,049,337	108,049,337
Regional Shopping Center	246,905.00	287,327.50	145130.00	417,532,637	417,532,637
Single Family Housing	278,180.76	293,005.44	254926.36	802,627,180	802,627,180
Total	799,540.14	713,459.03	479,646.35	1,826,778,034	1,826,778,034

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.80	7.30	7.50	45.60	19.00	35.40

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Office Park	9.50	7.30	7.30	33.00	48.00	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	50.33	438.20	242.76	2.75		0.00	34.77		0.00	34.77		549,007.46		10.52	10.07	552,348.63
NaturalGas Unmitigated	50.33	438.20	242.76	2.75		0.00	34.77		0.00	34.77		549,007.46		10.52	10.07	552,348.63
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	386432	4.17	35.61	15.15	0.23		0.00	2.88		0.00	2.88		45,462.55		0.87	0.83	45,739.23
Industrial Park	1.03217e+006	11.13	101.19	85.00	0.61		0.00	7.69		0.00	7.69		121,431.78		2.33	2.23	122,170.79
Office Park	159525	1.72	15.64	13.14	0.09		0.00	1.19		0.00	1.19		18,767.63		0.36	0.34	18,881.84
Regional Shopping Center	193610	2.09	18.98	15.94	0.11		0.00	1.44		0.00	1.44		22,777.60		0.44	0.42	22,916.22
Single Family Housing	2.89483e+006	31.22	266.78	113.52	1.70		0.00	21.57		0.00	21.57		340,567.90		6.53	6.24	342,640.54
Total		**50.33**	**438.20**	**242.75**	**2.74**		**0.00**	**34.77**		**0.00**	**34.77**		**549,007.46**		**10.53**	**10.06**	**552,348.62**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	386.432	4.17	35.61	15.15	0.23		0.00	2.88		0.00	2.88		45,462.55		0.87	0.83	45,739.23
Industrial Park	1032.17	11.13	101.19	85.00	0.61		0.00	7.69		0.00	7.69		121,431.78		2.33	2.23	122,170.79
Office Park	159.525	1.72	15.64	13.14	0.09		0.00	1.19		0.00	1.19		18,767.63		0.36	0.34	18,881.84
Regional Shopping Center	193.61	2.09	18.98	15.94	0.11		0.00	1.44		0.00	1.44		22,777.60		0.44	0.42	22,916.22
Single Family Housing	2894.83	31.22	266.78	113.52	1.70		0.00	21.57		0.00	21.57		340,567.90		6.53	6.24	342,640.54
Total		**50.33**	**438.20**	**242.75**	**2.74**		**0.00**	**34.77**		**0.00**	**34.77**		**549,007.46**		**10.53**	**10.06**	**552,348.62**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	7,903.38	777.57	48,625.98	148.24		0.00	7,450.17		0.00	7,449.87	1,092,758.50	459,226.30		5,122.68	8.31	1,662,137.77
Unmitigated	7,903.38	777.57	48,625.98	148.24		0.00	7,450.17		0.00	7,449.87	1,092,758.50	459,226.30		5,122.68	8.31	1,662,137.77
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	739.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	2,028.28					0.00	0.00		0.00	0.00						0.00
Hearth	5,038.93	740.35	45,385.80	148.07		0.00	7,432.23		0.00	7,431.92	1,092,758.50	453,373.41		5,117.11	8.31	1,656,167.97
Landscaping	96.84	37.22	3,240.18	0.17		0.00	17.94		0.00	17.94		5,852.88		5.57		5,969.80
Total	**7,903.38**	**777.57**	**48,625.98**	**148.24**		**0.00**	**7,450.17**		**0.00**	**7,449.86**	**1,092,758.50**	**459,226.29**		**5,122.68**	**8.31**	**1,662,137.77**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	739.33					0.00	0.00		0.00	0.00						0.00
Consumer Products	2,028.28					0.00	0.00		0.00	0.00						0.00
Hearth	5,038.93	740.35	45,385.80	148.07		0.00	7,432.23		0.00	7,431.92	1,092,758.50	453,373.41		5,117.11	8.31	1,656,167.97
Landscaping	96.84	37.22	3,240.18	0.17		0.00	17.94		0.00	17.94		5,852.88		5.57		5,969.80
Total	**7,903.38**	**777.57**	**48,625.98**	**148.24**		**0.00**	**7,450.17**		**0.00**	**7,449.86**	**1,092,758.50**	**459,226.29**		**5,122.68**	**8.31**	**1,662,137.77**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Tracy TMP

San Joaquin County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	6250	1000sqft
Industrial Park	30340	1000sqft
Apartments Low Rise	13297	Dwelling Unit
Single Family Housing	27229	Dwelling Unit
Regional Shopping Center	7546	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	2	**Precipitation Freq (Days)**	51		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction modeled. Model used for area sources only.

Off-road Equipment -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	775.69	32.69	2,093.35	5.86		0.00	297.36		0.00	297.32	39,099.76	53,165.60	92,265.36	184.27	0.97	96,434.27
Energy	10.08	88.17	51.52	0.55		0.00	6.96		0.00	6.96	0.00	318,017.15	318,017.15	11.78	5.57	319,991.98
Mobile	371.63	1,487.29	3,202.82	12.19	1,073.00	57.38	1,130.39	19.07	54.93	74.00	0.00	939,044.83	939,044.83	25.16	0.00	939,573.19
Waste						0.00	0.00		0.00	0.00	86,141.45	0.00	86,141.45	5,090.81	0.00	193,048.54
Water						0.00	0.00		0.00	0.00	0.00	246,070.63	246,070.63	4,696.26	120.38	382,010.82
Total	**1,157.40**	**1,608.15**	**5,347.69**	**18.60**	**1,073.00**	**57.38**	**1,434.71**	**19.07**	**54.93**	**378.28**	**125,241.21**	**1,556,298.21**	**1,681,539.42**	**10,008.28**	**126.92**	**1,931,058.80**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	775.69	32.69	2,093.35	5.86		0.00	297.36		0.00	297.32	39,099.76	53,165.60	92,265.36	184.27	0.97	96,434.27
Energy	10.08	88.17	51.52	0.55		0.00	6.96		0.00	6.96	0.00	318,017.15	318,017.15	11.78	5.57	319,991.98
Mobile	371.63	1,487.29	3,202.82	12.19	1,073.00	57.38	1,130.39	19.07	54.93	74.00	0.00	939,044.83	939,044.83	25.16	0.00	939,573.19
Waste						0.00	0.00		0.00	0.00	86,141.45	0.00	86,141.45	5,090.81	0.00	193,048.54
Water						0.00	0.00		0.00	0.00	0.00	246,070.63	246,070.63	4,696.26	120.38	382,010.82
Total	**1,157.40**	**1,608.15**	**5,347.69**	**18.60**	**1,073.00**	**57.38**	**1,434.71**	**19.07**	**54.93**	**378.28**	**125,241.21**	**1,556,298.21**	**1,681,539.42**	**10,008.28**	**126.92**	**1,931,058.80**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	371.63	1,487.29	3,202.82	12.19	1,073.00	57.38	1,130.39	19.07	54.93	74.00	0.00	939,044.83	939,044.83	25.16	0.00	939,573.19
Unmitigated	371.63	1,487.29	3,202.82	12.19	1,073.00	57.38	1,130.39	19.07	54.93	74.00	0.00	939,044.83	939,044.83	25.16	0.00	939,573.19
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	87,627.23	95,206.52	80712.79	254,202,884	254,202,884
Industrial Park	211,166.40	75,546.60	22148.20	432,049,887	432,049,887
Office Park	71,375.00	10,250.00	4750.00	133,144,392	133,144,392
Regional Shopping Center	324,025.24	377,073.62	190461.04	547,948,049	547,948,049
Single Family Housing	260,581.53	274,468.32	238798.33	751,848,613	751,848,613
Total	954,775.40	832,545.06	536,870.36	2,119,193,825	2,119,193,825

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.80	7.30	7.50	45.60	19.00	35.40

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Office Park	9.50	7.30	7.30	33.00	48.00	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00	0.00	218,259.40	218,259.40	9.87	3.74	219,627.11
Electricity Unmitigated						0.00	0.00		0.00	0.00	0.00	218,259.40	218,259.40	9.87	3.74	219,627.11
NaturalGas Mitigated	10.08	88.17	51.52	0.55		0.00	6.96		0.00	6.96	0.00	99,757.76	99,757.76	1.91	1.83	100,364.87
NaturalGas Unmitigated	10.08	88.17	51.52	0.55		0.00	6.96		0.00	6.96	0.00	99,757.76	99,757.76	1.91	1.83	100,364.87
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	1.90253e+008	1.03	8.77	3.73	0.06		0.00	0.71		0.00	0.71	0.00	10,152.60	10,152.60	0.19	0.19	10,214.39
Industrial Park	5.24882e+008	2.83	25.73	21.61	0.15		0.00	1.96		0.00	1.96	0.00	28,009.70	28,009.70	0.54	0.51	28,180.16
Office Park	7.175e+007	0.39	3.52	2.95	0.02		0.00	0.27		0.00	0.27	0.00	3,828.85	3,828.85	0.07	0.07	3,852.16
Regional Shopping Center	9.27403e+007	0.50	4.55	3.82	0.03		0.00	0.35		0.00	0.35	0.00	4,948.98	4,948.98	0.09	0.09	4,979.10
Single Family Housing	9.89765e+008	5.34	45.61	19.41	0.29		0.00	3.69		0.00	3.69	0.00	52,817.62	52,817.62	1.01	0.97	53,139.06
Total		**10.09**	**88.18**	**51.52**	**0.55**		**0.00**	**6.98**		**0.00**	**6.98**	**0.00**	**99,757.75**	**99,757.75**	**1.90**	**1.83**	**100,364.87**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	1.90253e+008	1.03	8.77	3.73	0.06		0.00	0.71		0.00	0.71	0.00	10,152.60	10,152.60	0.19	0.19	10,214.39
Industrial Park	5.24882e+008	2.83	25.73	21.61	0.15		0.00	1.96		0.00	1.96	0.00	28,009.70	28,009.70	0.54	0.51	28,180.16
Office Park	7.175e+007	0.39	3.52	2.95	0.02		0.00	0.27		0.00	0.27	0.00	3,828.85	3,828.85	0.07	0.07	3,852.16
Regional Shopping Center	9.27403e+007	0.50	4.55	3.82	0.03		0.00	0.35		0.00	0.35	0.00	4,948.98	4,948.98	0.09	0.09	4,979.10
Single Family Housing	9.89765e+008	5.34	45.61	19.41	0.29		0.00	3.69		0.00	3.69	0.00	52,817.62	52,817.62	1.01	0.97	53,139.06
Total		**10.09**	**88.18**	**51.52**	**0.55**		**0.00**	**6.98**		**0.00**	**6.98**	**0.00**	**99,757.75**	**99,757.75**	**1.90**	**1.83**	**100,364.87**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	5.08657e+007					14,797.41	0.67	0.25	14,890.14
Industrial Park	3.38898e+008					98,589.26	4.46	1.69	99,207.06
Office Park	7.28125e+007					21,181.99	0.96	0.36	21,314.73
Regional Shopping Center	1.01041e+008					29,393.97	1.33	0.50	29,578.16
Single Family Housing	1.86644e+008					54,296.77	2.46	0.93	54,637.02
Total						**218,259.40**	**9.88**	**3.73**	**219,627.11**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	5.08657e+007					14,797.41	0.67	0.25	14,890.14
Industrial Park	3.38898e+008					98,589.26	4.46	1.69	99,207.06
Office Park	7.28125e+007					21,181.99	0.96	0.36	21,314.73
Regional Shopping Center	1.01041e+008					29,393.97	1.33	0.50	29,578.16
Single Family Housing	1.86644e+008					54,296.77	2.46	0.93	54,637.02
Total						**218,259.40**	**9.88**	**3.73**	**219,627.11**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	775.69	32.69	2,093.35	5.86		0.00	297.36		0.00	297.32	39,099.76	53,165.60	92,265.36	184.27	0.97	96,434.27
Unmitigated	775.69	32.69	2,093.35	5.86		0.00	297.36		0.00	297.32	39,099.76	53,165.60	92,265.36	184.27	0.97	96,434.27
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	148.49					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	415.72					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	202.43	29.20	1,790.29	5.84		0.00	295.68		0.00	295.64	39,099.76	52,668.49	91,768.25	183.79	0.97	95,927.23
Landscaping	9.06	3.48	303.06	0.02		0.00	1.68		0.00	1.68	0.00	497.11	497.11	0.47	0.00	507.04
Total	**775.70**	**32.68**	**2,093.35**	**5.86**		**0.00**	**297.36**		**0.00**	**297.32**	**39,099.76**	**53,165.60**	**92,265.36**	**184.26**	**0.97**	**96,434.27**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	148.49					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	415.72					0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	202.43	29.20	1,790.29	5.84		0.00	295.68		0.00	295.64	39,099.76	52,668.49	91,768.25	183.79	0.97	95,927.23
Landscaping	9.06	3.48	303.06	0.02		0.00	1.68		0.00	1.68	0.00	497.11	497.11	0.47	0.00	507.04
Total	**775.70**	**32.68**	**2,093.35**	**5.86**		**0.00**	**297.36**		**0.00**	**297.32**	**39,099.76**	**53,165.60**	**92,265.36**	**184.26**	**0.97**	**96,434.27**

7.0 Water Detail

7.1 Mitigation Measures Water

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					246,070.63	4,696.26	120.38	382,010.82
Unmitigated					246,070.63	4,696.26	120.38	382,010.82
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	866.353 / 546.179					1,929.58	26.53	0.69	2,700.26
Industrial Park	149180 / 0					236,500.55	4,564.26	116.96	368,606.67
Office Park	1110.84 / 680.835					2,454.27	34.02	0.88	3,442.31
Regional Shopping Center	558.951 / 342.583					1,234.94	17.12	0.44	1,732.11
Single Family Housing	1774.08 / 1118.44					3,951.30	54.33	1.41	5,529.47
Total						**246,070.64**	**4,696.26**	**120.38**	**382,010.82**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	866.353 / 546.179					1,929.58	26.53	0.69	2,700.26
Industrial Park	149180 / 0					236,500.55	4,564.26	116.96	368,606.67
Office Park	1110.84 / 680.835					2,454.27	34.02	0.88	3,442.31
Regional Shopping Center	558.951 / 342.583					1,234.94	17.12	0.44	1,732.11
Single Family Housing	1774.08 / 1118.44					3,951.30	54.33	1.41	5,529.47
Total						**246,070.64**	**4,696.26**	**120.38**	**382,010.82**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					86,141.45	5,090.81	0.00	193,048.54
Unmitigated					86,141.45	5,090.81	0.00	193,048.54
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	6116.62					1,241.62	73.38	0.00	2,782.55
Industrial Park	373415					75,799.95	4,479.65	0.00	169,872.57
Office Park	5812.5					1,179.88	69.73	0.00	2,644.20
Regional Shopping Center	7923.3					1,608.36	95.05	0.00	3,604.43
Single Family Housing	31093.2					6,311.64	373.01	0.00	14,144.79
Total						**86,141.45**	**5,090.82**	**0.00**	**193,048.54**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	6116.62					1,241.62	73.38	0.00	2,782.55
Industrial Park	373415					75,799.95	4,479.65	0.00	169,872.57
Office Park	5812.5					1,179.88	69.73	0.00	2,644.20
Regional Shopping Center	7923.3					1,608.36	95.05	0.00	3,604.43
Single Family Housing	31093.2					6,311.64	373.01	0.00	14,144.79
Total						**86,141.45**	**5,090.82**	**0.00**	**193,048.54**

9.0 Vegetation

Tracy TMP

San Joaquin County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	6250	1000sqft
Industrial Park	30340	1000sqft
Apartments Low Rise	13297	Dwelling Unit
Single Family Housing	27229	Dwelling Unit
Regional Shopping Center	7546	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	2	**Precipitation Freq (Days)**	51		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction modeled. Model used for area sources only.

Off-road Equipment -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8,042.92	750.95	47,031.23	142.62		0.00	7,170.67		0.00	7,170.36	1,051,222.16	478,102.17		4,929.09	8.65	1,635,517.75
Energy	55.23	483.10	282.32	3.01		0.00	38.16		0.00	38.16		602,543.04		11.55	11.05	606,210.02
Mobile	2,551.47	9,761.52	20,589.46	83.96	8,178.37	365.53	8,543.90	121.92	351.33	473.25		7,018,717.19		180.96		7,022,517.27
Total	**10,649.62**	**10,995.57**	**67,903.01**	**229.59**	**8,178.37**	**365.53**	**15,752.73**	**121.92**	**351.33**	**7,681.77**	**1,051,222.16**	**8,099,362.40**		**5,121.60**	**19.70**	**9,264,245.04**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8,042.92	750.95	47,031.23	142.62		0.00	7,170.67		0.00	7,170.36	1,051,222.16	478,102.17		4,929.09	8.65	1,635,517.75
Energy	55.23	483.10	282.32	3.01		0.00	38.16		0.00	38.16		602,543.04		11.55	11.05	606,210.02
Mobile	2,551.47	9,761.52	20,589.46	83.96	8,178.37	365.53	8,543.90	121.92	351.33	473.25		7,018,717.19		180.96		7,022,517.27
Total	**10,649.62**	**10,995.57**	**67,903.01**	**229.59**	**8,178.37**	**365.53**	**15,752.73**	**121.92**	**351.33**	**7,681.77**	**1,051,222.16**	**8,099,362.40**		**5,121.60**	**19.70**	**9,264,245.04**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2,551.47	9,761.52	20,589.46	83.96	8,178.37	365.53	8,543.90	121.92	351.33	473.25		7,018,717.19		180.96		7,022,517.27
Unmitigated	2,551.47	9,761.52	20,589.46	83.96	8,178.37	365.53	8,543.90	121.92	351.33	473.25		7,018,717.19		180.96		7,022,517.27
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	87,627.23	95,206.52	80712.79	254,202,884	254,202,884
Industrial Park	211,166.40	75,546.60	22148.20	432,049,887	432,049,887
Office Park	71,375.00	10,250.00	4750.00	133,144,392	133,144,392
Regional Shopping Center	324,025.24	377,073.62	190461.04	547,948,049	547,948,049
Single Family Housing	260,581.53	274,468.32	238798.33	751,848,613	751,848,613
Total	954,775.40	832,545.06	536,870.36	2,119,193,825	2,119,193,825

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.80	7.30	7.50	45.60	19.00	35.40

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Office Park	9.50	7.30	7.30	33.00	48.00	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	55.23	483.10	282.32	3.01		0.00	38.16		0.00	38.16		602,543.04		11.55	11.05	606,210.02
NaturalGas Unmitigated	55.23	483.10	282.32	3.01		0.00	38.16		0.00	38.16		602,543.04		11.55	11.05	606,210.02
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	521240	5.62	48.04	20.44	0.31		0.00	3.88		0.00	3.88		61,322.34		1.18	1.12	61,695.53
Industrial Park	1.43803e+006	15.51	140.98	118.43	0.85		0.00	10.71		0.00	10.71		169,180.34		3.24	3.10	170,209.94
Office Park	196575	2.12	19.27	16.19	0.12		0.00	1.46		0.00	1.46		23,126.51		0.44	0.42	23,267.25
Regional Shopping Center	254083	2.74	24.91	20.92	0.15		0.00	1.89		0.00	1.89		29,892.13		0.57	0.55	30,074.05
Single Family Housing	2.71168e+006	29.24	249.90	106.34	1.60		0.00	20.20		0.00	20.20		319,021.72		6.11	5.85	320,963.23
Total		**55.23**	**483.10**	**282.32**	**3.03**		**0.00**	**38.14**		**0.00**	**38.14**		**602,543.04**		**11.54**	**11.04**	**606,210.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	521.24	5.62	48.04	20.44	0.31		0.00	3.88		0.00	3.88		61,322.34		1.18	1.12	61,695.53
Industrial Park	1438.03	15.51	140.98	118.43	0.85		0.00	10.71		0.00	10.71		169,180.34		3.24	3.10	170,209.94
Office Park	196.575	2.12	19.27	16.19	0.12		0.00	1.46		0.00	1.46		23,126.51		0.44	0.42	23,267.25
Regional Shopping Center	254.083	2.74	24.91	20.92	0.15		0.00	1.89		0.00	1.89		29,892.13		0.57	0.55	30,074.05
Single Family Housing	2711.68	29.24	249.90	106.34	1.60		0.00	20.20		0.00	20.20		319,021.72		6.11	5.85	320,963.23
Total		**55.23**	**483.10**	**282.32**	**3.03**		**0.00**	**38.14**		**0.00**	**38.14**		**602,543.04**		**11.54**	**11.04**	**606,210.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8,042.92	750.95	47,031.23	142.62		0.00	7,170.67		0.00	7,170.36	1,051,222.16	478,102.17		4,929.09	8.65	1,635,517.75
Unmitigated	8,042.92	750.95	47,031.23	142.62		0.00	7,170.67		0.00	7,170.36	1,051,222.16	478,102.17		4,929.09	8.65	1,635,517.75
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	813.62					0.00	0.00		0.00	0.00						0.00
Consumer Products	2,277.93					0.00	0.00		0.00	0.00						0.00
Hearth	4,850.69	712.21	43,660.84	142.44		0.00	7,152.00		0.00	7,151.68	1,051,222.16	472,008.71		4,923.30	8.65	1,629,302.68
Landscaping	100.69	38.74	3,370.38	0.18		0.00	18.68		0.00	18.68		6,093.46		5.79		6,215.08
Total	**8,042.93**	**750.95**	**47,031.22**	**142.62**		**0.00**	**7,170.68**		**0.00**	**7,170.36**	**1,051,222.16**	**478,102.17**		**4,929.09**	**8.65**	**1,635,517.76**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	813.62					0.00	0.00		0.00	0.00						0.00
Consumer Products	2,277.93					0.00	0.00		0.00	0.00						0.00
Hearth	4,850.69	712.21	43,660.84	142.44		0.00	7,152.00		0.00	7,151.68	1,051,222.16	472,008.71		4,923.30	8.65	1,629,302.68
Landscaping	100.69	38.74	3,370.38	0.18		0.00	18.68		0.00	18.68		6,093.46		5.79		6,215.08
Total	**8,042.93**	**750.95**	**47,031.22**	**142.62**		**0.00**	**7,170.68**		**0.00**	**7,170.36**	**1,051,222.16**	**478,102.17**		**4,929.09**	**8.65**	**1,635,517.76**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Tracy TMP

San Joaquin County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Office Park	6250	1000sqft
Industrial Park	30340	1000sqft
Apartments Low Rise	13297	Dwelling Unit
Single Family Housing	27229	Dwelling Unit
Regional Shopping Center	7546	1000sqft

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.7	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	2	**Precipitation Freq (Days)**	51		

1.3 User Entered Comments

Project Characteristics -

Land Use -

Construction Phase - No construction modeled. Model used for area sources only.

Off-road Equipment -

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8,042.92	750.95	47,031.23	142.62		0.00	7,170.67		0.00	7,170.36	1,051,222.16	478,102.17		4,929.09	8.65	1,635,517.75
Energy	55.23	483.10	282.32	3.01		0.00	38.16		0.00	38.16		602,543.04		11.55	11.05	606,210.02
Mobile	2,531.22	9,568.79	21,245.16	75.92	8,178.37	367.02	8,545.39	121.92	352.82	474.74		6,435,036.76		177.74		6,438,769.37
Total	**10,629.37**	**10,802.84**	**68,558.71**	**221.55**	**8,178.37**	**367.02**	**15,754.22**	**121.92**	**352.82**	**7,683.26**	**1,051,222.16**	**7,515,681.97**		**5,118.38**	**19.70**	**8,680,497.14**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	8,042.92	750.95	47,031.23	142.62		0.00	7,170.67		0.00	7,170.36	1,051,222.16	478,102.17		4,929.09	8.65	1,635,517.75
Energy	55.23	483.10	282.32	3.01		0.00	38.16		0.00	38.16		602,543.04		11.55	11.05	606,210.02
Mobile	2,531.22	9,568.79	21,245.16	75.92	8,178.37	367.02	8,545.39	121.92	352.82	474.74		6,435,036.76		177.74		6,438,769.37
Total	**10,629.37**	**10,802.84**	**68,558.71**	**221.55**	**8,178.37**	**367.02**	**15,754.22**	**121.92**	**352.82**	**7,683.26**	**1,051,222.16**	**7,515,681.97**		**5,118.38**	**19.70**	**8,680,497.14**

3.0 Construction Detail

3.1 Mitigation Measures Construction

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2,531.22	9,568.79	21,245.16	75.92	8,178.37	367.02	8,545.39	121.92	352.82	474.74		6,435,036.76		177.74		6,438,769.37
Unmitigated	2,531.22	9,568.79	21,245.16	75.92	8,178.37	367.02	8,545.39	121.92	352.82	474.74		6,435,036.76		177.74		6,438,769.37
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	87,627.23	95,206.52	80712.79	254,202,884	254,202,884
Industrial Park	211,166.40	75,546.60	22148.20	432,049,887	432,049,887
Office Park	71,375.00	10,250.00	4750.00	133,144,392	133,144,392
Regional Shopping Center	324,025.24	377,073.62	190461.04	547,948,049	547,948,049
Single Family Housing	260,581.53	274,468.32	238798.33	751,848,613	751,848,613
Total	954,775.40	832,545.06	536,870.36	2,119,193,825	2,119,193,825

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.80	7.30	7.50	45.60	19.00	35.40

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Industrial Park	9.50	7.30	7.30	59.00	28.00	13.00
Office Park	9.50	7.30	7.30	33.00	48.00	19.00
Regional Shopping Center	9.50	7.30	7.30	16.30	64.70	19.00
Single Family Housing	10.80	7.30	7.50	45.60	19.00	35.40

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	55.23	483.10	282.32	3.01		0.00	38.16		0.00	38.16		602,543.04		11.55	11.05	606,210.02
NaturalGas Unmitigated	55.23	483.10	282.32	3.01		0.00	38.16		0.00	38.16		602,543.04		11.55	11.05	606,210.02
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	521240	5.62	48.04	20.44	0.31		0.00	3.88		0.00	3.88		61,322.34		1.18	1.12	61,695.53
Industrial Park	1.43803e+006	15.51	140.98	118.43	0.85		0.00	10.71		0.00	10.71		169,180.34		3.24	3.10	170,209.94
Office Park	196575	2.12	19.27	16.19	0.12		0.00	1.46		0.00	1.46		23,126.51		0.44	0.42	23,267.25
Regional Shopping Center	254083	2.74	24.91	20.92	0.15		0.00	1.89		0.00	1.89		29,892.13		0.57	0.55	30,074.05
Single Family Housing	2.71168e+006	29.24	249.90	106.34	1.60		0.00	20.20		0.00	20.20		319,021.72		6.11	5.85	320,963.23
Total		**55.23**	**483.10**	**282.32**	**3.03**		**0.00**	**38.14**		**0.00**	**38.14**		**602,543.04**		**11.54**	**11.04**	**606,210.00**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	521.24	5.62	48.04	20.44	0.31		0.00	3.88		0.00	3.88		61,322.34		1.18	1.12	61,695.53
Industrial Park	1438.03	15.51	140.98	118.43	0.85		0.00	10.71		0.00	10.71		169,180.34		3.24	3.10	170,209.94
Office Park	196.575	2.12	19.27	16.19	0.12		0.00	1.46		0.00	1.46		23,126.51		0.44	0.42	23,267.25
Regional Shopping Center	254.083	2.74	24.91	20.92	0.15		0.00	1.89		0.00	1.89		29,892.13		0.57	0.55	30,074.05
Single Family Housing	2711.68	29.24	249.90	106.34	1.60		0.00	20.20		0.00	20.20		319,021.72		6.11	5.85	320,963.23
Total		**55.23**	**483.10**	**282.32**	**3.03**		**0.00**	**38.14**		**0.00**	**38.14**		**602,543.04**		**11.54**	**11.04**	**606,210.00**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	8,042.92	750.95	47,031.23	142.62		0.00	7,170.67		0.00	7,170.36	1,051,222.16	478,102.17		4,929.09	8.65	1,635,517.75
Unmitigated	8,042.92	750.95	47,031.23	142.62		0.00	7,170.67		0.00	7,170.36	1,051,222.16	478,102.17		4,929.09	8.65	1,635,517.75
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	813.62					0.00	0.00		0.00	0.00						0.00
Consumer Products	2,277.93					0.00	0.00		0.00	0.00						0.00
Hearth	4,850.69	712.21	43,660.84	142.44		0.00	7,152.00		0.00	7,151.68	1,051,222.16	472,008.71		4,923.30	8.65	1,629,302.68
Landscaping	100.69	38.74	3,370.38	0.18		0.00	18.68		0.00	18.68		6,093.46		5.79		6,215.08
Total	**8,042.93**	**750.95**	**47,031.22**	**142.62**		**0.00**	**7,170.68**		**0.00**	**7,170.36**	**1,051,222.16**	**478,102.17**		**4,929.09**	**8.65**	**1,635,517.76**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	813.62					0.00	0.00		0.00	0.00						0.00
Consumer Products	2,277.93					0.00	0.00		0.00	0.00						0.00
Hearth	4,850.69	712.21	43,660.84	142.44		0.00	7,152.00		0.00	7,151.68	1,051,222.16	472,008.71		4,923.30	8.65	1,629,302.68
Landscaping	100.69	38.74	3,370.38	0.18		0.00	18.68		0.00	18.68		6,093.46		5.79		6,215.08
Total	**8,042.93**	**750.95**	**47,031.22**	**142.62**		**0.00**	**7,170.68**		**0.00**	**7,170.36**	**1,051,222.16**	**478,102.17**		**4,929.09**	**8.65**	**1,635,517.76**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

Existing Conditions

Mobile Source Emissions Calculations

Project VMT: 3,300,000
Year: 2010

	Total	Breakdown of		Emission Factor		Total Emis Passenger	Total Emis Delivery	Passnger	Delivery	Total Emissions	
	VMT	Passnger	Truck/Other	Passnger	Truck/Other	pounds/day		tons/year		tons/year	metric tons/year
CO	3,300,000	2,343,000	957,000	0.0083	0.0184	19,359.64	17,644.83	3,533.13	3,220.18	6,753.32	6126.50
NO_x	3,300,000	2,343,000	957,000	0.0009	0.0206	2,151.20	19,737.75	392.59	3,602.14	3,994.73	3623.96
N_2O[1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	194.66	176.60
ROG	3,300,000	2,343,000	957,000	0.0009	0.0026	2,141.47	2,478.22	390.82	452.28	843.10	764.84
SO_x	3,300,000	2,343,000	957,000	0.0000	0.0000	25.25	25.85	4.61	4.72	9.32	8.46
PM_{10}	3,300,000	2,343,000	957,000	0.0001	0.0008	203.79	718.91	37.19	131.20	168.39	152.76
$PM_{2.5}$	3,300,000	2,343,000	957,000	0.0001	0.0006	128.35	614.71	23.42	112.18	135.61	123.02
CH_4	3,300,000	2,343,000	957,000	0.0001	0.0001	190.86	120.36	34.83	21.97	56.80	51.53
CO_2	3,300,000	2,343,000	957,000	1.0957	2.7322	2,567,183.74	2,614,736.44	468,511.03	477,189.40	945,700.43	857924.96

	CO_2	N_2O	CH_4	Total $MTCO_2eq$
metric tons per year	857,924.96	176.60	51.53	
metric tons CO_2eq per year	857,924.96	54,744.64	1,082.04	**913,751.65**

Notes:

1. VMT based the City of Tracy Transportation Master Plan and Fehr and Peers Supplemental Data, 2011.

2. Emission Factor based upon EMFAC 2007 (version 2.3), *Highest (Most Conservative) Emission Factors for On-Road Passenger Vehicles and Delivery Trucks* .

3. Breakdown of Passenger and Trucks assumes 71% auto and 29% truck based on the fleet mix for the project.

4. Emission Factor for N_2O based upon a conversion ratio of 0.04873 from NO_x to N_2O. Based upon California Air Resources Board: *Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging*, 2005.

5. Conversion from metric tons per year to metric tons of CO_2eq per year is based upon the EPA Greenhouse Gas Equivalencies Calculator; http://www.epa.gov/cleanenergy/energy-resources/calculator.html

General Plan 2030
Mobile Source Emissions Calculations

Project VMT: 4,778,000
Year: 2026

	Total	Breakdown of		Emission Factor		al Emis Passen	otal Emis Delive	Passnger	Delivery	Total Emissions	
	VMT	Passnger	Truck/Other	Passnger	Truck/Other	pounds/day		tons/year		tons/year	metric tons/year
CO	4,778,000	3,392,380	1,385,620	0.0033	0.0057	11,153.43	7,890.21	2,035.50	1,439.96	3,475.46	3152.89
NO_X	4,778,000	3,392,380	1,385,620	0.0003	0.0059	920.72	8,173.35	168.03	1,491.64	1,659.67	1505.63
N_2O[1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	80.88	73.37
ROG	4,778,000	3,392,380	1,385,620	0.0004	0.0009	1,426.58	1,224.93	260.35	223.55	483.90	438.99
SO_X	4,778,000	3,392,380	1,385,620	0.0000	0.0000	36.50	37.64	6.66	6.87	13.53	12.27
PM_{10}	4,778,000	3,392,380	1,385,620	0.0001	0.0003	328.64	383.22	59.98	69.94	129.91	117.86
$PM_{2.5}$	4,778,000	3,392,380	1,385,620	0.0001	0.0002	217.62	279.72	39.72	51.05	90.76	82.34
CH_4	4,778,000	3,392,380	1,385,620	0.0000	0.0000	119.33	49.61	21.78	9.05	30.83	27.97
CO_2	4,778,000	3,392,380	1,385,620	1.1111	2.8830	3,769,131.93	3,994,718.89	687,866.58	729,036.20	1,416,902.78	1285392.52

	CO_2	N_2O	CH_4	Total $MTCO_2eq$
metric tons per year	1,285,392.52	73.37	27.97	
metric tons CO_2eq per year	1,285,392.52	22,744.44	587.39	**1,308,724.35**

Notes:

1. VMT based the City of Tracy Transportation Master Plan and Fehr and Peers Supplemental Data, 2011.

2. Emission Factor based upon EMFAC 2007 (version 2.3), *Highest (Most Conservative) Emission Factors for On-Road Passenger Vehicles and Delivery Trucks* .

3. Breakdown of Passenger and Trucks assumes 71% auto and 29% truck based on the fleet mix for the project.

4. Emission Factor for N_2O based upon a conversion ratio of 0.04873 from NO_X to N_2O. Based upon California Air Resources Board: *Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging* , 2005.

5. Conversion from metric tons per year to metric tons of CO_2eq per year is based upon the EPA Greenhouse Gas Equivalencies Calculator; http://www.epa.gov/cleanenergy/energy-resources/calculator.html

TMP 2035

Mobile Source Emissions Calculations

Project VMT: 6,901,062
Year: 2026

	Total	Breakdown of		Emission Factor		al Emis Passen	otal Emis Delive	Passnger	Delivery	Total Emissions	
	VMT	Passnger	Truck/Other	Passnger	Truck/Other	pounds/day		tons/year		tons/year	metric tons/year
CO	6,901,062	4,899,754	2,001,308	0.0033	0.0057	16,109.36	11,396.16	2,939.96	2,079.80	5,019.76	4553.85
NO_X	6,901,062	4,899,754	2,001,308	0.0003	0.0059	1,329.84	11,805.10	242.70	2,154.43	2,397.13	2174.64
N_2O[1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	116.81	105.97
ROG	6,901,062	4,899,754	2,001,308	0.0004	0.0009	2,060.47	1,769.22	376.04	322.88	698.92	634.05
SO_X	6,901,062	4,899,754	2,001,308	0.0000	0.0000	52.71	54.36	9.62	9.92	19.54	17.73
PM_{10}	6,901,062	4,899,754	2,001,308	0.0001	0.0003	474.66	553.50	86.63	101.01	187.64	170.22
$PM_{2.5}$	6,901,062	4,899,754	2,001,308	0.0001	0.0002	314.32	404.01	57.36	73.73	131.09	118.93
CH_4	6,901,062	4,899,754	2,001,308	0.0000	0.0000	172.36	71.66	31.46	13.08	44.53	40.40
CO_2	6,901,062	4,899,754	2,001,308	1.1111	2.8830	5,443,912.34	5,769,736.87	993,514.00	1,052,976.98	2,046,490.98	1856545.31

	CO_2	N_2O	CH_4	Total $MTCO_2eq$
metric tons per year	1,856,545.31	105.97	40.40	
metric tons CO_2eq per year	1,856,545.31	32,850.72	848.40	**1,890,244.43**

Notes:

1. VMT based the City of Tracy Transportation Master Plan and Fehr and Peers Supplemental Data, 2011.

2. Emission Factor based upon EMFAC 2007 (version 2.3), *Highest (Most Conservative) Emission Factors for On-Road Passenger Vehicles and Delivery Trucks*.

3. Breakdown of Passenger and Trucks assumes 71% auto and 29% truck based on the fleet mix for the project.

4. Emission Factor for N_2O based upon a conversion ratio of 0.04873 from NO_X to N_2O. Based upon California Air Resources Board: *Estimates of Nitrous Oxide Emissions from Motor Vehicles and the Effects of Catalyst Composition and Aging*, 2005.

5. Conversion from metric tons per year to metric tons of CO_2eq per year is based upon the EPA Greenhouse Gas Equivalencies Calculator; http://www.epa.gov/cleanenergy/energy-resources/calculator.html

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 12/19/2011 at 14:47:09

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Lammers-Commerce
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	6 (F)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	3.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1. Y SB1	684	1256	711	1201	AG	3700	0.8	0.0	12.9
2. Y SB2	711	1201	745	1133	AG	3120	1.8	0.0	12.9
3. Y SB3	745	1133	800	1025	AG	3145	0.8	0.0	12.9
4. Y SB4	800	1025	858	906	AG	3145	0.8	0.0	12.9
5. Y NB1	868	911	813	1024	AG	1985	0.8	0.0	12.9
6. Y NB2	814	1024	761	1138	AG	1535	1.8	0.0	12.9
7. Y NB3	761	1138	728	1205	AG	2905	0.8	0.0	12.9
8. Y NB4	728	1205	700	1263	AG	2905	0.8	0.0	12.9
9. Y LT1	720	1198	753	1134	AG	580	1.8	0.0	12.9
10. Y LT2	753	1134	802	1038	AG	450	1.8	0.0	12.9
11. X EB1	596	1103	682	1125	AG	2170	0.8	0.0	12.9
12. X EB2	682	1125	750	1141	AG	800	1.8	0.0	12.9
13. X EB3	750	1141	826	1158	AG	1380	0.8	0.0	12.9
14. X EB4	826	1158	923	1182	AG	1380	0.8	0.0	12.9
15. X WB1	924	1170	832	1147	AG	1050	0.8	0.0	12.9
16. X WB2	832	1147	757	1128	AG	1025	1.8	0.0	12.9
17. X WB3	757	1128	687	1111	AG	1475	0.8	0.0	12.9
18. X WB4	687	1111	599	1090	AG	1475	0.8	0.0	12.9
19. X LT1	674	1115	753	1134	AG	1370	1.8	0.0	12.9
20. X LT2	753	1134	841	1157	AG	25	1.8	0.0	12.9

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	805	1099	1.8
2. Recpt 2	691	1157	1.8
3. Recpt 3	729	1093	1.8
4. Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	301.	3.8	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	109.	3.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	7.	3.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	229.	3.7	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.1	0.0
4. Recpt 4	0.0	0.0	0.1	0.0

1

Run Ended on 12/19/2011 at 14:47:09

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 12/19/2011 at 14:40:06

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Tracy-11th
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	6 (F)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	3.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	1840	0.8	0.0	31.6
2.	Y SB2	711	1201	745	1133	AG	1550	1.8	0.0	31.6
3.	Y SB3	745	1133	800	1025	AG	1940	0.8	0.0	31.6
4.	Y SB4	800	1025	858	906	AG	1940	0.8	0.0	31.6
5.	Y NB1	868	911	813	1024	AG	2060	0.8	0.0	31.6
6.	Y NB2	814	1024	761	1138	AG	1530	1.8	0.0	31.6
7.	Y NB3	761	1138	728	1205	AG	2090	0.8	0.0	31.6
8.	Y NB4	728	1205	700	1263	AG	2090	0.8	0.0	31.6
9.	Y LT1	720	1198	753	1134	AG	290	1.8	0.0	31.6
10.	Y LT2	753	1134	802	1038	AG	530	1.8	0.0	31.6
11.	X EB1	596	1103	682	1125	AG	2490	0.8	0.0	32.7
12.	X EB2	682	1125	750	1141	AG	1930	1.8	0.0	32.7
13.	X EB3	750	1141	826	1158	AG	2220	0.8	0.0	32.7
14.	X EB4	826	1158	923	1182	AG	2220	0.8	0.0	32.7
15.	X WB1	924	1170	832	1147	AG	1740	0.8	0.0	32.7
16.	X WB2	832	1147	757	1128	AG	1350	1.8	0.0	32.7
17.	X WB3	757	1128	687	1111	AG	1880	0.8	0.0	32.7
18.	X WB4	687	1111	599	1090	AG	1880	0.8	0.0	32.7
19.	X LT1	674	1115	753	1134	AG	560	1.8	0.0	32.7
20.	X LT2	753	1134	841	1157	AG	390	1.8	0.0	32.7

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	302.	3.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	116.	3.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
3. Recpt 3	8.	3.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	229.	3.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.1	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 12/19/2011 at 14:40:06

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 12/19/2011 at 14:45:22

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Tracy-Schulte
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	6 (F)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	3.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	1390	0.8	0.0	30.7
2.	Y SB2	711	1201	745	1133	AG	1010	1.8	0.0	30.7
3.	Y SB3	745	1133	800	1025	AG	1135	0.8	0.0	30.7
4.	Y SB4	800	1025	858	906	AG	1135	0.8	0.0	30.7
5.	Y NB1	868	911	813	1024	AG	1200	0.8	0.0	30.7
6.	Y NB2	814	1024	761	1138	AG	825	1.8	0.0	30.7
7.	Y NB3	761	1138	728	1205	AG	1075	0.8	0.0	30.7
8.	Y NB4	728	1205	700	1263	AG	1075	0.8	0.0	30.7
9.	Y LT1	720	1198	753	1134	AG	380	1.8	0.0	30.7
10.	Y LT2	753	1134	802	1038	AG	375	1.8	0.0	30.7
11.	X EB1	596	1103	682	1125	AG	1400	0.8	0.0	26.3
12.	X EB2	682	1125	750	1141	AG	1150	1.8	0.0	26.3
13.	X EB3	750	1141	826	1158	AG	1530	0.8	0.0	26.3
14.	X EB4	826	1158	923	1182	AG	1530	0.8	0.0	26.3
15.	X WB1	924	1170	832	1147	AG	1100	0.8	0.0	26.3
16.	X WB2	832	1147	757	1128	AG	975	1.8	0.0	26.3
17.	X WB3	757	1128	687	1111	AG	1350	0.8	0.0	26.3
18.	X WB4	687	1111	599	1090	AG	1350	0.8	0.0	26.3
19.	X LT1	674	1115	753	1134	AG	250	1.8	0.0	26.3
20.	X LT2	753	1134	841	1157	AG	125	1.8	0.0	26.3

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	304.	3.6	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	108.	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	4.	3.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	229.	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 12/19/2011 at 14:45:22

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 12/19/2011 at 14:37:52

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Corral-11th
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	6 (F)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	3.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	2440	0.8	0.0	42.1
2.	Y SB2	711	1201	745	1133	AG	1910	1.8	0.0	42.1
3.	Y SB3	745	1133	800	1025	AG	2160	0.8	0.0	42.1
4.	Y SB4	800	1025	858	906	AG	2160	0.8	0.0	42.1
5.	Y NB1	868	911	813	1024	AG	1960	0.8	0.0	42.1
6.	Y NB2	814	1024	761	1138	AG	1750	1.8	0.0	42.1
7.	Y NB3	761	1138	728	1205	AG	2420	0.8	0.0	42.1
8.	Y NB4	728	1205	700	1263	AG	2420	0.8	0.0	42.1
9.	Y LT1	720	1198	753	1134	AG	530	1.8	0.0	42.1
10.	Y LT2	753	1134	802	1038	AG	210	1.8	0.0	42.1
11.	X EB1	596	1103	682	1125	AG	3160	0.8	0.0	41.6
12.	X EB2	682	1125	750	1141	AG	2490	1.8	0.0	41.6
13.	X EB3	750	1141	826	1158	AG	3020	0.8	0.0	41.6
14.	X EB4	826	1158	923	1182	AG	3020	0.8	0.0	41.6
15.	X WB1	924	1170	832	1147	AG	2320	0.8	0.0	41.6
16.	X WB2	832	1147	757	1128	AG	2070	1.8	0.0	41.6
17.	X WB3	757	1128	687	1111	AG	2820	0.8	0.0	41.6
18.	X WB4	687	1111	599	1090	AG	2820	0.8	0.0	41.6
19.	X LT1	674	1115	753	1134	AG	670	1.8	0.0	41.6
20.	X LT2	753	1134	841	1157	AG	250	1.8	0.0	41.6

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	307.	3.8	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	105.	3.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	6.	3.8	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	230.	3.8	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
2. Recpt 2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1
3. Recpt 3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.1	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 12/19/2011 at 14:37:52

1 CALINE4 - (DATED CALINE4x)

3.0.0 PC (32 BIT) VERSION
(C) COPYRIGHT 2000, TRINITY CONSULTANTS

Run Began on 12/19/2011 at 14:43:35

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Corral-Schulte
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U=	0.5 M/S	Z0=	100. CM	ALT=	0. (M)
BRG=	WORST CASE	VD=	0.0 CM/S		
CLAS=	6 (F)	VS=	0.0 CM/S		
MIXH=	1000. M	AMB=	3.4 PPM		
SIGTH=	20. DEGREES	TEMP=	15.0 DEGREE (C)		

II. LINK VARIABLES

	LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
1.	Y SB1	684	1256	711	1201	AG	2135	0.8	0.0	33.0
2.	Y SB2	711	1201	745	1133	AG	1175	1.8	0.0	33.0
3.	Y SB3	745	1133	800	1025	AG	1245	0.8	0.0	33.0
4.	Y SB4	800	1025	858	906	AG	1245	0.8	0.0	33.0
5.	Y NB1	868	911	813	1024	AG	1290	0.8	0.0	33.0
6.	Y NB2	814	1024	761	1138	AG	1220	1.8	0.0	33.0
7.	Y NB3	761	1138	728	1205	AG	1700	0.8	0.0	33.0
8.	Y NB4	728	1205	700	1263	AG	1700	0.8	0.0	33.0
9.	Y LT1	720	1198	753	1134	AG	960	1.8	0.0	33.0
10.	Y LT2	753	1134	802	1038	AG	70	1.8	0.0	33.0
11.	X EB1	596	1103	682	1125	AG	1200	0.8	0.0	42.0
12.	X EB2	682	1125	750	1141	AG	720	1.8	0.0	42.0
13.	X EB3	750	1141	826	1158	AG	1680	0.8	0.0	42.0
14.	X EB4	826	1158	923	1182	AG	1680	0.8	0.0	42.0
15.	X WB1	924	1170	832	1147	AG	1270	0.8	0.0	42.0
16.	X WB2	832	1147	757	1128	AG	1200	1.8	0.0	42.0
17.	X WB3	757	1128	687	1111	AG	1270	0.8	0.0	42.0
18.	X WB4	687	1111	599	1090	AG	1270	0.8	0.0	42.0
19.	X LT1	674	1115	753	1134	AG	480	1.8	0.0	42.0
20.	X LT2	753	1134	841	1157	AG	70	1.8	0.0	42.0

III. RECEPTOR LOCATIONS

	RECEPTOR	COORDINATES (M) X	Y	Z
1.	Recpt 1	805	1099	1.8
2.	Recpt 2	691	1157	1.8
3.	Recpt 3	729	1093	1.8
4.	Recpt 4	778	1179	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) 1	2	3	4	5	6	7	8
1. Recpt 1	310.	3.7	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
2. Recpt 2	100.	3.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	9.	3.6	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	231.	3.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 9	10	11	12	13	14	15	16
1. Recpt 1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

RECEPTOR	CONC/LINK (PPM) 17	18	19	20
1. Recpt 1	0.0	0.0	0.0	0.0
2. Recpt 2	0.0	0.0	0.0	0.0
3. Recpt 3	0.0	0.0	0.0	0.0
4. Recpt 4	0.0	0.0	0.0	0.0

1

Run Ended on 12/19/2011 at 14:43:35

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Fresno (SJV) Fresno (SJV) Fresno (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.037	0.068	0.106	1.874	1.558	4.685	0.304
35	0.006	0.010	0.017	0.204	0.284	1.805	0.046

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.783	1.296	1.846	5.598	15.364	22.068	1.828
35	0.468	0.771	1.001	1.185	2.878	14.286	0.830

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.066	0.120	0.242	6.144	10.880	1.393	0.826
35	0.038	0.068	0.148	2.258	5.605	1.266	0.333

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	921.810	1181.126	1698.003	3352.071	2418.624	266.396	1381.757
35	299.862	384.333	521.883	1685.526	1482.786	139.995	514.536

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.032	0.023	0.003	0.013
35	0.003	0.004	0.005	0.016	0.014	0.002	0.005

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.053	0.108	0.118	0.126	0.314	0.023	0.087
35	0.009	0.018	0.020	0.069	0.073	0.011	0.020

Pollutant Name: PM2.5 - Tire Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.008	0.002	0.001	0.003
35	0.002	0.002	0.002	0.008	0.002	0.001	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.005	0.005	0.011	0.005	0.003	0.006
35	0.005	0.005	0.005	0.011	0.005	0.003	0.006

Pollutant Name: Gasoline - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.598	7.486	5.145	3.487	3.461	28.032	8.324
35	29.476	22.983	16.928	17.622	17.502	52.631	25.487

Pollutant Name: Diesel - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.435	3.379	4.314	0.000	4.452
35	29.156	29.156	19.435	5.735	4.314	0.000	6.637

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Fresno (SJV) Fresno (SJV) Fresno (SJV)

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.003	0.006	0.026	0.039	0.228	0.645	0.018
10	0.006	0.013	0.052	0.076	0.445	0.799	0.031
20	0.012	0.024	0.102	0.144	0.843	1.094	0.056
30	0.018	0.036	0.150	0.204	1.195	1.372	0.080
40	0.023	0.047	0.196	0.256	1.501	1.633	0.102
50	0.028	0.057	0.240	0.300	1.760	1.878	0.122
60	0.033	0.067	0.282	0.336	1.973	2.057	0.141
120	0.055	0.115	0.484	0.378	2.218	2.328	0.213
180	0.054	0.112	0.479	0.401	2.354	2.355	0.213
240	0.057	0.119	0.509	0.424	2.485	2.503	0.226
300	0.061	0.126	0.540	0.445	2.612	2.648	0.239
360	0.064	0.133	0.570	0.466	2.734	2.790	0.252
420	0.067	0.140	0.601	0.486	2.853	2.929	0.265
480	0.071	0.147	0.631	0.506	2.967	3.065	0.278
540	0.074	0.154	0.661	0.525	3.076	3.198	0.290
600	0.077	0.161	0.691	0.543	3.182	3.328	0.303
660	0.080	0.168	0.721	0.560	3.283	3.454	0.315
720	0.084	0.174	0.750	0.576	3.380	3.578	0.327

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.061	0.112	0.389	0.760	2.182	2.952	0.231
10	0.121	0.221	0.769	1.490	4.275	3.578	0.435
20	0.237	0.432	1.504	2.856	8.195	4.776	0.824
30	0.348	0.634	2.205	4.098	11.760	5.902	1.190
40	0.453	0.825	2.873	5.217	14.971	6.956	1.534
50	0.553	1.007	3.507	6.213	17.828	7.938	1.854
60	0.647	1.179	4.107	7.084	20.329	8.849	2.151
120	1.051	1.907	6.616	8.273	23.741	12.515	3.195

180	0.995	1.808	6.335	8.515	24.435	12.095	3.099
240	1.085	1.970	6.908	8.765	25.152	13.103	3.336
300	1.164	2.112	7.411	9.023	25.892	14.035	3.547
360	1.232	2.235	7.845	9.289	26.654	14.891	3.733
420	1.289	2.338	8.208	9.562	27.440	15.672	3.893
480	1.335	2.422	8.502	9.844	28.248	16.377	4.029
540	1.370	2.486	8.726	10.134	29.080	17.006	4.139
600	1.394	2.530	8.879	10.432	29.934	17.559	4.225
660	1.407	2.554	8.963	10.737	30.811	18.037	4.285
720	1.410	2.559	8.977	11.051	31.711	18.439	4.320

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.028	0.064	0.569	0.160	1.066	0.153	0.167
10	0.029	0.067	0.591	0.241	1.606	0.193	0.180
20	0.032	0.072	0.630	0.383	2.555	0.263	0.203
30	0.034	0.076	0.665	0.499	3.328	0.321	0.223
40	0.035	0.080	0.696	0.588	3.925	0.366	0.239
50	0.037	0.083	0.721	0.652	4.347	0.400	0.252
60	0.038	0.086	0.742	0.689	4.593	0.421	0.261
120	0.041	0.094	0.815	0.694	4.626	0.423	0.280
180	0.042	0.094	0.816	0.691	4.609	0.420	0.280
240	0.041	0.093	0.809	0.687	4.583	0.413	0.278
300	0.041	0.092	0.799	0.682	4.548	0.405	0.275
360	0.040	0.091	0.784	0.675	4.504	0.396	0.270
420	0.039	0.088	0.765	0.667	4.451	0.384	0.265
480	0.038	0.086	0.741	0.658	4.389	0.371	0.257
540	0.037	0.083	0.714	0.647	4.319	0.356	0.249
600	0.035	0.079	0.682	0.636	4.239	0.339	0.239
660	0.033	0.075	0.646	0.622	4.150	0.321	0.228
720	0.031	0.070	0.606	0.608	4.052	0.301	0.216

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.036	15.383	22.010	2.532	4.431	13.053	14.360
10	13.460	17.217	24.716	5.050	8.838	15.242	16.273
20	16.803	21.518	31.027	10.045	17.577	19.541	20.671
30	20.809	26.664	38.541	14.983	26.218	23.734	25.833
40	25.477	32.654	47.255	19.865	34.762	27.821	31.758
50	30.807	39.489	57.172	24.691	43.207	31.802	38.447
60	36.798	47.170	68.290	29.461	51.554	35.677	45.899
120	86.189	110.361	159.081	50.109	87.684	53.072	105.438
180	97.777	125.214	180.578	59.200	103.592	57.350	119.807
240	109.359	140.056	202.039	67.754	118.561	61.377	134.117
300	120.935	154.887	223.465	75.772	132.592	65.153	148.367
360	132.505	169.707	244.854	83.253	145.683	68.678	162.556
420	144.069	184.515	266.208	90.198	157.835	71.951	176.687
480	155.627	199.312	287.527	96.606	169.049	74.974	190.757
540	167.178	214.099	308.809	102.478	179.323	77.745	204.767
600	178.724	228.874	330.056	107.813	188.659	80.265	218.718
660	190.264	243.637	351.268	112.611	197.055	82.534	232.609

720	201.797	258.390	372.443	116.873	204.513	84.552	246.440

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.001	0.000	0.000
50	0.000	0.000	0.001	0.000	0.001	0.000	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.002	0.001	0.001
300	0.001	0.002	0.002	0.001	0.002	0.001	0.001
360	0.001	0.002	0.002	0.001	0.002	0.001	0.002
420	0.001	0.002	0.003	0.001	0.002	0.001	0.002
480	0.002	0.002	0.003	0.001	0.002	0.001	0.002
540	0.002	0.002	0.003	0.001	0.002	0.001	0.002
600	0.002	0.002	0.003	0.001	0.002	0.001	0.002
660	0.002	0.002	0.004	0.001	0.002	0.001	0.002
720	0.002	0.003	0.004	0.001	0.003	0.001	0.002

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.001	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.001
20	0.002	0.004	0.003	0.001	0.003	0.004	0.003
30	0.003	0.006	0.005	0.002	0.004	0.003	0.004
40	0.004	0.008	0.007	0.002	0.005	0.003	0.005
50	0.005	0.009	0.008	0.003	0.006	0.002	0.006
60	0.005	0.011	0.009	0.003	0.006	0.002	0.008
120	0.009	0.018	0.016	0.004	0.009	0.005	0.012
180	0.010	0.020	0.017	0.004	0.009	0.006	0.014
240	0.011	0.022	0.019	0.004	0.009	0.008	0.015
300	0.012	0.023	0.020	0.005	0.010	0.010	0.016
360	0.013	0.025	0.022	0.005	0.010	0.011	0.017
420	0.013	0.026	0.023	0.005	0.010	0.012	0.018
480	0.014	0.027	0.023	0.005	0.011	0.013	0.019
540	0.014	0.028	0.024	0.005	0.011	0.014	0.019
600	0.014	0.028	0.025	0.005	0.011	0.014	0.020
660	0.014	0.028	0.025	0.005	0.012	0.014	0.020
720	0.014	0.028	0.025	0.006	0.012	0.015	0.020

Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Fresno (SJV) Fresno (SJV) Fresno (SJV)

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.021	0.035	0.028	0.002	0.042	0.177	0.026
10	0.038	0.065	0.052	0.004	0.078	0.330	0.049
20	0.066	0.113	0.090	0.008	0.134	0.578	0.085
30	0.086	0.146	0.117	0.010	0.172	0.764	0.110
40	0.093	0.159	0.128	0.011	0.187	0.839	0.120

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Fresno (SJV) Fresno (SJV) Fresno (SJV)

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.019	0.049	0.056	0.001	0.002	0.451	0.048

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Fresno (SJV) Fresno (SJV) Fresno (SJV)

Table 5b: Multi-Day Diurnal Loss Emissions
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity:
ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.003	0.004	0.000	0.001	0.043	0.004

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Fresno (SJV) Fresno (SJV) Fresno (SJV)

Table 6a: Partial Day Resting Loss Emissions
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity:
ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.011	0.033	0.039	0.001	0.001	0.143	0.026

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Fresno (SJV) Fresno (SJV) Fresno (SJV)

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.002	0.003	0.000	0.000	0.014	0.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Fresno (SJV) Fresno (SJV) Fresno (SJV)

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.433	0.305	0.138	0.114	0.002	0.008	1.000
%TRIP	0.409	0.285	0.214	0.082	0.000	0.010	1.000
%VEH	0.457	0.322	0.145	0.042	0.000	0.034	1.000

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Fresno (SJV) Fresno (SJV) Fresno (SJV)

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.163	0.194	0.014	0.533	0.003	0.083
2	0.007	0.086	0.102	0.008	0.275	0.037	0.045
3	0.008	0.063	0.073	0.005	0.190	0.056	0.034
4	0.010	0.052	0.061	0.005	0.149	0.068	0.030
5	0.011	0.046	0.053	0.004	0.124	0.077	0.027
10	0.015	0.036	0.040	0.003	0.078	0.099	0.024
15	0.017	0.034	0.037	0.003	0.066	0.113	0.024
20	0.018	0.034	0.037	0.003	0.063	0.123	0.025
25	0.019	0.035	0.038	0.003	0.064	0.133	0.026
30	0.020	0.037	0.040	0.003	0.068	0.140	0.027
35	0.021	0.038	0.041	0.003	0.071	0.147	0.028
40	0.022	0.040	0.043	0.003	0.074	0.154	0.029
45	0.023	0.041	0.044	0.003	0.077	0.160	0.030
50	0.023	0.042	0.046	0.004	0.080	0.166	0.031
55	0.024	0.043	0.047	0.004	0.083	0.172	0.032
60	0.025	0.045	0.048	0.004	0.085	0.177	0.033

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.037	0.067	0.103	2.116	2.569	4.698	0.557
35	0.006	0.010	0.017	0.225	0.464	1.809	0.074

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.789	1.268	1.820	6.260	24.099	22.147	2.497
35	0.471	0.755	0.968	1.320	4.579	14.335	0.942

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.066	0.117	0.251	6.856	14.852	1.402	1.627
35	0.038	0.067	0.155	2.486	7.791	1.273	0.621

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	921.824	1180.786	1719.971	3531.643	2417.025	266.398	1678.834
35	299.866	384.251	520.803	1731.634	1692.008	139.997	669.833

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.017	0.034	0.023	0.003	0.016
35	0.003	0.004	0.005	0.017	0.016	0.002	0.006

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.053	0.108	0.120	0.119	0.330	0.023	0.092
35	0.009	0.018	0.020	0.071	0.078	0.011	0.026

Pollutant Name: PM2.5 - Tire Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.008	0.002	0.001	0.003
35	0.002	0.002	0.002	0.008	0.002	0.001	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.005	0.005	0.011	0.005	0.003	0.007
35	0.005	0.005	0.005	0.011	0.005	0.003	0.007

Pollutant Name: Gasoline - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.598	7.488	5.072	3.452	3.388	28.017	8.198
35	29.475	22.989	16.967	17.448	17.147	52.603	25.118

Pollutant Name: Diesel - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.438	3.082	4.266	0.000	3.790
35	29.156	29.156	19.438	5.648	4.266	0.000	6.238

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern (SJV)
****

*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.003	0.006	0.028	0.041	0.259	0.646	0.021
10	0.006	0.012	0.055	0.080	0.504	0.800	0.036
20	0.012	0.023	0.109	0.151	0.956	1.097	0.066
30	0.017	0.034	0.160	0.215	1.355	1.377	0.093
40	0.023	0.045	0.210	0.270	1.702	1.640	0.119
50	0.028	0.055	0.257	0.316	1.996	1.885	0.143
60	0.032	0.065	0.303	0.354	2.238	2.065	0.165
120	0.055	0.112	0.525	0.398	2.516	2.339	0.251
180	0.053	0.109	0.519	0.423	2.670	2.365	0.251
240	0.057	0.115	0.553	0.446	2.819	2.514	0.266
300	0.060	0.122	0.586	0.469	2.963	2.659	0.282
360	0.064	0.129	0.619	0.491	3.102	2.802	0.297
420	0.067	0.136	0.652	0.512	3.236	2.941	0.312
480	0.070	0.143	0.685	0.533	3.365	3.078	0.328
540	0.074	0.150	0.718	0.553	3.490	3.211	0.342
600	0.077	0.157	0.751	0.572	3.609	3.341	0.357
660	0.080	0.163	0.783	0.590	3.724	3.468	0.372
720	0.083	0.170	0.816	0.607	3.834	3.592	0.386

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.061	0.109	0.409	0.944	3.001	2.960	0.286
10	0.121	0.216	0.810	1.849	5.880	3.594	0.541
20	0.236	0.422	1.586	3.545	11.272	4.808	1.027
30	0.346	0.619	2.327	5.088	16.177	5.949	1.484
40	0.451	0.807	3.033	6.477	20.594	7.016	1.911
50	0.551	0.985	3.704	7.713	24.523	8.010	2.307
60	0.645	1.154	4.340	8.795	27.964	8.930	2.673
120	1.050	1.874	7.022	10.271	32.657	12.627	3.895
180	0.995	1.778	6.724	10.572	33.612	12.193	3.799
240	1.085	1.940	7.339	10.882	34.598	13.203	4.076
300	1.165	2.081	7.878	11.202	35.616	14.138	4.325
360	1.233	2.203	8.342	11.532	36.665	14.997	4.545
420	1.290	2.306	8.730	11.872	37.745	15.781	4.737
480	1.336	2.388	9.043	12.221	38.857	16.489	4.900
540	1.372	2.451	9.281	12.581	40.001	17.121	5.035
600	1.396	2.494	9.443	12.951	41.176	17.678	5.141
660	1.409	2.517	9.529	13.330	42.382	18.159	5.219
720	1.411	2.521	9.541	13.719	43.620	18.565	5.268

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.028	0.064	0.641	0.184	1.289	0.154	0.214
10	0.030	0.066	0.664	0.277	1.942	0.194	0.231
20	0.032	0.071	0.705	0.441	3.089	0.264	0.261
30	0.034	0.075	0.741	0.574	4.023	0.323	0.287
40	0.035	0.078	0.773	0.677	4.745	0.369	0.308
50	0.037	0.081	0.800	0.750	5.255	0.402	0.324
60	0.038	0.083	0.823	0.793	5.552	0.424	0.336
120	0.041	0.092	0.906	0.798	5.593	0.426	0.361
180	0.042	0.092	0.906	0.796	5.572	0.422	0.361
240	0.041	0.091	0.899	0.791	5.541	0.416	0.359
300	0.041	0.090	0.887	0.785	5.499	0.408	0.354
360	0.040	0.088	0.871	0.777	5.445	0.398	0.349
420	0.039	0.086	0.849	0.768	5.381	0.387	0.341
480	0.038	0.084	0.823	0.758	5.307	0.374	0.332
540	0.036	0.081	0.792	0.745	5.221	0.359	0.321
600	0.035	0.077	0.756	0.732	5.125	0.342	0.309
660	0.033	0.073	0.716	0.716	5.017	0.324	0.295
720	0.031	0.068	0.671	0.699	4.899	0.304	0.279

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.040	15.394	22.271	2.300	3.433	13.049	14.561
10	13.462	17.221	24.990	4.587	6.847	15.238	16.524
20	16.802	21.509	31.340	9.123	13.617	19.536	21.027
30	20.805	26.643	38.907	13.608	20.312	23.729	26.302
40	25.470	32.623	47.692	18.042	26.931	27.816	32.350
50	30.797	39.449	57.695	22.425	33.473	31.797	39.169
60	36.787	47.121	68.915	26.757	39.940	35.672	46.760
120	86.184	110.319	160.695	45.509	67.931	53.065	107.226
180	97.769	125.158	182.389	53.766	80.255	57.344	121.861
240	109.348	139.987	204.053	61.535	91.852	61.372	136.430
300	120.922	154.807	225.685	68.817	102.722	65.148	150.933
360	132.491	169.619	247.285	75.612	112.864	68.673	165.369
420	144.054	184.421	268.854	81.919	122.279	71.948	179.740
480	155.611	199.214	290.391	87.739	130.966	74.971	194.045
540	167.163	213.997	311.896	93.072	138.926	77.742	208.283
600	178.710	228.772	333.370	97.917	146.159	80.263	222.455
660	190.251	243.537	354.813	102.275	152.664	82.532	236.562
720	201.787	258.294	376.224	106.145	158.441	84.551	250.602

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000

20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.001	0.000	0.000
50	0.000	0.000	0.001	0.000	0.001	0.000	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.002	0.001	0.002
360	0.001	0.002	0.003	0.001	0.002	0.001	0.002
420	0.001	0.002	0.003	0.001	0.002	0.001	0.002
480	0.002	0.002	0.003	0.001	0.002	0.001	0.002
540	0.002	0.002	0.003	0.001	0.002	0.001	0.002
600	0.002	0.002	0.003	0.001	0.002	0.001	0.002
660	0.002	0.002	0.004	0.001	0.002	0.001	0.002
720	0.002	0.003	0.004	0.001	0.002	0.001	0.002

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.001	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.001
20	0.002	0.004	0.003	0.001	0.002	0.004	0.003
30	0.003	0.006	0.005	0.002	0.003	0.003	0.004
40	0.004	0.008	0.006	0.002	0.004	0.003	0.005
50	0.005	0.009	0.008	0.003	0.004	0.002	0.006
60	0.005	0.011	0.009	0.003	0.005	0.002	0.008
120	0.009	0.018	0.015	0.004	0.007	0.005	0.012
180	0.010	0.020	0.017	0.004	0.007	0.006	0.014
240	0.011	0.022	0.019	0.004	0.007	0.008	0.015
300	0.012	0.024	0.020	0.005	0.008	0.010	0.016
360	0.012	0.025	0.021	0.005	0.008	0.011	0.017
420	0.013	0.026	0.022	0.005	0.008	0.012	0.018
480	0.014	0.027	0.023	0.005	0.008	0.013	0.019
540	0.014	0.028	0.024	0.005	0.009	0.014	0.019
600	0.014	0.029	0.024	0.005	0.009	0.014	0.020
660	0.014	0.029	0.024	0.005	0.009	0.014	0.020
720	0.014	0.029	0.024	0.006	0.009	0.015	0.020

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern (SJV)
****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.020	0.034	0.026	0.002	0.040	0.176	0.025
10	0.038	0.063	0.047	0.004	0.075	0.329	0.046
20	0.065	0.108	0.082	0.007	0.127	0.575	0.080
30	0.085	0.140	0.107	0.009	0.164	0.760	0.104
40	0.092	0.153	0.116	0.009	0.177	0.835	0.113

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern (SJV)

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.018	0.047	0.051	0.001	0.002	0.450	0.047

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern (SJV)

*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.003	0.003	0.000	0.001	0.043	0.004

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern (SJV)

*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.011	0.032	0.037	0.000	0.001	0.142	0.026

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern (SJV)

*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.002	0.002	0.000	0.000	0.014	0.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern (SJV)

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.353	0.268	0.149	0.220	0.001	0.009	1.000
%TRIP	0.361	0.266	0.258	0.104	0.000	0.010	1.000
%VEH	0.417	0.311	0.165	0.070	0.000	0.036	1.000

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern (SJV)

*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.154	0.184	0.010	0.434	0.003	0.074
2	0.007	0.081	0.097	0.005	0.223	0.037	0.040
3	0.008	0.059	0.070	0.004	0.154	0.056	0.031
4	0.009	0.050	0.058	0.003	0.121	0.068	0.027
5	0.011	0.044	0.051	0.003	0.100	0.077	0.025
10	0.015	0.034	0.038	0.002	0.062	0.099	0.022
15	0.017	0.033	0.036	0.002	0.052	0.113	0.022
20	0.018	0.033	0.036	0.002	0.049	0.123	0.022
25	0.019	0.034	0.037	0.002	0.050	0.133	0.023
30	0.020	0.036	0.039	0.002	0.052	0.140	0.024
35	0.021	0.037	0.040	0.002	0.055	0.147	0.025
40	0.022	0.039	0.042	0.002	0.057	0.153	0.026
45	0.023	0.040	0.043	0.002	0.060	0.160	0.027
50	0.023	0.041	0.044	0.002	0.062	0.166	0.028
55	0.024	0.042	0.046	0.002	0.064	0.172	0.029
60	0.025	0.043	0.047	0.003	0.066	0.177	0.030

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kings (SJV) Kings (SJV) Kings (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.042	0.079	0.112	2.226	2.921	4.702	0.609

35	0.006	0.012	0.018	0.234	0.490	1.810	0.080

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.855	1.401	1.923	6.498	30.838	22.176	2.694
35	0.510	0.831	1.047	1.369	5.951	14.354	1.005

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.079	0.147	0.271	7.164	12.049	1.405	1.771
35	0.045	0.083	0.163	2.583	7.113	1.275	0.675

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	921.828	1178.969	1703.138	3636.429	2395.926	266.395	1694.943
35	299.869	383.748	521.637	1757.857	1533.770	139.994	680.659

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.035	0.023	0.003	0.016
35	0.003	0.004	0.005	0.017	0.015	0.002	0.007

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.059	0.112	0.126	0.109	0.275	0.023	0.093
35	0.010	0.018	0.021	0.069	0.064	0.011	0.027

Pollutant Name: PM2.5 - Tire Wear Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.008	0.002	0.001	0.003
35	0.002	0.002	0.002	0.008	0.002	0.001	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.005	0.005	0.011	0.005	0.003	0.007
35	0.005	0.005	0.005	0.011	0.005	0.003	0.007

Pollutant Name: Gasoline - mi/gal Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.597	7.496	5.129	3.419	3.368	28.013	8.387
35	29.469	23.011	16.933	17.282	17.044	52.593	25.572

Pollutant Name: Diesel - mi/gal Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.443	2.912	4.367	0.000	3.409
35	29.156	29.156	19.443	5.599	4.367	0.000	6.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kings (SJV) Kings (SJV) Kings (SJV)

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.004	0.007	0.026	0.043	0.313	0.646	0.020
10	0.007	0.013	0.051	0.084	0.610	0.801	0.035
20	0.014	0.026	0.100	0.160	1.156	1.098	0.062
30	0.020	0.038	0.147	0.227	1.639	1.379	0.087
40	0.026	0.049	0.193	0.285	2.058	1.642	0.111
50	0.032	0.060	0.237	0.334	2.413	1.888	0.133
60	0.037	0.070	0.279	0.374	2.706	2.068	0.153
120	0.061	0.118	0.491	0.421	3.042	2.342	0.229
180	0.060	0.115	0.485	0.446	3.228	2.368	0.228
240	0.063	0.122	0.516	0.471	3.408	2.517	0.243
300	0.067	0.129	0.548	0.495	3.582	2.663	0.257
360	0.071	0.137	0.579	0.519	3.750	2.806	0.271
420	0.075	0.144	0.610	0.541	3.912	2.946	0.284
480	0.078	0.151	0.641	0.563	4.068	3.082	0.298
540	0.082	0.158	0.672	0.584	4.219	3.216	0.312
600	0.086	0.165	0.702	0.604	4.363	3.346	0.325
660	0.089	0.172	0.733	0.623	4.502	3.473	0.338
720	0.093	0.179	0.764	0.641	4.634	3.597	0.351

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.069	0.118	0.386	1.123	4.054	2.964	0.281
10	0.137	0.234	0.763	2.200	7.943	3.601	0.527
20	0.268	0.457	1.495	4.217	15.228	4.820	0.997
30	0.393	0.670	2.194	6.052	21.853	5.965	1.437
40	0.512	0.872	2.862	7.705	27.820	7.036	1.848
50	0.625	1.064	3.498	9.175	33.127	8.033	2.229
60	0.731	1.245	4.102	10.462	37.776	8.957	2.579
120	1.185	2.005	6.689	12.218	44.116	12.663	3.728
180	1.122	1.901	6.392	12.576	45.406	12.225	3.638
240	1.222	2.070	6.984	12.944	46.738	13.237	3.897
300	1.311	2.218	7.503	13.325	48.113	14.173	4.130
360	1.387	2.346	7.949	13.718	49.530	15.034	4.337
420	1.451	2.454	8.322	14.122	50.989	15.819	4.519
480	1.503	2.542	8.621	14.538	52.492	16.528	4.674
540	1.543	2.609	8.847	14.966	54.036	17.162	4.803
600	1.570	2.655	9.000	15.405	55.623	17.720	4.907
660	1.585	2.682	9.079	15.857	57.253	18.202	4.984
720	1.588	2.688	9.085	16.320	58.925	18.609	5.036

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.038	0.080	0.606	0.206	1.609	0.154	0.186
10	0.040	0.083	0.624	0.311	2.424	0.194	0.202
20	0.043	0.090	0.657	0.495	3.856	0.265	0.230
30	0.045	0.095	0.687	0.645	5.023	0.324	0.254
40	0.048	0.100	0.713	0.760	5.925	0.370	0.273

50	0.049	0.103	0.737	0.842	6.561	0.403	0.288
60	0.051	0.107	0.757	0.890	6.933	0.425	0.298
120	0.056	0.117	0.835	0.896	6.983	0.427	0.320
180	0.056	0.117	0.836	0.893	6.957	0.423	0.320
240	0.056	0.116	0.830	0.888	6.918	0.417	0.318
300	0.055	0.115	0.819	0.881	6.865	0.409	0.314
360	0.054	0.113	0.803	0.872	6.799	0.399	0.309
420	0.053	0.110	0.783	0.862	6.719	0.388	0.302
480	0.051	0.107	0.758	0.850	6.626	0.374	0.294
540	0.049	0.103	0.729	0.837	6.519	0.360	0.285
600	0.047	0.098	0.695	0.821	6.398	0.343	0.274
660	0.045	0.093	0.657	0.804	6.264	0.325	0.262
720	0.042	0.088	0.615	0.785	6.117	0.305	0.248

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.033	15.347	22.162	2.070	4.082	13.056	14.235
10	13.458	17.179	24.837	4.128	8.142	15.246	16.109
20	16.804	21.476	31.096	8.210	16.193	19.545	20.424
30	20.812	26.616	38.570	12.247	24.154	23.738	25.497
40	25.482	32.598	47.258	16.237	32.025	27.825	31.326
50	30.813	39.423	57.160	20.182	39.805	31.807	37.913
60	36.806	47.090	68.277	24.081	47.495	35.682	45.257
120	86.193	110.146	159.466	40.958	80.780	53.078	104.089
180	97.783	124.973	180.962	48.389	95.436	57.355	118.244
240	109.367	139.789	202.435	55.381	109.227	61.382	132.345
300	120.945	154.593	223.884	61.935	122.152	65.157	146.392
360	132.516	169.385	245.308	68.050	134.213	68.681	160.385
420	144.080	184.165	266.709	73.727	145.408	71.954	174.323
480	155.639	198.933	288.086	78.965	155.739	74.976	188.208
540	167.190	213.689	309.439	83.764	165.204	77.747	202.038
600	178.735	228.433	330.767	88.125	173.805	80.267	215.815
660	190.274	243.165	352.072	92.047	181.540	82.536	229.537
720	201.807	257.886	373.353	95.530	188.411	84.553	243.206

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.001	0.000	0.000
40	0.000	0.000	0.001	0.000	0.001	0.000	0.000
50	0.000	0.000	0.001	0.000	0.001	0.000	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.000
120	0.001	0.001	0.002	0.001	0.002	0.001	0.001
180	0.001	0.001	0.002	0.001	0.002	0.001	0.001
240	0.001	0.001	0.002	0.001	0.002	0.001	0.001
300	0.001	0.002	0.002	0.001	0.002	0.001	0.001
360	0.001	0.002	0.002	0.001	0.002	0.001	0.002
420	0.001	0.002	0.003	0.001	0.002	0.001	0.002
480	0.002	0.002	0.003	0.001	0.002	0.001	0.002

540	0.002	0.002	0.003	0.001	0.003	0.001	0.002
600	0.002	0.002	0.003	0.001	0.003	0.001	0.002
660	0.002	0.002	0.004	0.001	0.003	0.001	0.002
720	0.002	0.003	0.004	0.001	0.003	0.001	0.002

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.001	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.002
20	0.002	0.004	0.004	0.001	0.002	0.004	0.003
30	0.003	0.006	0.005	0.002	0.004	0.003	0.004
40	0.004	0.007	0.007	0.002	0.005	0.003	0.005
50	0.005	0.009	0.008	0.002	0.005	0.002	0.007
60	0.006	0.011	0.010	0.003	0.006	0.002	0.008
120	0.010	0.018	0.016	0.004	0.008	0.005	0.013
180	0.011	0.020	0.018	0.004	0.009	0.006	0.014
240	0.012	0.022	0.020	0.004	0.009	0.008	0.016
300	0.013	0.023	0.021	0.004	0.009	0.010	0.017
360	0.014	0.025	0.023	0.004	0.010	0.011	0.018
420	0.015	0.026	0.024	0.004	0.010	0.012	0.019
480	0.015	0.027	0.025	0.005	0.010	0.013	0.020
540	0.016	0.028	0.025	0.005	0.010	0.014	0.020
600	0.016	0.028	0.026	0.005	0.011	0.014	0.020
660	0.016	0.028	0.026	0.005	0.011	0.014	0.021
720	0.016	0.028	0.026	0.005	0.011	0.015	0.021

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kings (SJV) Kings (SJV) Kings (SJV)

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.021	0.035	0.027	0.002	0.048	0.177	0.026
10	0.039	0.065	0.049	0.003	0.089	0.331	0.049

20	0.067	0.111	0.085	0.006	0.153	0.579	0.084
30	0.086	0.145	0.111	0.008	0.196	0.764	0.110
40	0.094	0.158	0.121	0.009	0.213	0.840	0.119

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kings (SJV) Kings (SJV) Kings (SJV)

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.019	0.048	0.053	0.001	0.003	0.451	0.049

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kings (SJV) Kings (SJV) Kings (SJV)

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.003	0.003	0.000	0.001	0.043	0.004

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kings (SJV) Kings (SJV) Kings (SJV)

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.011	0.032	0.039	0.000	0.001	0.143	0.026

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings (SJV)
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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kings (SJV) Kings (SJV) Kings (SJV)

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.002	0.003	0.000	0.000	0.014	0.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kings (SJV) Kings (SJV) Kings (SJV)

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.371	0.277	0.114	0.227	0.003	0.010	1.000
%TRIP	0.393	0.295	0.209	0.090	0.000	0.012	1.000
%VEH	0.429	0.326	0.135	0.069	0.001	0.040	1.000

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kings (SJV) Kings (SJV) Kings (SJV)

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.162	0.185	0.009	0.499	0.003	0.072
2	0.007	0.086	0.097	0.005	0.257	0.037	0.039
3	0.008	0.062	0.070	0.003	0.178	0.056	0.030
4	0.010	0.052	0.058	0.003	0.139	0.068	0.026
5	0.011	0.046	0.051	0.002	0.116	0.077	0.024
10	0.015	0.035	0.039	0.002	0.073	0.099	0.021
15	0.017	0.034	0.036	0.002	0.061	0.113	0.021
20	0.018	0.034	0.036	0.002	0.058	0.123	0.022
25	0.020	0.035	0.038	0.002	0.059	0.133	0.023
30	0.020	0.036	0.039	0.002	0.062	0.140	0.024
35	0.021	0.038	0.041	0.002	0.065	0.147	0.025
40	0.022	0.039	0.042	0.002	0.068	0.154	0.026
45	0.023	0.041	0.044	0.002	0.071	0.160	0.027
50	0.023	0.042	0.045	0.002	0.074	0.166	0.028
55	0.024	0.043	0.046	0.002	0.076	0.172	0.028
60	0.025	0.044	0.047	0.002	0.078	0.177	0.029

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Madera (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Madera (SJV) Madera (SJV) Madera (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.040	0.067	0.110	2.101	0.349	4.705	0.399
35	0.006	0.010	0.019	0.228	0.082	1.811	0.061

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.840	1.283	1.921	6.498	3.754	22.196	2.185
35	0.502	0.765	1.014	1.370	0.621	14.366	0.952

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.071	0.117	0.274	6.969	5.648	1.408	1.087
35	0.041	0.067	0.168	2.557	2.696	1.277	0.431

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	921.870	1177.444	1713.743	3447.098	2379.089	266.399	1463.597
35	299.884	383.194	520.696	1692.621	1442.334	139.997	551.032

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.033	0.023	0.003	0.014
35	0.003	0.004	0.005	0.016	0.014	0.002	0.005

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.061	0.114	0.130	0.135	0.190	0.023	0.099
35	0.010	0.019	0.022	0.076	0.043	0.011	0.024

Pollutant Name: PM2.5 - Tire Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.008	0.002	0.001	0.003
35	0.002	0.002	0.002	0.008	0.002	0.001	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

5	0.005	0.005	0.005	0.011	0.005	0.003	0.006
35	0.005	0.005	0.005	0.011	0.005	0.003	0.006

Pollutant Name: Gasoline - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.596	7.508	5.065	3.475	3.520	28.009	8.240
35	29.469	23.051	16.968	17.564	17.788	52.586	25.129

Pollutant Name: Diesel - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.443	3.193	4.455	0.000	4.353
35	29.156	29.156	19.443	5.680	4.455	0.000	6.658

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Madera (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Madera (SJV) Madera (SJV) Madera (SJV)

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.003	0.006	0.029	0.044	0.159	0.646	0.022
10	0.006	0.012	0.057	0.085	0.311	0.801	0.036
20	0.012	0.024	0.112	0.162	0.589	1.099	0.065
30	0.018	0.036	0.165	0.229	0.836	1.380	0.092
40	0.024	0.046	0.216	0.288	1.049	1.644	0.117
50	0.029	0.057	0.265	0.337	1.231	1.890	0.141
60	0.034	0.066	0.311	0.378	1.380	2.070	0.162
120	0.057	0.113	0.541	0.425	1.551	2.345	0.247

180	0.056	0.110	0.535	0.451	1.646	2.371	0.246
240	0.059	0.117	0.569	0.476	1.737	2.520	0.262
300	0.063	0.124	0.604	0.500	1.826	2.666	0.277
360	0.066	0.131	0.638	0.524	1.912	2.809	0.292
420	0.070	0.138	0.672	0.547	1.995	2.949	0.307
480	0.073	0.144	0.706	0.568	2.074	3.086	0.322
540	0.076	0.151	0.740	0.589	2.151	3.219	0.337
600	0.080	0.158	0.773	0.610	2.225	3.350	0.351
660	0.083	0.165	0.807	0.629	2.295	3.477	0.366
720	0.087	0.172	0.841	0.648	2.363	3.601	0.380

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.065	0.119	0.411	0.924	0.855	2.965	0.264
10	0.129	0.235	0.813	1.810	1.676	3.605	0.492
20	0.252	0.460	1.591	3.470	3.212	4.829	0.928
30	0.370	0.675	2.335	4.980	4.610	5.978	1.339
40	0.482	0.879	3.043	6.340	5.869	7.053	1.724
50	0.588	1.072	3.717	7.550	6.989	8.054	2.085
60	0.689	1.255	4.357	8.609	7.969	8.981	2.420
120	1.119	2.030	7.060	10.054	9.307	12.696	3.619
180	1.059	1.925	6.758	10.348	9.579	12.254	3.507
240	1.155	2.098	7.378	10.651	9.860	13.266	3.780
300	1.239	2.249	7.921	10.965	10.150	14.202	4.023
360	1.311	2.380	8.388	11.288	10.449	15.063	4.237
420	1.372	2.490	8.779	11.620	10.757	15.848	4.421
480	1.421	2.579	9.094	11.963	11.074	16.558	4.576
540	1.459	2.647	9.333	12.315	11.400	17.193	4.701
600	1.484	2.694	9.496	12.676	11.734	17.752	4.798
660	1.498	2.720	9.582	13.048	12.078	18.235	4.864
720	1.501	2.725	9.592	13.429	12.431	18.643	4.902

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.030	0.067	0.656	0.190	0.676	0.154	0.204
10	0.031	0.070	0.679	0.286	1.018	0.194	0.219
20	0.034	0.075	0.721	0.455	1.619	0.265	0.244
30	0.036	0.079	0.758	0.593	2.109	0.324	0.266
40	0.038	0.083	0.790	0.699	2.488	0.370	0.283
50	0.039	0.086	0.818	0.774	2.755	0.404	0.298
60	0.040	0.089	0.842	0.818	2.911	0.425	0.308
120	0.044	0.097	0.926	0.824	2.932	0.428	0.332
180	0.044	0.098	0.927	0.821	2.921	0.424	0.333
240	0.044	0.097	0.919	0.817	2.905	0.418	0.330
300	0.044	0.096	0.907	0.810	2.882	0.410	0.326
360	0.043	0.094	0.890	0.803	2.855	0.400	0.320
420	0.042	0.092	0.868	0.793	2.821	0.388	0.313
480	0.040	0.089	0.841	0.782	2.782	0.375	0.305
540	0.039	0.086	0.810	0.769	2.737	0.360	0.294
600	0.037	0.082	0.773	0.755	2.686	0.344	0.283
660	0.035	0.078	0.732	0.739	2.630	0.325	0.269

720	0.033	0.073	0.686	0.722	2.568	0.305	0.254

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.034	15.325	22.126	2.388	4.435	13.047	14.849
10	13.458	17.154	24.824	4.763	8.846	15.236	16.787
20	16.802	21.443	31.126	9.473	17.594	19.535	21.257
30	20.809	26.574	38.639	14.130	26.244	23.727	26.517
40	25.476	32.546	47.361	18.735	34.796	27.814	32.568
50	30.806	39.360	57.293	23.286	43.249	31.795	39.410
60	36.798	47.015	68.435	27.785	51.604	35.670	47.042
120	86.184	109.978	159.603	47.257	87.770	53.063	108.306
180	97.772	124.782	181.147	55.831	103.694	57.342	123.015
240	109.353	139.575	202.661	63.899	118.678	61.370	137.671
300	120.929	154.356	224.144	71.460	132.721	65.147	152.275
360	132.498	169.125	245.596	78.516	145.826	68.672	166.826
420	144.062	183.882	267.018	85.065	157.990	71.947	181.324
480	155.619	198.628	288.410	91.109	169.214	74.970	195.770
540	167.170	213.362	309.770	96.646	179.499	77.742	210.164
600	178.714	228.084	331.101	101.678	188.844	80.263	224.505
660	190.253	242.795	352.400	106.203	197.248	82.533	238.793
720	201.785	257.493	373.670	110.222	204.713	84.551	253.029

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.000	0.000
50	0.000	0.000	0.001	0.000	0.001	0.000	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.002
360	0.001	0.002	0.003	0.001	0.002	0.001	0.002
420	0.001	0.002	0.003	0.001	0.002	0.001	0.002
480	0.002	0.002	0.003	0.001	0.002	0.001	0.002
540	0.002	0.002	0.003	0.001	0.002	0.001	0.002
600	0.002	0.002	0.003	0.001	0.002	0.001	0.002
660	0.002	0.002	0.004	0.001	0.002	0.001	0.002
720	0.002	0.003	0.004	0.001	0.002	0.001	0.003

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

5	0.001	0.001	0.001	0.000	0.001	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.002
20	0.002	0.004	0.004	0.001	0.003	0.004	0.003
30	0.003	0.006	0.005	0.002	0.004	0.003	0.005
40	0.004	0.008	0.007	0.002	0.005	0.003	0.006
50	0.005	0.010	0.008	0.003	0.006	0.002	0.007
60	0.006	0.012	0.010	0.003	0.007	0.002	0.009
120	0.010	0.019	0.016	0.004	0.009	0.005	0.014
180	0.011	0.022	0.018	0.005	0.009	0.006	0.016
240	0.012	0.024	0.020	0.005	0.010	0.008	0.017
300	0.013	0.026	0.021	0.005	0.010	0.010	0.019
360	0.014	0.027	0.023	0.005	0.010	0.011	0.020
420	0.015	0.029	0.024	0.005	0.011	0.012	0.021
480	0.015	0.030	0.025	0.005	0.011	0.013	0.021
540	0.016	0.030	0.025	0.005	0.011	0.014	0.022
600	0.016	0.031	0.026	0.006	0.012	0.014	0.022
660	0.016	0.031	0.026	0.006	0.012	0.014	0.023
720	0.016	0.031	0.026	0.006	0.012	0.015	0.023

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Madera (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Madera (SJV) Madera (SJV) Madera (SJV)

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.020	0.031	0.025	0.002	0.027	0.177	0.026
10	0.037	0.057	0.046	0.004	0.050	0.330	0.047
20	0.064	0.099	0.080	0.007	0.085	0.577	0.082
30	0.083	0.128	0.104	0.009	0.110	0.763	0.107
40	0.091	0.140	0.113	0.010	0.119	0.838	0.116

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Madera (SJV)
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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Madera (SJV) Madera (SJV) Madera (SJV)

Table 5a: Partial Day Diurnal Loss Emissions
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity:
ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.018	0.043	0.050	0.001	0.001	0.451	0.050

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Madera (SJV)
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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Madera (SJV) Madera (SJV) Madera (SJV)

Table 5b: Multi-Day Diurnal Loss Emissions
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity:
ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.003	0.003	0.000	0.000	0.043	0.004

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Madera (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Madera (SJV) Madera (SJV) Madera (SJV)

Table 6a: Partial Day Resting Loss Emissions
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity:
ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.010	0.029	0.036	0.001	0.001	0.143	0.027

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Madera (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Madera (SJV) Madera (SJV) Madera (SJV)

Table 6b: Multi-Day Resting Loss Emissions
(grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity:
ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.002	0.002	0.000	0.000	0.014	0.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title

Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Madera (SJV)
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Madera (SJV) Madera (SJV) Madera (SJV)

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.354	0.358	0.138	0.138	0.001	0.012	1.000
%TRIP	0.349	0.329	0.238	0.071	0.000	0.013	1.000
%VEH	0.388	0.370	0.146	0.052	0.000	0.045	1.000

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Madera (SJV)
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Madera (SJV) Madera (SJV) Madera (SJV)

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.152	0.182	0.015	0.380	0.003	0.085
2	0.007	0.080	0.096	0.008	0.196	0.037	0.046
3	0.008	0.059	0.069	0.006	0.136	0.056	0.035
4	0.009	0.049	0.058	0.005	0.107	0.068	0.030
5	0.011	0.043	0.051	0.004	0.090	0.077	0.028
10	0.015	0.034	0.038	0.003	0.058	0.099	0.024
15	0.017	0.032	0.036	0.003	0.051	0.113	0.024
20	0.018	0.032	0.036	0.003	0.050	0.123	0.025

25	0.019	0.034	0.037	0.003	0.052	0.133	0.026
30	0.020	0.035	0.038	0.003	0.055	0.140	0.027
35	0.021	0.036	0.040	0.003	0.058	0.147	0.028
40	0.022	0.038	0.041	0.004	0.060	0.153	0.029
45	0.023	0.039	0.043	0.004	0.063	0.160	0.030
50	0.023	0.040	0.044	0.004	0.065	0.166	0.031
55	0.024	0.041	0.045	0.004	0.067	0.172	0.032
60	0.025	0.043	0.046	0.004	0.070	0.177	0.033

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Merced (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Merced (SJV) Merced (SJV) Merced (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.040	0.069	0.107	2.240	1.664	4.717	0.511
35	0.006	0.010	0.018	0.241	0.371	1.815	0.071

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.855	1.300	1.924	7.109	10.079	22.274	2.496
35	0.511	0.774	1.037	1.494	1.758	14.414	0.976

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.072	0.119	0.252	7.363	21.936	1.417	1.498
35	0.041	0.068	0.154	2.683	9.768	1.283	0.577

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	921.604	1178.540	1704.426	3527.869	2423.641	266.401	1565.931
35	299.799	383.520	521.354	1730.183	1889.179	139.999	615.051

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.034	0.023	0.003	0.015
35	0.003	0.004	0.005	0.017	0.018	0.002	0.006

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.063	0.113	0.131	0.134	0.535	0.023	0.100
35	0.010	0.018	0.022	0.077	0.130	0.011	0.027

Pollutant Name: PM2.5 - Tire Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.008	0.002	0.001	0.003
35	0.002	0.002	0.002	0.008	0.002	0.001	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.005	0.005	0.011	0.005	0.003	0.006
35	0.005	0.005	0.005	0.011	0.005	0.003	0.006

Pollutant Name: Gasoline - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

5	9.599	7.502	5.110	3.433	3.480	27.994	8.372
35	29.476	23.031	16.944	17.352	17.590	52.558	25.537

Pollutant Name: Diesel - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.442	3.087	4.215	0.000	3.748
35	29.156	29.156	19.442	5.650	4.215	0.000	6.192

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Merced (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Merced (SJV) Merced (SJV) Merced (SJV)

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.003	0.006	0.026	0.044	0.131	0.647	0.019
10	0.006	0.012	0.052	0.086	0.255	0.803	0.033
20	0.012	0.024	0.102	0.164	0.484	1.103	0.059
30	0.018	0.035	0.150	0.232	0.686	1.385	0.083
40	0.023	0.046	0.197	0.291	0.862	1.650	0.106
50	0.029	0.056	0.242	0.342	1.011	1.897	0.127
60	0.033	0.066	0.286	0.383	1.133	2.079	0.147
120	0.057	0.112	0.505	0.431	1.274	2.355	0.222
180	0.055	0.109	0.498	0.457	1.352	2.381	0.222
240	0.059	0.116	0.531	0.483	1.427	2.531	0.236
300	0.062	0.123	0.563	0.507	1.500	2.677	0.250
360	0.066	0.130	0.595	0.531	1.571	2.821	0.263
420	0.069	0.137	0.627	0.554	1.638	2.961	0.277
480	0.072	0.144	0.659	0.576	1.704	3.098	0.290
540	0.076	0.151	0.690	0.598	1.767	3.232	0.303
600	0.079	0.157	0.722	0.618	1.827	3.363	0.316
660	0.083	0.164	0.754	0.638	1.885	3.491	0.329
720	0.086	0.171	0.785	0.656	1.941	3.615	0.342

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.067	0.117	0.390	1.025	0.994	2.973	0.261
10	0.133	0.231	0.773	2.009	1.947	3.621	0.490
20	0.261	0.451	1.513	3.851	3.732	4.860	0.929
30	0.383	0.662	2.222	5.527	5.356	6.023	1.341
40	0.499	0.862	2.899	7.036	6.818	7.111	1.727
50	0.609	1.052	3.544	8.378	8.119	8.123	2.085
60	0.713	1.231	4.156	9.554	9.258	9.060	2.417
120	1.161	1.994	6.784	11.158	10.812	12.804	3.544
180	1.100	1.891	6.485	11.484	11.128	12.348	3.449
240	1.201	2.061	7.088	11.821	11.454	13.362	3.704
300	1.288	2.211	7.616	12.168	11.791	14.301	3.933
360	1.364	2.340	8.070	12.527	12.139	15.165	4.135
420	1.427	2.448	8.448	12.896	12.496	15.953	4.311
480	1.479	2.535	8.753	13.276	12.864	16.666	4.460
540	1.517	2.602	8.982	13.667	13.243	17.304	4.583
600	1.544	2.648	9.136	14.068	13.632	17.866	4.679
660	1.558	2.674	9.216	14.480	14.031	18.353	4.749
720	1.560	2.678	9.221	14.903	14.441	18.764	4.792

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.031	0.066	0.613	0.200	0.601	0.155	0.177
10	0.033	0.069	0.631	0.301	0.905	0.195	0.191
20	0.035	0.074	0.664	0.478	1.440	0.267	0.216
30	0.037	0.078	0.694	0.623	1.876	0.326	0.238
40	0.039	0.082	0.721	0.735	2.212	0.373	0.255
50	0.040	0.085	0.744	0.814	2.450	0.407	0.268
60	0.041	0.088	0.764	0.860	2.589	0.428	0.278
120	0.045	0.096	0.844	0.866	2.608	0.431	0.299
180	0.046	0.096	0.845	0.863	2.598	0.427	0.299
240	0.045	0.096	0.838	0.858	2.583	0.421	0.297
300	0.045	0.094	0.827	0.852	2.564	0.412	0.293
360	0.044	0.093	0.811	0.843	2.539	0.403	0.288
420	0.043	0.090	0.791	0.833	2.509	0.391	0.282
480	0.041	0.088	0.766	0.822	2.474	0.378	0.275
540	0.040	0.085	0.736	0.809	2.434	0.363	0.266
600	0.038	0.081	0.702	0.794	2.389	0.346	0.255
660	0.036	0.077	0.664	0.777	2.339	0.328	0.244
720	0.034	0.072	0.621	0.759	2.284	0.308	0.231

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.037	15.348	22.155	2.254	2.531	13.042	14.341
10	13.459	17.177	24.815	4.496	5.047	15.231	16.222

20	16.798	21.467	31.047	8.942	10.038	19.529	20.558
30	20.800	26.600	38.494	13.339	14.973	23.721	25.658
40	25.464	32.576	47.155	17.685	19.852	27.808	31.523
50	30.790	39.395	57.032	21.981	24.676	31.788	38.151
60	36.779	47.057	68.124	26.228	29.443	35.663	45.544
120	86.163	110.102	159.222	44.609	50.077	53.055	104.835
180	97.745	124.919	180.672	52.703	59.162	57.335	119.089
240	109.322	139.726	202.100	60.318	67.711	61.364	133.290
300	120.893	154.522	223.508	67.456	75.724	65.141	147.439
360	132.459	169.306	244.896	74.116	83.200	68.668	161.534
420	144.019	184.080	266.263	80.299	90.141	71.943	175.577
480	155.574	198.842	287.608	86.004	96.545	74.966	189.567
540	167.123	213.594	308.934	91.231	102.412	77.739	203.505
600	178.667	228.334	330.238	95.980	107.744	80.260	217.389
660	190.205	243.064	351.522	100.252	112.539	82.531	231.221
720	201.737	257.782	372.785	104.046	116.799	84.549	245.000

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.000	0.000	0.000
50	0.000	0.000	0.001	0.000	0.000	0.000	0.000
60	0.000	0.000	0.001	0.000	0.000	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.001
360	0.001	0.002	0.002	0.001	0.001	0.001	0.002
420	0.001	0.002	0.003	0.001	0.001	0.001	0.002
480	0.002	0.002	0.003	0.001	0.001	0.001	0.002
540	0.002	0.002	0.003	0.001	0.001	0.001	0.002
600	0.002	0.002	0.003	0.001	0.001	0.001	0.002
660	0.002	0.002	0.004	0.001	0.001	0.001	0.002
720	0.002	0.003	0.004	0.001	0.001	0.001	0.002

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.000	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.002
20	0.002	0.004	0.004	0.001	0.001	0.004	0.003
30	0.003	0.006	0.005	0.002	0.002	0.003	0.005
40	0.004	0.008	0.007	0.002	0.003	0.003	0.006
50	0.005	0.010	0.009	0.003	0.003	0.002	0.007
60	0.006	0.012	0.010	0.003	0.004	0.002	0.008
120	0.011	0.019	0.017	0.004	0.005	0.005	0.014
180	0.012	0.021	0.019	0.004	0.005	0.006	0.016
240	0.013	0.023	0.020	0.005	0.005	0.008	0.017
300	0.014	0.025	0.022	0.005	0.006	0.010	0.018

360	0.015	0.027	0.023	0.005	0.006	0.011	0.019
420	0.016	0.028	0.024	0.005	0.006	0.012	0.020
480	0.016	0.029	0.025	0.005	0.006	0.013	0.021
540	0.016	0.030	0.026	0.005	0.006	0.014	0.022
600	0.017	0.030	0.026	0.005	0.006	0.014	0.022
660	0.017	0.030	0.027	0.006	0.007	0.014	0.022
720	0.017	0.030	0.027	0.006	0.007	0.015	0.022

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Merced (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Merced (SJV) Merced (SJV) Merced (SJV)

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.018	0.029	0.023	0.002	0.016	0.169	0.023
10	0.033	0.054	0.043	0.003	0.030	0.316	0.042
20	0.056	0.094	0.075	0.006	0.052	0.554	0.073
30	0.073	0.122	0.098	0.008	0.067	0.734	0.095
40	0.080	0.133	0.107	0.008	0.073	0.807	0.104

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Merced (SJV)
****
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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Merced (SJV) Merced (SJV) Merced (SJV)

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.015	0.041	0.047	0.001	0.001	0.444	0.043

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Merced (SJV)

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Merced (SJV) Merced (SJV) Merced (SJV)

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.003	0.003	0.000	0.000	0.042	0.003

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Merced (SJV)

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Merced (SJV) Merced (SJV) Merced (SJV)

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.009	0.028	0.035	0.000	0.000	0.141	0.023

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Merced (SJV)

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Merced (SJV) Merced (SJV) Merced (SJV)

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.002	0.002	0.000	0.000	0.014	0.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Merced (SJV)

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Merced (SJV) Merced (SJV) Merced (SJV)

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.382	0.306	0.116	0.184	0.002	0.010	1.000
%TRIP	0.386	0.314	0.205	0.084	0.000	0.011	1.000
%VEH	0.425	0.350	0.131	0.058	0.000	0.036	1.000

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Merced (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Merced (SJV) Merced (SJV) Merced (SJV)

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.007	0.140	0.161	0.008	0.183	0.003	0.066
2	0.006	0.074	0.085	0.004	0.094	0.037	0.036
3	0.007	0.054	0.061	0.003	0.065	0.056	0.028
4	0.009	0.045	0.051	0.003	0.051	0.068	0.024
5	0.010	0.040	0.045	0.002	0.043	0.076	0.023
10	0.014	0.032	0.034	0.002	0.027	0.099	0.020
15	0.016	0.030	0.033	0.002	0.024	0.112	0.021
20	0.018	0.031	0.033	0.002	0.023	0.123	0.022
25	0.019	0.032	0.034	0.002	0.024	0.132	0.023
30	0.020	0.033	0.036	0.002	0.025	0.140	0.024
35	0.020	0.035	0.037	0.002	0.026	0.147	0.025
40	0.021	0.036	0.039	0.002	0.027	0.153	0.026
45	0.022	0.037	0.040	0.002	0.028	0.159	0.026
50	0.023	0.038	0.041	0.002	0.030	0.165	0.027
55	0.023	0.040	0.042	0.002	0.031	0.171	0.028
60	0.024	0.041	0.043	0.002	0.031	0.177	0.029

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Joaquin (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin (SJV) San Joaquin (SJV) San Joaquin (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.037	0.067	0.103	1.828	3.600	4.688	0.263
35	0.006	0.010	0.017	0.200	0.658	1.805	0.044

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.780	1.280	1.824	5.620	31.649	22.085	1.761
35	0.466	0.762	0.991	1.188	6.023	14.297	0.831

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.066	0.119	0.238	6.008	24.969	1.395	0.692
35	0.038	0.067	0.146	2.219	12.437	1.267	0.290

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	921.742	1180.346	1703.448	3306.140	2433.523	266.397	1314.986
35	299.843	384.116	521.755	1663.305	1920.904	139.996	478.182

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.032	0.024	0.003	0.013
35	0.003	0.004	0.005	0.016	0.018	0.002	0.005

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.053	0.107	0.119	0.131	0.600	0.023	0.087
35	0.009	0.017	0.020	0.069	0.146	0.011	0.019

Pollutant Name: PM2.5 - Tire Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.007	0.002	0.001	0.002
35	0.002	0.002	0.002	0.007	0.002	0.001	0.002

Pollutant Name: PM2.5 - Brake Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.005	0.005	0.010	0.005	0.003	0.006
35	0.005	0.005	0.005	0.010	0.005	0.003	0.006

Pollutant Name: Gasoline - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.599	7.490	5.136	3.493	3.277	28.029	8.387
35	29.479	22.996	16.933	17.650	16.602	52.625	25.634

Pollutant Name: Diesel - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.441	3.443	4.189	0.000	4.753

35	29.156	29.156	19.441	5.753	4.189	0.000	6.841

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Joaquin (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin (SJV) San Joaquin (SJV) San Joaquin (SJV)

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.003	0.006	0.026	0.041	0.262	0.645	0.018
10	0.006	0.012	0.051	0.080	0.511	0.799	0.031
20	0.012	0.024	0.101	0.151	0.970	1.094	0.055
30	0.018	0.035	0.148	0.214	1.375	1.373	0.078
40	0.023	0.046	0.194	0.269	1.726	1.635	0.099
50	0.028	0.057	0.238	0.315	2.025	1.879	0.119
60	0.033	0.066	0.280	0.353	2.270	2.059	0.137
120	0.056	0.114	0.485	0.397	2.552	2.331	0.209
180	0.054	0.111	0.480	0.421	2.708	2.357	0.208
240	0.058	0.118	0.510	0.445	2.858	2.505	0.222
300	0.061	0.125	0.541	0.467	3.004	2.650	0.234
360	0.064	0.132	0.572	0.489	3.145	2.793	0.247
420	0.068	0.139	0.602	0.510	3.281	2.932	0.260
480	0.071	0.145	0.632	0.531	3.413	3.068	0.273
540	0.075	0.152	0.663	0.550	3.539	3.201	0.285
600	0.078	0.159	0.693	0.569	3.660	3.331	0.297
660	0.081	0.166	0.723	0.587	3.776	3.457	0.310
720	0.084	0.173	0.753	0.605	3.888	3.581	0.322

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.062	0.111	0.385	0.763	3.644	2.954	0.221
10	0.122	0.220	0.762	1.496	7.139	3.581	0.412
20	0.238	0.430	1.491	2.867	13.686	4.783	0.778
30	0.349	0.631	2.188	4.115	19.641	5.912	1.123
40	0.455	0.822	2.852	5.238	25.004	6.969	1.447

50	0.555	1.003	3.483	6.238	29.774	7.954	1.751
60	0.651	1.175	4.082	7.113	33.952	8.867	2.033
120	1.057	1.902	6.612	8.307	39.651	12.540	3.063
180	1.001	1.804	6.327	8.550	40.810	12.117	2.963
240	1.091	1.966	6.906	8.801	42.007	13.125	3.197
300	1.171	2.109	7.414	9.059	43.242	14.058	3.405
360	1.239	2.232	7.851	9.326	44.516	14.915	3.588
420	1.297	2.335	8.216	9.601	45.828	15.696	3.745
480	1.343	2.419	8.511	9.884	47.178	16.401	3.877
540	1.378	2.482	8.735	10.175	48.566	17.031	3.983
600	1.403	2.526	8.887	10.474	49.993	17.585	4.063
660	1.416	2.550	8.968	10.781	51.458	18.064	4.118
720	1.418	2.555	8.978	11.095	52.961	18.467	4.148

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.029	0.065	0.579	0.165	1.357	0.153	0.165
10	0.030	0.067	0.600	0.249	2.044	0.193	0.176
20	0.032	0.072	0.637	0.396	3.252	0.263	0.197
30	0.034	0.077	0.671	0.515	4.235	0.321	0.215
40	0.036	0.080	0.700	0.608	4.996	0.367	0.229
50	0.038	0.083	0.725	0.673	5.533	0.400	0.241
60	0.039	0.086	0.745	0.711	5.846	0.422	0.249
120	0.042	0.094	0.820	0.717	5.888	0.424	0.269
180	0.042	0.095	0.820	0.714	5.866	0.420	0.269
240	0.042	0.094	0.814	0.710	5.833	0.414	0.267
300	0.042	0.093	0.803	0.704	5.789	0.406	0.264
360	0.041	0.091	0.788	0.698	5.733	0.396	0.259
420	0.040	0.089	0.769	0.689	5.666	0.385	0.254
480	0.039	0.086	0.745	0.680	5.587	0.371	0.247
540	0.037	0.083	0.717	0.669	5.497	0.357	0.238
600	0.036	0.079	0.685	0.657	5.395	0.340	0.229
660	0.034	0.075	0.648	0.643	5.282	0.322	0.218
720	0.032	0.071	0.607	0.628	5.158	0.302	0.206

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.037	15.375	22.126	2.554	2.427	13.050	14.505
10	13.460	17.206	24.829	5.094	4.841	15.239	16.394
20	16.802	21.501	31.142	10.131	9.628	19.538	20.752
30	20.807	26.642	38.665	15.111	14.361	23.731	25.884
40	25.474	32.626	47.396	20.035	19.041	27.818	31.791
50	30.802	39.455	57.338	24.903	23.667	31.799	38.472
60	36.793	47.129	68.488	29.714	28.239	35.674	45.927
120	86.183	110.278	159.681	50.538	48.030	53.067	105.829
180	97.769	125.119	181.241	59.707	56.744	57.346	120.204
240	109.350	139.948	202.770	68.335	64.944	61.373	134.528
300	120.925	154.767	224.266	76.422	72.629	65.149	148.803
360	132.494	169.575	245.731	83.967	79.800	68.674	163.027
420	144.057	184.372	267.164	90.971	86.457	71.948	177.201
480	155.614	199.159	288.565	97.434	92.599	74.971	191.326

540	167.165	213.934	309.934	103.356	98.227	77.743	205.400
600	178.710	228.699	331.271	108.737	103.341	80.263	219.424
660	190.250	243.453	352.576	113.577	107.940	82.532	233.399
720	201.783	258.196	373.849	117.875	112.025	84.550	247.323

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.000	0.000	0.000
40	0.000	0.000	0.001	0.000	0.001	0.000	0.000
50	0.000	0.000	0.001	0.000	0.001	0.000	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.001	0.001	0.001
240	0.001	0.001	0.002	0.001	0.001	0.001	0.001
300	0.001	0.002	0.002	0.001	0.001	0.001	0.001
360	0.001	0.002	0.002	0.001	0.002	0.001	0.002
420	0.001	0.002	0.003	0.001	0.002	0.001	0.002
480	0.002	0.002	0.003	0.001	0.002	0.001	0.002
540	0.002	0.002	0.003	0.001	0.002	0.001	0.002
600	0.002	0.002	0.003	0.001	0.002	0.001	0.002
660	0.002	0.002	0.004	0.001	0.002	0.001	0.002
720	0.002	0.003	0.004	0.001	0.002	0.001	0.002

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.001	0.001	0.001	0.000	0.000	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.001
20	0.002	0.004	0.003	0.001	0.001	0.004	0.003
30	0.003	0.006	0.005	0.002	0.002	0.003	0.004
40	0.004	0.008	0.007	0.002	0.003	0.003	0.005
50	0.005	0.009	0.008	0.003	0.003	0.002	0.007
60	0.005	0.011	0.009	0.003	0.003	0.002	0.008
120	0.009	0.018	0.015	0.004	0.005	0.005	0.013
180	0.010	0.020	0.017	0.004	0.005	0.006	0.014
240	0.011	0.022	0.019	0.005	0.005	0.008	0.015
300	0.012	0.024	0.020	0.005	0.005	0.010	0.017
360	0.013	0.025	0.022	0.005	0.005	0.011	0.018
420	0.013	0.026	0.023	0.005	0.005	0.012	0.018
480	0.014	0.027	0.023	0.005	0.006	0.013	0.019
540	0.014	0.028	0.024	0.005	0.006	0.014	0.020
600	0.014	0.028	0.024	0.005	0.006	0.014	0.020
660	0.015	0.029	0.025	0.006	0.006	0.014	0.020
720	0.015	0.029	0.025	0.006	0.006	0.015	0.020

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Joaquin (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin (SJV) San Joaquin (SJV) San Joaquin (SJV)

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.021	0.034	0.027	0.002	0.040	0.175	0.026
10	0.038	0.064	0.050	0.004	0.074	0.328	0.049
20	0.065	0.110	0.086	0.007	0.125	0.573	0.084
30	0.085	0.143	0.112	0.010	0.161	0.758	0.110
40	0.092	0.155	0.122	0.011	0.174	0.832	0.120

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Joaquin (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin (SJV) San Joaquin (SJV) San Joaquin (SJV)

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.019	0.048	0.053	0.001	0.002	0.449	0.048

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Joaquin (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin (SJV) San Joaquin (SJV) San Joaquin (SJV)

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.003	0.003	0.000	0.001	0.043	0.004

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Joaquin (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin (SJV) San Joaquin (SJV) San Joaquin (SJV)

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.011	0.033	0.038	0.001	0.001	0.142	0.026

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Joaquin (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin (SJV) San Joaquin (SJV) San Joaquin (SJV)

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.002	0.002	0.000	0.000	0.014	0.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Joaquin (SJV)
****
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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin (SJV) San Joaquin (SJV) San Joaquin (SJV)

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.453	0.314	0.133	0.088	0.002	0.009	1.000
%TRIP	0.427	0.289	0.209	0.064	0.000	0.011	1.000

%VEH	0.469	0.322	0.137	0.035	0.001	0.037	1.000

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : San Joaquin (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin (SJV) San Joaquin (SJV) San Joaquin (SJV)

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.157	0.183	0.017	0.430	0.003	0.080
2	0.007	0.083	0.096	0.009	0.221	0.037	0.044
3	0.008	0.061	0.070	0.007	0.152	0.056	0.033
4	0.009	0.051	0.058	0.005	0.118	0.068	0.029
5	0.011	0.045	0.051	0.005	0.098	0.077	0.027
10	0.015	0.035	0.038	0.004	0.060	0.099	0.024
15	0.017	0.033	0.036	0.003	0.049	0.113	0.024
20	0.018	0.033	0.036	0.003	0.045	0.123	0.025
25	0.019	0.035	0.037	0.004	0.045	0.133	0.026
30	0.020	0.036	0.039	0.004	0.047	0.140	0.027
35	0.021	0.037	0.040	0.004	0.050	0.147	0.028
40	0.022	0.039	0.042	0.004	0.052	0.153	0.030
45	0.023	0.040	0.043	0.004	0.054	0.160	0.031
50	0.023	0.041	0.044	0.004	0.056	0.166	0.031
55	0.024	0.043	0.046	0.005	0.058	0.172	0.032
60	0.025	0.044	0.047	0.005	0.060	0.177	0.033

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Stanislaus (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter

Emfac2007 Emission Factors: V2.3 Nov 1 2006

Stanislaus (SJV) Stanislaus (SJV) Stanislaus (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.035	0.063	0.102	1.704	3.616	4.676	0.272
35	0.005	0.009	0.017	0.186	0.620	1.802	0.045

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.735	1.187	1.752	5.059	35.603	22.009	1.711
35	0.439	0.706	0.939	1.071	6.851	14.250	0.805

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.063	0.111	0.252	5.496	20.428	1.386	0.690
35	0.036	0.063	0.154	2.029	10.912	1.261	0.287

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	921.715	1179.830	1711.233	3298.108	2425.636	266.394	1356.676
35	299.834	383.985	521.121	1660.485	1729.850	139.994	497.224

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.032	0.024	0.003	0.013
35	0.003	0.004	0.005	0.016	0.017	0.002	0.005

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.046	0.092	0.107	0.115	0.455	0.023	0.077
35	0.008	0.015	0.018	0.062	0.109	0.011	0.017

Pollutant Name: PM2.5 - Tire Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.007	0.002	0.001	0.003
35	0.002	0.002	0.002	0.007	0.002	0.001	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.005	0.005	0.010	0.005	0.003	0.006
35	0.005	0.005	0.005	0.010	0.005	0.003	0.006

Pollutant Name: Gasoline - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.600	7.494	5.094	3.498	3.306	28.043	8.304
35	29.484	23.009	16.957	17.677	16.744	52.651	25.402

Pollutant Name: Diesel - mi/gal Temperature: 70F Relative Humidity: 0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.438	3.455	4.236	0.000	4.921
35	29.156	29.156	19.438	5.757	4.236	0.000	7.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected

Season : Winter
Area : Stanislaus (SJV)
****
*****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Stanislaus (SJV) Stanislaus (SJV) Stanislaus (SJV)

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.003	0.006	0.026	0.040	0.333	0.644	0.020
10	0.007	0.012	0.052	0.078	0.649	0.797	0.034
20	0.013	0.024	0.101	0.148	1.231	1.091	0.060
30	0.019	0.036	0.149	0.210	1.745	1.368	0.085
40	0.024	0.047	0.195	0.263	2.192	1.628	0.108
50	0.030	0.057	0.239	0.309	2.571	1.872	0.130
60	0.035	0.067	0.282	0.346	2.882	2.050	0.150
120	0.057	0.113	0.489	0.389	3.240	2.320	0.227
180	0.056	0.110	0.483	0.413	3.438	2.347	0.226
240	0.059	0.117	0.515	0.436	3.630	2.495	0.240
300	0.063	0.124	0.545	0.459	3.815	2.640	0.254
360	0.066	0.131	0.576	0.480	3.994	2.781	0.268
420	0.070	0.137	0.607	0.501	4.167	2.920	0.282
480	0.073	0.144	0.638	0.521	4.333	3.056	0.295
540	0.076	0.151	0.668	0.540	4.493	3.188	0.309
600	0.080	0.158	0.699	0.559	4.647	3.317	0.322
660	0.083	0.165	0.729	0.576	4.795	3.444	0.335
720	0.087	0.171	0.759	0.593	4.936	3.567	0.348

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.060	0.107	0.396	0.754	4.412	2.946	0.240
10	0.119	0.211	0.783	1.477	8.645	3.566	0.447
20	0.233	0.413	1.532	2.832	16.573	4.752	0.844
30	0.342	0.605	2.247	4.064	23.784	5.867	1.217
40	0.445	0.787	2.929	5.173	30.278	6.912	1.567
50	0.543	0.960	3.578	6.160	36.054	7.885	1.895
60	0.636	1.124	4.193	7.025	41.114	8.788	2.199
120	1.028	1.812	6.791	8.204	48.014	12.432	3.288
180	0.972	1.717	6.498	8.443	49.418	12.023	3.185
240	1.059	1.870	7.092	8.691	50.868	13.029	3.432
300	1.135	2.005	7.614	8.947	52.364	13.959	3.652
360	1.201	2.121	8.062	9.210	53.906	14.813	3.846
420	1.256	2.218	8.438	9.482	55.495	15.591	4.013
480	1.301	2.297	8.740	9.761	57.130	16.294	4.153
540	1.335	2.358	8.970	10.048	58.811	16.921	4.267
600	1.359	2.400	9.126	10.343	60.538	17.472	4.355
660	1.372	2.424	9.210	10.646	62.312	17.947	4.416

720	1.375	2.429	9.220	10.957	64.132	18.346	4.450

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.028	0.061	0.598	0.164	1.705	0.153	0.182
10	0.030	0.064	0.618	0.247	2.569	0.192	0.195
20	0.032	0.069	0.655	0.394	4.086	0.262	0.218
30	0.034	0.074	0.688	0.513	5.323	0.319	0.238
40	0.036	0.077	0.717	0.605	6.278	0.365	0.255
50	0.038	0.081	0.742	0.670	6.953	0.398	0.267
60	0.039	0.083	0.763	0.707	7.346	0.419	0.277
120	0.042	0.091	0.840	0.713	7.400	0.421	0.298
180	0.043	0.091	0.841	0.710	7.372	0.418	0.299
240	0.042	0.090	0.834	0.706	7.331	0.411	0.296
300	0.042	0.089	0.823	0.701	7.275	0.403	0.293
360	0.041	0.088	0.808	0.694	7.205	0.393	0.288
420	0.040	0.086	0.788	0.686	7.120	0.382	0.281
480	0.039	0.083	0.763	0.676	7.021	0.369	0.274
540	0.037	0.080	0.734	0.665	6.908	0.354	0.264
600	0.036	0.077	0.701	0.653	6.780	0.338	0.254
660	0.034	0.073	0.664	0.639	6.638	0.319	0.242
720	0.032	0.068	0.621	0.624	6.482	0.299	0.229

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.027	15.351	22.138	2.597	3.294	13.055	14.602
10	13.454	17.186	24.850	5.179	6.571	15.245	16.543
20	16.806	21.489	31.179	10.301	13.068	19.544	21.006
30	20.818	26.634	38.718	15.366	19.493	23.737	26.245
40	25.492	32.622	47.467	20.372	25.845	27.824	32.258
50	30.826	39.453	57.424	25.322	32.124	31.805	39.047
60	36.821	47.126	68.592	30.214	38.330	35.681	46.611
120	86.198	110.210	159.867	51.389	65.192	53.076	107.050
180	97.793	125.048	181.459	60.712	77.020	57.353	121.628
240	109.380	139.874	203.018	69.485	88.149	61.380	136.145
300	120.961	154.688	224.543	77.707	98.580	65.155	150.602
360	132.534	169.489	246.035	85.379	108.314	68.679	165.000
420	144.099	184.278	267.494	92.502	117.349	71.952	179.337
480	155.658	199.054	288.919	99.073	125.686	74.974	193.614
540	167.209	213.818	310.310	105.095	133.325	77.745	207.832
600	178.752	228.569	331.668	110.566	140.266	80.265	221.989
660	190.288	243.308	352.992	115.487	146.509	82.534	236.086
720	201.817	258.034	374.283	119.858	152.053	84.552	250.123

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.001	0.000	0.000
40	0.000	0.000	0.001	0.000	0.001	0.000	0.000
50	0.000	0.000	0.001	0.000	0.001	0.000	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.000
120	0.001	0.001	0.002	0.001	0.001	0.001	0.001
180	0.001	0.001	0.002	0.001	0.002	0.001	0.001
240	0.001	0.001	0.002	0.001	0.002	0.001	0.001
300	0.001	0.002	0.002	0.001	0.002	0.001	0.002
360	0.001	0.002	0.003	0.001	0.002	0.001	0.002
420	0.001	0.002	0.003	0.001	0.002	0.001	0.002
480	0.002	0.002	0.003	0.001	0.002	0.001	0.002
540	0.002	0.002	0.003	0.001	0.002	0.001	0.002
600	0.002	0.002	0.003	0.001	0.002	0.001	0.002
660	0.002	0.002	0.004	0.001	0.002	0.001	0.002
720	0.002	0.003	0.004	0.001	0.003	0.001	0.002

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.001	0.001	0.000	0.001	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.001
20	0.002	0.003	0.003	0.001	0.002	0.004	0.003
30	0.003	0.005	0.004	0.002	0.003	0.003	0.004
40	0.003	0.007	0.006	0.002	0.003	0.003	0.005
50	0.004	0.008	0.007	0.003	0.004	0.002	0.006
60	0.005	0.010	0.008	0.003	0.005	0.002	0.007
120	0.008	0.016	0.014	0.004	0.006	0.005	0.011
180	0.009	0.018	0.015	0.004	0.007	0.006	0.013
240	0.010	0.019	0.017	0.004	0.007	0.008	0.014
300	0.010	0.021	0.018	0.004	0.007	0.010	0.015
360	0.011	0.022	0.019	0.004	0.007	0.011	0.016
420	0.012	0.023	0.020	0.005	0.007	0.012	0.016
480	0.012	0.024	0.021	0.005	0.008	0.013	0.017
540	0.012	0.025	0.021	0.005	0.008	0.014	0.017
600	0.013	0.025	0.022	0.005	0.008	0.014	0.018
660	0.013	0.025	0.022	0.005	0.008	0.014	0.018
720	0.013	0.025	0.022	0.005	0.009	0.015	0.018

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Stanislaus (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Stanislaus (SJV) Stanislaus (SJV) Stanislaus (SJV)

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.022	0.036	0.027	0.003	0.068	0.178	0.028
10	0.041	0.067	0.051	0.005	0.125	0.333	0.052
20	0.071	0.116	0.087	0.009	0.213	0.582	0.089
30	0.092	0.151	0.113	0.012	0.273	0.768	0.116
40	0.100	0.164	0.124	0.013	0.295	0.844	0.126

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Stanislaus (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Stanislaus (SJV) Stanislaus (SJV) Stanislaus (SJV)

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.021	0.051	0.055	0.001	0.004	0.452	0.053

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected

Season : Winter
Area : Stanislaus (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Stanislaus (SJV) Stanislaus (SJV) Stanislaus (SJV)

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.002	0.003	0.004	0.000	0.001	0.043	0.004

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Stanislaus (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Stanislaus (SJV) Stanislaus (SJV) Stanislaus (SJV)

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.012	0.033	0.038	0.001	0.001	0.143	0.028

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter

Area : Stanislaus (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Stanislaus (SJV) Stanislaus (SJV) Stanislaus (SJV)

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.002	0.003	0.000	0.000	0.014	0.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Stanislaus (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Stanislaus (SJV) Stanislaus (SJV) Stanislaus (SJV)

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.423	0.316	0.148	0.102	0.001	0.010	1.000
%TRIP	0.391	0.288	0.231	0.078	0.000	0.012	1.000
%VEH	0.440	0.329	0.148	0.041	0.000	0.042	1.000

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected

Season : Winter
Area : Stanislaus (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Stanislaus (SJV) Stanislaus (SJV) Stanislaus (SJV)

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.168	0.195	0.023	0.725	0.003	0.089
2	0.007	0.089	0.102	0.012	0.372	0.037	0.048
3	0.008	0.064	0.074	0.009	0.256	0.056	0.036
4	0.010	0.054	0.061	0.007	0.199	0.068	0.032
5	0.011	0.047	0.054	0.006	0.165	0.077	0.029
10	0.015	0.036	0.040	0.004	0.100	0.099	0.025
15	0.017	0.034	0.037	0.004	0.081	0.113	0.025
20	0.019	0.035	0.037	0.004	0.075	0.123	0.026
25	0.020	0.036	0.038	0.004	0.074	0.133	0.027
30	0.021	0.037	0.040	0.005	0.078	0.140	0.028
35	0.021	0.039	0.042	0.005	0.081	0.147	0.030
40	0.022	0.040	0.043	0.005	0.085	0.154	0.031
45	0.023	0.041	0.045	0.005	0.088	0.160	0.032
50	0.024	0.043	0.046	0.005	0.092	0.166	0.033
55	0.024	0.044	0.047	0.005	0.095	0.172	0.034
60	0.025	0.045	0.048	0.006	0.098	0.177	0.034

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Tulare (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Tulare (SJV) Tulare (SJV) Tulare (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.036	0.065	0.098	1.676	2.360	4.680	0.265
35	0.006	0.010	0.016	0.185	0.392	1.803	0.044

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.760	1.224	1.714	5.213	25.322	22.036	1.739
35	0.454	0.726	0.925	1.102	4.865	14.266	0.821

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.064	0.115	0.240	5.423	10.261	1.389	0.662
35	0.037	0.065	0.146	2.016	6.055	1.263	0.278

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	921.975	1178.828	1703.470	3267.153	2417.443	266.397	1349.460
35	299.917	383.673	521.438	1658.528	1474.740	139.996	494.560

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.009	0.011	0.016	0.031	0.024	0.003	0.013
35	0.003	0.004	0.005	0.016	0.014	0.002	0.005

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: 0%

Speed

MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.048	0.095	0.105	0.122	0.252	0.023	0.080
35	0.008	0.015	0.017	0.064	0.058	0.011	0.018

Pollutant Name: PM2.5 - Tire Wear Temperature: 70F Relative Humidity:

0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.002	0.002	0.002	0.007	0.002	0.001	0.003
35	0.002	0.002	0.002	0.007	0.002	0.001	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 70F Relative Humidity:
0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.005	0.005	0.005	0.010	0.005	0.003	0.006
35	0.005	0.005	0.005	0.010	0.005	0.003	0.006

Pollutant Name: Gasoline - mi/gal Temperature: 70F Relative Humidity:
0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	9.597	7.499	5.117	3.495	3.408	28.038	8.266
35	29.473	23.026	16.947	17.661	17.241	52.642	25.266

Pollutant Name: Diesel - mi/gal Temperature: 70F Relative Humidity:
0%

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	29.156	29.156	19.442	3.517	4.320	0.000	4.948
35	29.156	29.156	19.442	5.775	4.320	0.000	6.991

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Tulare (SJV)
****
*****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Tulare (SJV) Tulare (SJV) Tulare (SJV)

Table 2: Starting Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.003	0.006	0.024	0.038	0.312	0.644	0.019
10	0.006	0.012	0.048	0.075	0.609	0.798	0.032
20	0.012	0.023	0.095	0.142	1.154	1.092	0.057
30	0.017	0.033	0.140	0.201	1.636	1.370	0.080
40	0.022	0.044	0.184	0.253	2.055	1.631	0.102
50	0.027	0.053	0.226	0.296	2.410	1.875	0.122
60	0.032	0.062	0.266	0.332	2.702	2.053	0.141
120	0.053	0.105	0.466	0.374	3.038	2.324	0.214
180	0.051	0.102	0.461	0.396	3.223	2.351	0.214
240	0.055	0.109	0.490	0.418	3.403	2.499	0.227
300	0.058	0.115	0.520	0.440	3.576	2.644	0.240
360	0.061	0.122	0.549	0.460	3.744	2.785	0.253
420	0.064	0.128	0.579	0.480	3.906	2.924	0.267
480	0.068	0.134	0.608	0.500	4.062	3.060	0.279
540	0.071	0.141	0.637	0.518	4.212	3.193	0.292
600	0.074	0.147	0.667	0.536	4.357	3.322	0.305
660	0.077	0.153	0.696	0.553	4.495	3.449	0.317
720	0.080	0.160	0.725	0.569	4.628	3.572	0.330

Pollutant Name: Carbon Monoxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.057	0.101	0.380	0.729	3.456	2.948	0.229
10	0.113	0.199	0.752	1.428	6.771	3.571	0.425
20	0.220	0.390	1.473	2.738	12.980	4.763	0.803
30	0.323	0.571	2.162	3.929	18.628	5.884	1.159
40	0.421	0.743	2.819	5.002	23.714	6.933	1.493
50	0.514	0.907	3.445	5.956	28.239	7.911	1.805
60	0.601	1.061	4.039	6.792	32.202	8.817	2.096
120	0.975	1.710	6.568	7.932	37.606	12.472	3.145
180	0.923	1.620	6.280	8.163	38.705	12.057	3.044
240	1.006	1.764	6.859	8.403	39.841	13.064	3.282
300	1.079	1.890	7.367	8.650	41.013	13.995	3.494
360	1.142	1.999	7.803	8.905	42.221	14.850	3.681
420	1.194	2.091	8.168	9.167	43.465	15.629	3.842
480	1.237	2.166	8.462	9.437	44.745	16.332	3.976
540	1.270	2.223	8.684	9.715	46.062	16.960	4.085
600	1.292	2.263	8.834	10.001	47.415	17.512	4.169
660	1.304	2.285	8.913	10.294	48.804	17.989	4.226
720	1.307	2.290	8.921	10.594	50.230	18.389	4.258

Pollutant Name: Oxides of Nitrogen Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.026	0.055	0.574	0.156	1.530	0.153	0.172
10	0.027	0.058	0.591	0.235	2.306	0.192	0.184

20	0.029	0.062	0.624	0.373	3.668	0.262	0.205
30	0.031	0.067	0.654	0.486	4.778	0.320	0.223
40	0.033	0.070	0.680	0.574	5.635	0.365	0.238
50	0.034	0.073	0.702	0.635	6.241	0.399	0.250
60	0.035	0.075	0.722	0.671	6.594	0.420	0.258
120	0.038	0.082	0.796	0.676	6.642	0.422	0.279
180	0.038	0.082	0.797	0.674	6.618	0.419	0.279
240	0.038	0.082	0.791	0.670	6.580	0.412	0.277
300	0.038	0.081	0.780	0.665	6.530	0.404	0.274
360	0.037	0.079	0.765	0.658	6.467	0.394	0.269
420	0.036	0.077	0.746	0.651	6.391	0.383	0.263
480	0.035	0.075	0.723	0.641	6.302	0.370	0.256
540	0.034	0.072	0.695	0.631	6.201	0.355	0.247
600	0.032	0.069	0.663	0.619	6.086	0.338	0.237
660	0.031	0.066	0.627	0.606	5.958	0.320	0.226
720	0.029	0.062	0.587	0.592	5.818	0.300	0.213

Pollutant Name: Carbon Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	12.036	15.346	22.094	2.575	4.464	13.050	14.669
10	13.459	17.178	24.777	5.135	8.902	15.239	16.603
20	16.803	21.474	31.049	10.213	17.706	19.538	21.056
30	20.809	26.613	38.531	15.235	26.411	23.731	26.289
40	25.476	32.594	47.221	20.199	35.017	27.818	32.303
50	30.806	39.418	57.121	25.106	43.524	31.799	39.097
60	36.797	47.084	68.230	29.956	51.932	35.674	46.672
120	86.187	110.136	159.215	50.950	88.327	53.067	107.342
180	97.775	124.962	180.696	60.194	104.352	57.346	121.945
240	109.356	139.776	202.148	68.892	119.431	61.373	136.491
300	120.932	154.579	223.573	77.045	133.564	65.150	150.981
360	132.502	169.369	244.970	84.651	146.752	68.675	165.415
420	144.065	184.148	266.338	91.713	158.993	71.949	179.793
480	155.623	198.915	287.679	98.229	170.289	74.971	194.114
540	167.174	213.670	308.992	104.199	180.639	77.743	208.379
600	178.720	228.413	330.277	109.623	190.043	80.264	222.587
660	190.259	243.144	351.534	114.502	198.501	82.533	236.740
720	201.792	257.864	372.763	118.836	206.013	84.551	250.836

Pollutant Name: Sulfur Dioxide Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.000	0.000	0.000	0.000	0.000	0.000
10	0.000	0.000	0.000	0.000	0.000	0.000	0.000
20	0.000	0.000	0.000	0.000	0.000	0.000	0.000
30	0.000	0.000	0.000	0.000	0.001	0.000	0.000
40	0.000	0.000	0.001	0.000	0.001	0.000	0.000
50	0.000	0.000	0.001	0.000	0.001	0.000	0.000
60	0.000	0.000	0.001	0.000	0.001	0.001	0.000
120	0.001	0.001	0.002	0.001	0.002	0.001	0.001
180	0.001	0.001	0.002	0.001	0.002	0.001	0.001
240	0.001	0.001	0.002	0.001	0.002	0.001	0.001
300	0.001	0.002	0.002	0.001	0.002	0.001	0.002

360	0.001	0.002	0.002	0.001	0.002	0.001	0.002
420	0.001	0.002	0.003	0.001	0.002	0.001	0.002
480	0.002	0.002	0.003	0.001	0.002	0.001	0.002
540	0.002	0.002	0.003	0.001	0.003	0.001	0.002
600	0.002	0.002	0.003	0.001	0.003	0.001	0.002
660	0.002	0.002	0.004	0.001	0.003	0.001	0.002
720	0.002	0.003	0.004	0.001	0.003	0.001	0.002

Pollutant Name: PM2.5 Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
5	0.000	0.001	0.001	0.000	0.001	0.005	0.001
10	0.001	0.002	0.002	0.001	0.001	0.005	0.001
20	0.002	0.003	0.003	0.001	0.003	0.004	0.002
30	0.003	0.005	0.004	0.002	0.004	0.003	0.004
40	0.003	0.006	0.006	0.002	0.005	0.003	0.005
50	0.004	0.008	0.007	0.003	0.006	0.002	0.006
60	0.005	0.009	0.008	0.003	0.006	0.002	0.007
120	0.008	0.015	0.014	0.004	0.009	0.005	0.011
180	0.009	0.017	0.015	0.004	0.009	0.006	0.012
240	0.010	0.019	0.017	0.004	0.009	0.008	0.014
300	0.010	0.020	0.018	0.004	0.009	0.010	0.015
360	0.011	0.021	0.019	0.005	0.010	0.011	0.015
420	0.011	0.022	0.020	0.005	0.010	0.012	0.016
480	0.012	0.023	0.021	0.005	0.010	0.013	0.017
540	0.012	0.024	0.021	0.005	0.011	0.014	0.017
600	0.012	0.024	0.021	0.005	0.011	0.014	0.018
660	0.012	0.024	0.022	0.005	0.011	0.014	0.018
720	0.012	0.024	0.022	0.005	0.012	0.015	0.018

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Tulare (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Tulare (SJV) Tulare (SJV) Tulare (SJV)

Table 4: Hot Soak Emissions (grams/trip)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL

5	0.020	0.034	0.026	0.002	0.058	0.176	0.026
10	0.038	0.063	0.049	0.005	0.108	0.328	0.049
20	0.065	0.109	0.085	0.008	0.184	0.574	0.085
30	0.085	0.142	0.110	0.010	0.237	0.758	0.110
40	0.092	0.154	0.120	0.011	0.256	0.833	0.120

Hot soak results are scaled to reflect zero emissions for trip lengths of less than 5 minutes (about 25% of in-use trips).

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Tulare (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Tulare (SJV) Tulare (SJV) Tulare (SJV)

Table 5a: Partial Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.019	0.048	0.053	0.001	0.003	0.450	0.050

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Tulare (SJV)

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Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Tulare (SJV) Tulare (SJV) Tulare (SJV)

Table 5b: Multi-Day Diurnal Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.003	0.004	0.000	0.001	0.043	0.004

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Tulare (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Tulare (SJV) Tulare (SJV) Tulare (SJV)

Table 6a: Partial Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.010	0.031	0.038	0.001	0.001	0.142	0.027

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Tulare (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Tulare (SJV) Tulare (SJV) Tulare (SJV)

Table 6b: Multi-Day Resting Loss Emissions (grams/hour)

Pollutant Name: Reactive Org Gases Temperature: ALL Relative Humidity: ALL

Temp degF	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
70	0.001	0.002	0.002	0.000	0.000	0.014	0.002

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Tulare (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Tulare (SJV) Tulare (SJV) Tulare (SJV)

Table 7: Estimated Travel Fractions

Pollutant Name: Temperature: ALL Relative Humidity: ALL

	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
%VMT	0.402	0.345	0.143	0.099	0.001	0.010	1.000
%TRIP	0.374	0.311	0.229	0.075	0.000	0.011	1.000
%VEH	0.418	0.352	0.150	0.040	0.000	0.040	1.000

Title : San Joaquin Valley Air Basin Subarea Winter CYr 2035 Default Title
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/12/19 13:55:50
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Tulare (SJV)

****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Tulare (SJV) Tulare (SJV) Tulare (SJV)

Table 8: Evaporative Running Loss Emissions (grams/minute)

Pollutant Name: Reactive Org Gases Temperature: 70F Relative Humidity: ALL

Time min	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
1	0.008	0.158	0.185	0.020	0.677	0.003	0.087
2	0.007	0.084	0.097	0.010	0.348	0.037	0.047
3	0.008	0.061	0.070	0.007	0.240	0.056	0.036
4	0.009	0.051	0.058	0.006	0.187	0.068	0.031
5	0.011	0.045	0.051	0.005	0.156	0.077	0.029
10	0.015	0.035	0.038	0.004	0.096	0.099	0.025
15	0.017	0.033	0.036	0.004	0.079	0.113	0.025
20	0.018	0.033	0.036	0.004	0.074	0.123	0.026
25	0.019	0.034	0.037	0.004	0.074	0.133	0.027
30	0.020	0.036	0.039	0.004	0.078	0.140	0.028
35	0.021	0.037	0.040	0.004	0.082	0.147	0.029
40	0.022	0.039	0.042	0.004	0.086	0.153	0.030
45	0.022	0.040	0.043	0.005	0.089	0.160	0.031
50	0.023	0.041	0.044	0.005	0.093	0.166	0.032
55	0.024	0.042	0.046	0.005	0.096	0.172	0.033
60	0.024	0.043	0.047	0.005	0.099	0.177	0.034