APPENDIX C
TRANSPORTATION IMPACT ANALYSIS

Draft Transportation Impact Analysis

Morgan Hill Downtown Specific Plan

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July 2009

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EXECUTIVE SUMMARY

This report presents the results of the transportation impact analysis (TIA) for the proposed Downtown Specific Plan (DSP) in Morgan Hill, California. The DSP includes changes to land use, zoning, and circulation in the downtown area. The downtown area is bordered by Main Avenue to the north, Butterfield Boulevard to the east, Dunne Avenue to the south and Del Monte Avenue to the west. The changes in land uses also include two blocks outside the DSP boundary. The proposed land use changes include approximately 186,000 square feet (s.f.) of net new retail space, 1,204 net new residential units, and approximately 99,000 net new office/service s.f. of space by 2030. The purpose of this analysis is to identify potential impacts of the proposed project on the surrounding roadway system and to recommend appropriate improvements to mitigate any significant impacts.

The roadway system was evaluated under Existing, Year 2015 Current General Plan, Year 2015 Current General Plan Plus Project, Year 2015 Current General Plan Plus Project and Alternate Downtown Circulation, Year 2030 Current General Plan, Year 2030 Current General Plan Plus Project, and Year 2030 Current General Plan Plus Project and Alternate Downtown Circulation, and Year 2030 Cumulative General Plan Amendment Conditions. Alternate Downtown Circulation refers to the proposed narrowing of Monterey Road between Main Avenue and Dunne Avenue to provide additional sidewalk width and to enhance the downtown area.

Impacts to the transportation system were identified using both the current and proposed Level of Service (LOS) policy thresholds.

Project Traffic Estimates

The amount of traffic added to the surrounding roadway system by the proposed project was estimated by using the Morgan Hill Travel Demand Forecasting model. The proposed project is expected to generate 7,671 daily, 625 AM peak-hour, and 663 PM peak-hour trips in 2015 and 10,520 daily, 807 AM peak-hour, and 911 PM peak-hour trips by 2030.

PROJECT IMPACTS

The City is currently studying revisions to its level of service (LOS) policy. The project's impacts are based on the current LOS policy. The current level of service policy requires a minimum of LOS D+ at most signalized intersections. The proposed policy would require a minimum of LOS D at signalized intersections and exempt the Downtown area from any minimum threshold. In addition, select locations throughout the City would allow a lower level of service (LOS E). The effects of the proposed LOS policy are indicated under the cumulative impacts.

Intersections

Year 2015 Current General Plan Impacts and Mitigation Measures

The proposed project would have significant-impact at one signalized study intersection in Year 2015 Current General Plan.

Monterey Road/Main Avenue – To mitigate the anticipated impact, Main Avenue would need protected east/west phasing with modifications to the eastbound approach (i.e., a left-turn lane and a shared-through right) and widening of the westbound approach (i.e., a separate left, through, and right lane with an overlap

phase). However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location is considered ***significant and unavoidable***.

Year 2015 Current General Plan with Alternate Downtown Circulation Impacts and Mitigation Measures

Monterey Road/Main Avenue – To mitigate the anticipated impact, Main Avenue would need protected east/west phasing with modifications to the eastbound approach and widening of the westbound approach. The southbound approach would need to be widened to include two southbound left-turn lanes, a through lane, and right turn-lane. These improvements would not conflict with the narrowing of Monterey Road from four to two lanes. However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location is considered ***significant and unavoidable***.

Monterey Road/Dunne Avenue – This intersection requires an eastbound right-turn overlap phase, and a southbound approach with a left-turn, through lane and shared through-right lane to operate acceptably (LOS D+ or better). The project impact at this location would be considered **less than significant** with this improvement. This configuration would be consistent with narrowing Monterey Road from four to two-lanes between Dunne Avenue and 5th Street, which is the alternative narrowing location of Monterey Road streetscape project. Thus, a modification of the proposed narrowing is required to mitigate this impact.

Year 2030 Current General Plan Impacts and Mitigation Measures

Monterey Road/Main Avenue – To mitigate the anticipated impact, Main Avenue would need protected east/west phasing with modifications to the eastbound approach and widening the westbound approach. However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location would be considered ***significant and unavoidable***.

Main Avenue/Depot Street – Signalizing this intersection would mitigate the project's impact.

Year 2030 Current General Plan with Alternate Downtown Circulation Impacts and Mitigation Measures

Monterey Road/Main Avenue – The following improvements would mitigate the impact:

- Install protected east/west phasing with modifications to the eastbound approach and widening the westbound approach.
- The southbound approach would need to be widened to include two southbound left-turn lanes, a through lane, and right lane and the northbound approach would include a northbound left-turn lane, a through lane, and a shared through-right lane. The northbound and southbound approach would conflict with the potential narrowing of Monterey Road from four to two lanes between Main Avenue and either 5th Street or Dunne Avenue.

However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location would be considered ***significant and unavoidable***.

Main Avenue/Hale Avenue – Signalizing this intersection would mitigate the project's impact.

Main Avenue/Depot Street – Signalizing this intersection would mitigate the project's impact.

Monterey Road/Dunne Avenue – This impact is due to the narrowing of Monterey Road from four (4) to two (2) lanes between Main Avenue and Dunne Avenue. This intersection requires an eastbound right-turn overlap phase, and a southbound approach with a left-turn, through lane and shared through-right lane to operate acceptably (LOS D+ or better). The project impact at this location would be considered **less than**

significant with this proposed modification. This configuration would be consistent with narrowing Monterey Road from four to two-lanes between Dunne Avenue and 5th Street, which is the alternative narrowing location of Monterey Road streetscape project.

Main Avenue/Butterfield Boulevard – This intersection requires a second northbound left-turn to operate acceptably. However, this improvement may require right-of-way from the northwest and southeast corners of the intersection, and physical constraints exist along the east side of Butterfield Boulevard due to the open canal.

Year 2030 Cumulative General Plan Amendment Impacts and Mitigation Measures

Monterey Road/Main Avenue – The following improvements would mitigate the impact:

- Install protected east/west phasing with modifications to the eastbound approach and widening the westbound approach.
- The southbound approach would need to be widened to include two southbound left-turn lanes, a through lane, and a shared through-right lane and the northbound approach would include a northbound left-turn lane, a through lane, and a shared through-right lane. The northbound and southbound approach would conflict with the potential narrowing of Monterey Road from four to two lanes between Main Avenue and either 5th Street or Dunne Avenue.

However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location would be considered ***significant and unavoidable***.

Main Avenue/Butterfield Boulevard – This intersection requires a second northbound left-turn to operate acceptably. However, this improvement may require right-of-way from the northwest, and southeast corners of the intersection and physical constraints exist along the east side of Butterfield Boulevard due to the open canal.

Dunne Avenue/Del Monte Street – Signalizing this intersection would mitigate the project's impact.

Dunne Avenue and Monterey Road – This intersection requires an eastbound right-turn overlap phase, and a southbound approach with a left-turn, through lane and shared through-right lane to operate acceptably (LOS D+ or better). This configuration would be consistent with narrowing Monterey Road from four to two-lanes between Dunne Avenue and 5th Street, which is the alternative narrowing location of Monterey Road streetscape project.

Freeway Segments

Based on the freeway analysis, the proposed project would not add more than 1% of the capacity to any freeway segment and would have a less-than-significant impact on the study freeway segments in 2015 and 2030. Therefore, no mitigation measures are necessary.

Alternate LOS Policy

The impacts identified above were also compared to the proposed level of service policy that the City of Morgan Hill is considering. When applying the proposed LOS policy, none of the study locations would result in significant impacts with implementation of the proposed project.

1. INTRODUCTION

This report presents the results of the transportation impact analysis (TIA) for the proposed Downtown Specific Plan (DSP) in Morgan Hill, California. The DSP includes changes to land use, zoning, and circulation in the downtown area. The downtown area is bordered by Main Avenue to the north, Butterfield Boulevard to the east, Dunne Avenue to the south and Del Monte Avenue to the west. The changes in land uses also include two blocks outside the DSP boundary. The proposed land use changes include approximately 186,000 square feet (s.f.) of net new retail space, 1,204 net new residential units, and approximately 99,000 net new office/service s.f. of space by 2030. The detailed description of the proposed land use changes and the horizon years of 2015 and 2030 are described in later chapters. In the remaining chapters these land use changes are referred to as the Project.

This report also analyzes an alternate Downtown circulation configuration in the form of two General Plan Circulation Element Amendments: 1) the narrowing of Monterey Road from four lanes to two lanes (i.e., one travel lane in each direction) between Dunne and Main Avenues; 2) eliminating the currently proposed closure of Depot Street at Dunne Avenue. In addition, the City of Morgan Hill is considering a level of service (LOS) policy change that requires a general plan amendment. This Proposed General Plan Circulation Element Tiered LOS Policy would allow LOS D for all intersections, with some exceptions. The evaluation of impacts for the DSP will be conducted based on current LOS policies, as well as measured against the new LOS standards with the proposed policy change.

The analysis was conducted to identify potential impacts of the proposed project on the surrounding transportation system and to recommend appropriate improvements to mitigate any significant impacts. **Figure 1** presents the project location, surrounding transportation system, and study intersections.

Project impacts were evaluated following the guidelines of the City of Morgan Hill and the Santa Clara Valley Transportation Authority (VTA), which is the congestion management agency for Santa Clara County. The analysis evaluated the operations of the following 24 study intersections:

1. Monterey Road / Cochrane Road
2. Butterfield Boulevard / Cochrane Road
3. Monterey Road / Central Avenue
4. Monterey Road / Keystone Avenue
5. Monterey Road / Main Avenue
6. Del Monte Avenue / Main Avenue
7. Hale Avenue / Main Avenue
8. Depot Street / Main Avenue
9. Monterey Road / 1st Street
10. Monterey Road / 2nd Street
11. Monterey Road / 3rd Street
12. Monterey Road / 4th Street

13. Monterey Road / 5th Street
14. Monterey Road / Dunne Avenue
15. Del Monte Avenue / Dunne Avenue
16. Church Street / Dunne Avenue
17. Butterfield Boulevard / Dunne Avenue
18. US 101 Southbound Ramps / Dunne Avenue
19. US 101 Northbound Ramps / Dunne Avenue
20. Condit Road / Dunne Avenue
21. Monterey Road / Tennant Avenue
22. Butterfield Boulevard / Main Avenue
23. Condit Road / Main Avenue
24. Hale Avenue / Dunne Avenue (Future only)

The operations of the study intersections were evaluated during the weekday morning (AM) and evening (PM) peak hours for 13 scenarios. The following scenarios are not labeled in numerical order to be consistent with various transportation studies that the City is currently conducting (see Appendix A for a complete list of all scenarios):

Scenario 1: *Existing Conditions* – Existing volumes obtained from counts.

Scenario 2: Year *2015 Current General Plan Conditions* – Year 2015 traffic volumes based on City provided Year 2015 estimated land use development projects, plus roadway improvements defined in the July 2001 General Plan that are anticipated to be built by 2015.

Scenario 9: Year *2015 Current General Plan Plus Project Conditions* – Scenario 2 traffic conditions plus traffic from the proposed project expected by 2015. Level of services analysis based on 2001 General Plan and current transportation impact analysis (TIA) guidelines.

Scenario 9A: Same as Scenario 9 except level of service analysis is based on the proposed LOS policy general plan amendment.

Scenario 10: Year *2015 Current General Plan Plus Project and Alternate Downtown Circulation Conditions* – Scenario 9 traffic conditions with two downtown area network changes: 1) narrowing of Monterey Road from 4 to 2 lanes from Main Avenue to Dunne Avenue and 2) leaving Depot Street open (i.e., removing Dunne Avenue and UP railroad grade separation from 2001 General Plan). Level of services analysis based on 2001 General Plan and current transportation impact analysis (TIA) guidelines.

Scenario10A: Same as Scenario 10 except level of service analysis is based on the proposed LOS policy general plan amendment.

Scenario 4: Year *2030 Current General Plan Conditions* – Year 2030 cumulative traffic volumes based on City provided land use that includes approved and pending development projects, plus roadway improvements defined in the July 2001 General Plan. Level of services analysis based on 2001 General Plan and current transportation impact analysis (TIA) guidelines.

Scenario 11: Year *2030 Current General Plan Plus Project Conditions* – Scenario 4 traffic conditions plus traffic from the proposed project. Level of services analysis based on 2001 General Plan and current transportation impact analysis (TIA) guidelines.

Scenario 11A: Same as Scenario 11 except level of service analysis is based on the proposed LOS policy general plan amendment.

Scenario 12: Year *2030 Current General Plan Plus Project and Alternate Downtown Circulation Conditions* – Scenario 11 traffic conditions with two downtown area network changes: 1) narrowing of Monterey Road from 4 to 2 lanes from Main Avenue to Dunne Avenue and 2) leaving Depot Street open (i.e., removing Dunne Avenue and UP railroad grade separation from 2001 General Plan). Level of services analysis based on 2001 General Plan and current transportation impact analysis (TIA) guidelines.

Scenario 12A: Same as Scenario 12 except level of service analysis is based on the proposed LOS policy general plan amendment.

Scenario 8: Year *2030 Cumulative General Plan Amendment Conditions* – Year 2030 cumulative traffic volumes based on City provided land use that includes approved and pending development projects, (i.e., private General Plan Amendment applications and City-initiated land use General Plan Amendments) plus funded and recommended roadway improvements for the revised General Plan Circulation Element. Level of services analysis based on 2001 General Plan and current transportation impact analysis (TIA) guidelines.

Scenario 8A: Same as Scenario 8 but evaluated using proposed level of service policy changes.

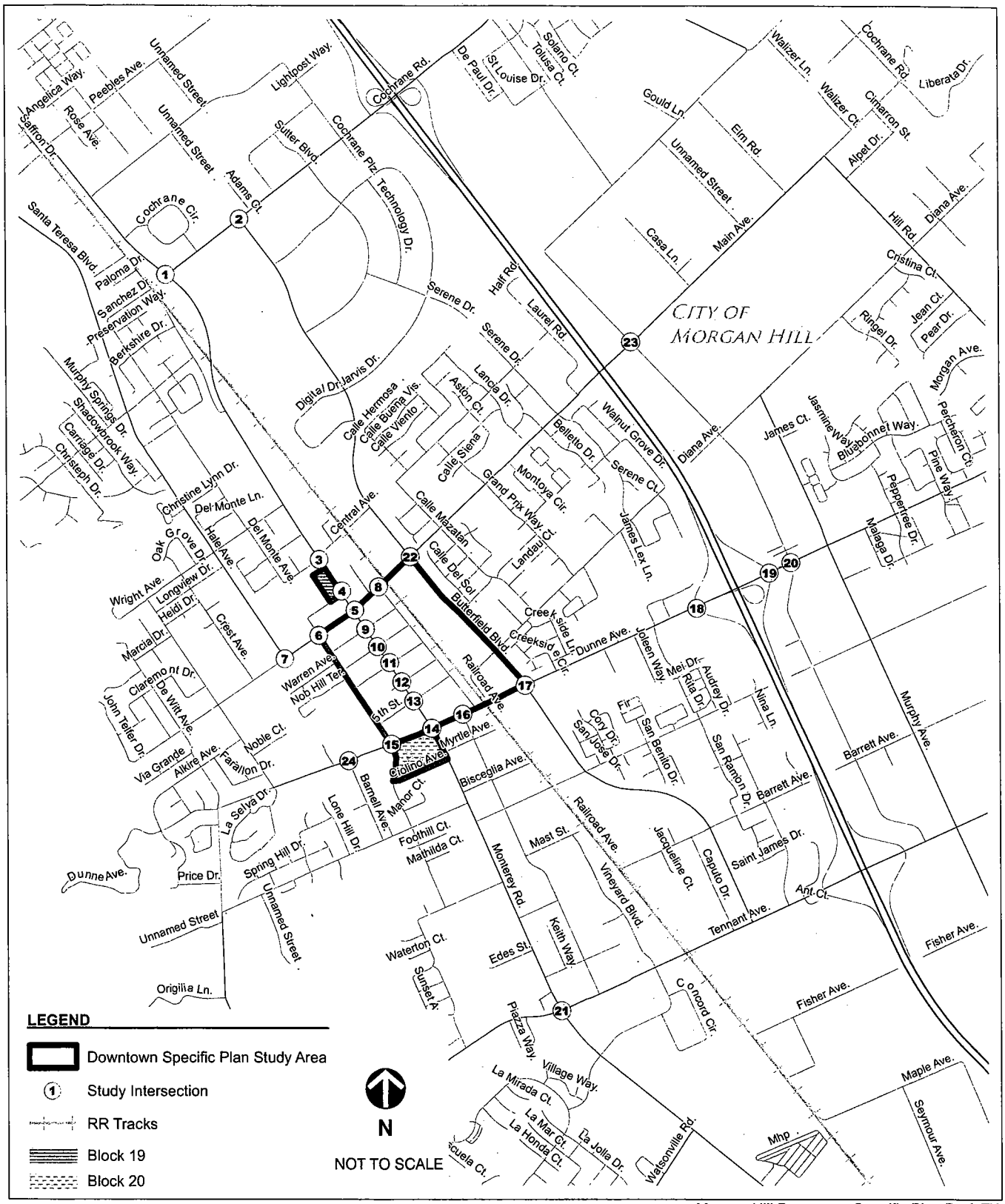
The analysis also included the following freeway segments (northbound and southbound):

1. US 101 north of Cochrane Road
2. US 101 between Cochrane Road and Dunne Avenue
3. US 101 between Dunne Avenue and Tennant Avenue
4. US 101 south of Tennant Avenue

The impacts of the proposed DSP on the transportation system were evaluated by comparing intersection operations under Year 2015 and Year 2030 Plus Project Conditions with Existing Conditions. Impacts for the Year 2030 Cumulative General Plan Amendment scenario were also identified by comparing to Existing Conditions. The Morgan Hill Citywide transportation model was used to project traffic volumes for all future scenarios. The computer model incorporates residential and non-residential land use assumptions for areas within the City, the unincorporated areas outside of the City but within the Morgan Hill Sphere of Influence, and areas outside of Morgan Hill that will generate traffic that impacts the roads serving the City. The City's traffic model uses land use and travel patterns from the regional travel demand model used by the Santa

Clara Valley Transportation Authority (VTA). Intersections operations under all scenarios were evaluated with level of service (LOS) calculations.

The remainder of this report is divided into eight chapters. Chapter 2 presents the existing traffic volumes at study intersections and existing operations at the study intersections. The land use and transportation assumptions for Year 2015 Current General Plan Conditions are presented in Chapter 3. Chapter 4 presents the results of the operations analysis for Year 2015 Current General Plan Plus Project Conditions. The Year 2015 Current General Plan Plus Project and Alternate Downtown Circulation Conditions analysis is presented is Chapter 5 which includes analysis of the alternate downtown configuration. The land use and transportation assumptions for Year 2030 Current General Plan Conditions are presented in Chapter 6. Chapter 7 presents the results of the operations analysis for Year 2030 Current General Plan Plus Project Conditions. The Year 2030 Current General Plan Plus Project and Alternate Downtown Circulation Conditions analysis is presented is Chapter 8 which includes analysis of the alternate downtown configuration. Chapter 9 presents 2030 Cumulative Conditions, which analyzes operations with traffic from all General Plan Amendments in the City including the proposed DSP and the Circulation Element Amendments on Monterey Road and Depot Street.



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STUDY AREA AND STUDY INTERSECTIONS
FIGURE 1

2. EXISTING CONDITIONS

This chapter describes the existing conditions of the roadway facilities, pedestrian and bicycle facilities, transit service, traffic volumes, and intersection operations. A discussion of the method used to calculate intersection levels of service (LOS) and the corresponding results is also presented in this chapter.

EXISTING ROADWAY NETWORK

This section describes the existing roadway network near the project site, which is illustrated on **Figure 1**.

U.S. Highway 101 (US 101) is a north-south freeway that serves as the primary roadway connection between Morgan Hill and other areas of Santa Clara County to the north and south. US 101 extends north to San Francisco and south to Los Angeles. The freeway includes six lanes (three mixed-flow lanes in each direction) within most of Morgan Hill. North of Cochrane Road, US 101 widens to eight lanes with three mixed-flow lanes and one high occupancy vehicle (HOV) lane in each direction. The Dunne Avenue interchange provides primary access to the downtown area.

Monterey Road, through Morgan Hill, is generally a four-lane arterial roadway with separate left-turn lanes at intersections and on-street parking in some areas. The section of Monterey Road between Wright Avenue and Cochrane Road only includes two northbound lanes and one southbound lane. Between Main Avenue and Wright Avenue and south of Dunne Avenue through the City, a continuous center lane is provided between intersections for left turns. Monterey Road is the main boulevard through downtown. The speed limit on Monterey Road varies from 45 miles per hour (mph) north of Cochrane Road to 25 mph between Main Avenue and East Dunne Avenue in downtown. One set of speed lumps near Third Street slow traffic through the downtown area.

Main Avenue is a two-lane roadway that extends east from Hale Avenue at the west end to Hill Road on the east side of the City and forms the northern boundary of the downtown area. The roadway is posted at 30 mph. Left-turn pockets are not provided on Main Avenue at its intersection with Monterey Road.

Dunne Avenue, east of Monterey Road, is a four-lane, divided arterial that extends eastward from this intersection, through a partial-cloverleaf interchange at US 101, and up into the eastern foothills. The roadway is posted at 35 mph and is signalized at intersections with major cross streets. Dunne Avenue, west of Monterey Road, narrows to a two-lane undivided roadway and extends westward past the intersection of Peak Avenue and up into the western foothills. Dunne Avenue forms the southern boundary of the downtown area.

Butterfield Boulevard is a four-lane, divided arterial that extends northward from Tennant Avenue to Cochrane Road. Butterfield Boulevard forms the eastern boundary of the downtown area and is a primary north-south roadway within the City. The street is posted at 45 mph and includes signalized intersections at major cross streets.

Depot Street is a two-lane, north-south roadway east of Monterey Road that extends south from Main Avenue to Dunne Avenue. The roadway is posted at 30 mph.

Del Monte Avenue is a two-lane, north-south roadway west of Monterey Road. It forms the western boundary of the downtown area.

Central Avenue is a two-lane, east-west roadway north of Main Avenue. This street extends through Morgan Hill in two segments. The segment closest to the downtown, extends east from Del Monte Avenue to the

railroad tracks providing access to Britton Middle School. The second segment extends from east of the railroad tracks to Serene Drive.

Condit Road is two-lane, north-south roadway located east of the project site. This facility extends through Morgan Hill, from Half Road in the north to Tennant Avenue in the south.

First Street is a two-lane, east-west roadway just south of Main Avenue. This street extends east from Del Monte Avenue to Monterey Road and continues east to Depot Street. At the intersection of First Street and Monterey Road, a center landscaped median prevents eastbound and westbound through traffic.

Second Street is a two-lane, east-west roadway south of First Street. This street extends east from Del Monte Avenue to Monterey Road and continues east to Depot Street, where access to the Caltrain Station and parking area is provided.

Third Street is a two-lane, east-west roadway south of Second Street. This street extends east from Del Monte Avenue to Monterey Road and continues east to Depot Street, where access to the Caltrain Station and parking area is provided. At the intersection of Third Street and Monterey Road, two sets of speed cushions slow northbound and southbound traffic. Like the intersection of First Street and Monterey Road, this intersection consists of a center landscaped median preventing eastbound and westbound through traffic.

Fourth Street, east of Monterey Road is a two-lane, east-west roadway south of Third Street. Fourth Street extends between Monterey Road and Depot Street. West of Monterey Road, Fourth Street provides access to several different commercial developments.

Fifth Street is a two-lane primarily east-west roadway that extends between Monterey Road and Del Monte Avenue. At Del Monte Avenue, Fifth Street turns south and becomes Del Monte Avenue.

EXISTING PEDESTRIAN AND BICYCLE FACILITIES

Pedestrian facilities comprise sidewalks, crosswalks, and pedestrian signals. Crosswalks exist at all of the intersections on Monterey Road between Main Avenue and Dunne Avenue. Sidewalks are provided on both sides of Monterey Road.

Bicycle facilities comprise paths (Class I), lanes (Class II), and routes (Class III). Bicycle paths are paved trails that are separate from roadways. Bicycle lanes are lanes on roadways designated for bicycle use by striping, pavement legends, and signs. Bicycle routes are roadways designated for bicycle use by signs only. Bicycle lanes are provided on Main Avenue, on Dunne Avenue east of Monterey Road, and on Monterey Road except through the downtown. Within the Downtown area, Monterey Road (between Main Avenue and Dunne Avenue), Depot Street, and 5th Street are designated bicycle routes. In the surrounding area, Del Monte Avenue south of 5th Street and Ciolino Avenue between Del Monte Avenue and Monterey Road are designated bike routes. **Figure 2** presents existing bicycle facilities in the study area.

EXISTING TRANSIT SERVICE

The Santa Clara Valley Transportation Authority (VTA) operates bus service in all jurisdictions within Santa Clara County. **Figure 3** shows the existing transit service in the study area.

Route 15, a local community bus, provides service between the Morgan Hill Civic Center and Saddleback Drive and offers peak-period trips to Jackson Oaks and the Morgan Hill Caltrain station. Midday trips are provided to the Centennial Recreation Center. In downtown, this route operates along Main Avenue, Butterfield Boulevard and Dunne Avenue. Service operates on weekdays only, every 60 minutes from 6:05 AM to 7:00 PM.

Route 16, a local community bus, provides service between the Morgan Hill Civic Center and Burnett Avenue. In downtown, it operates along Main Avenue. Service operates on weekdays only, every 60 minutes from 6:30 AM to 5:50 PM.

Route 68, a regional bus route, provides service between the City of Gilroy and the San Jose Diridon Caltrain Station. In downtown, it operates along Monterey Road and Main Avenue. Service operates on weekdays every 15 to 30 minutes from 4:20 AM to 1:20 AM and on weekends every 30 to 60 minutes from 5:50 AM to 1:15 AM.

Route 121, an express bus route, provides service between the City of Gilroy and the Lockheed Martin Light Rail Station in Sunnyvale. In downtown, it operates along Butterfield Boulevard and Dunne Avenue. This route services the Morgan Hill Caltrain station. Service operates on weekdays only, every 30 to 60 minutes from 4:30 AM to 8:45 AM and 2:50 PM to 7:40 PM.

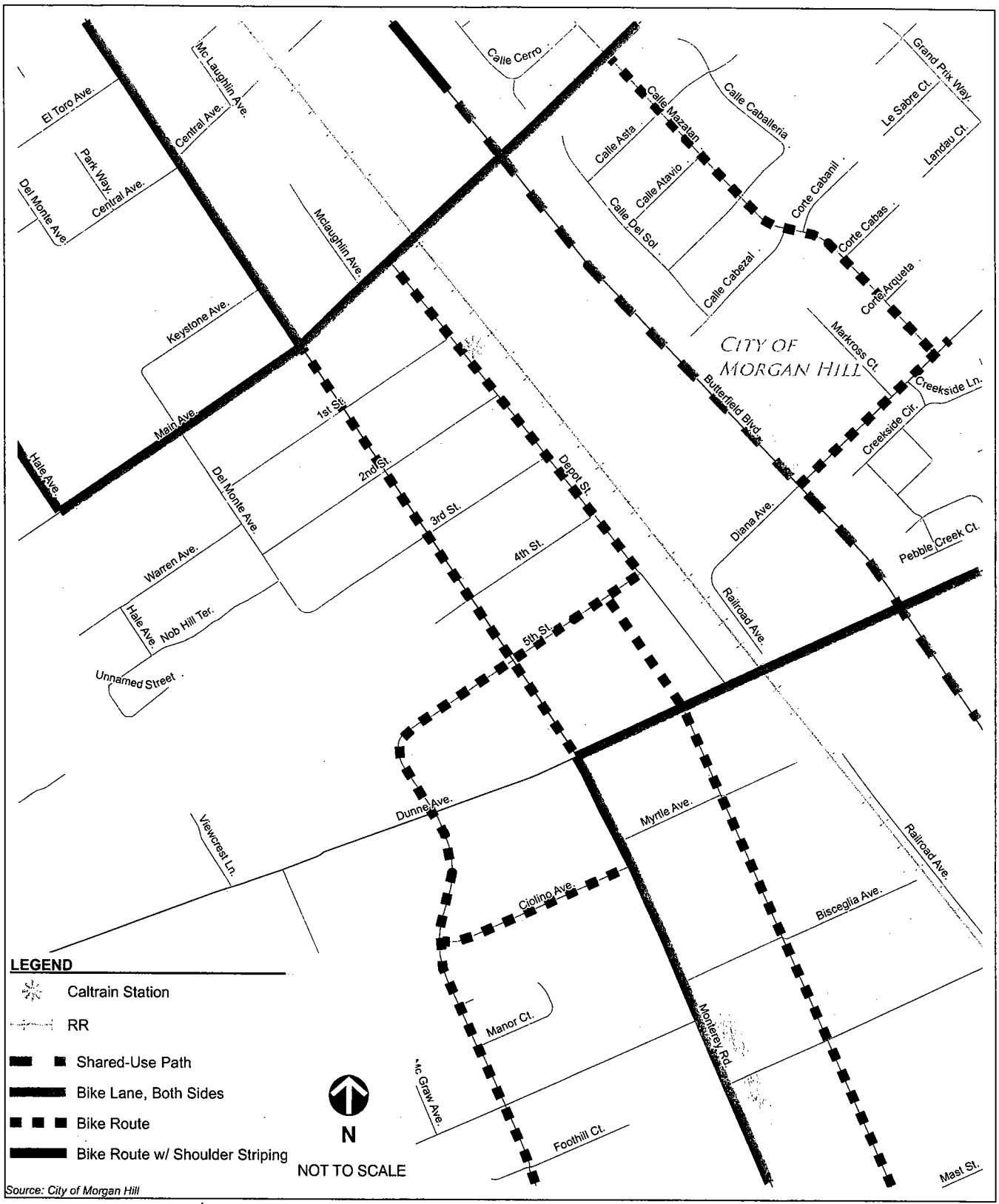
Route 168, an express bus route, provides direct service between the Gilroy, Morgan Hill and the San Jose Diridon Transit Centers. In downtown, it operates along Butterfield Boulevard and Dunne Avenue. Service operates on weekdays only, every 25 to 40 minutes from 5:40 AM to 9:30 AM and 3:30 PM to 7:15 PM.

Caltrain provides frequent daily train service between San Jose and San Francisco. Service extends south to Gilroy during commute periods, with three northbound trips during the AM peak period and three southbound trips during the PM peak period stopping at the Morgan Hill Caltrain Station. Connections to Route 15 and Route 121 can be made at this station.

EXISTING VOLUMES AND LANE CONFIGURATIONS

The operations of the study intersections were evaluated during the weekday AM and PM peak hours. Intersection operations were evaluated for the highest one-hour volume counted between each of the 7:00 and 9:00 AM and the 4:00 and 6:00 PM peak periods. Intersection turning movement counts were conducted in June and October 2007 and April 2008. The traffic counts are included in Appendix B.

Figures 4A – 4C present the existing AM and PM peak-hour turning movement volumes, lane configurations, and traffic control devices at the study intersections.



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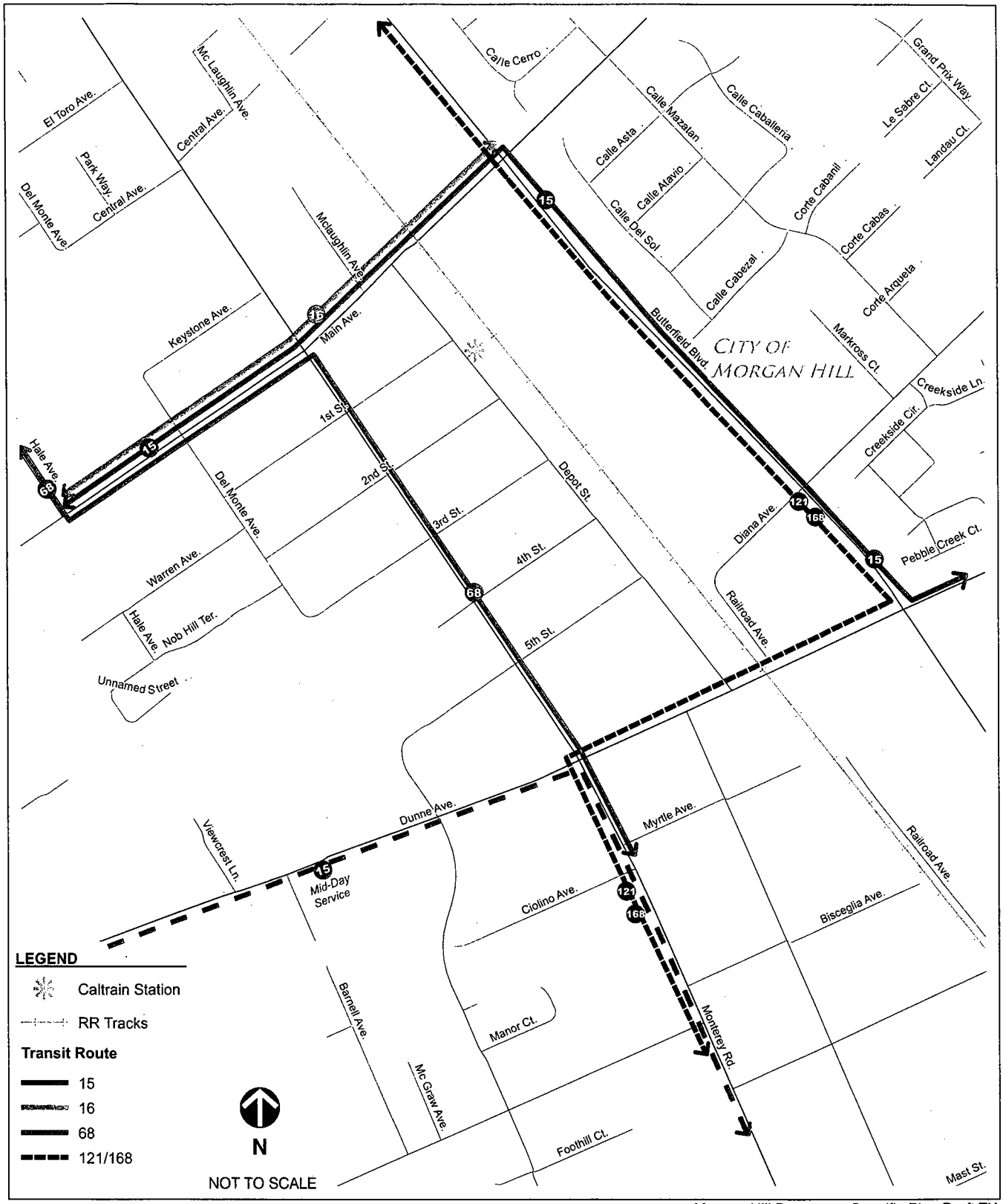
EXISTING BICYCLE FACILITIES
FIGURE 2



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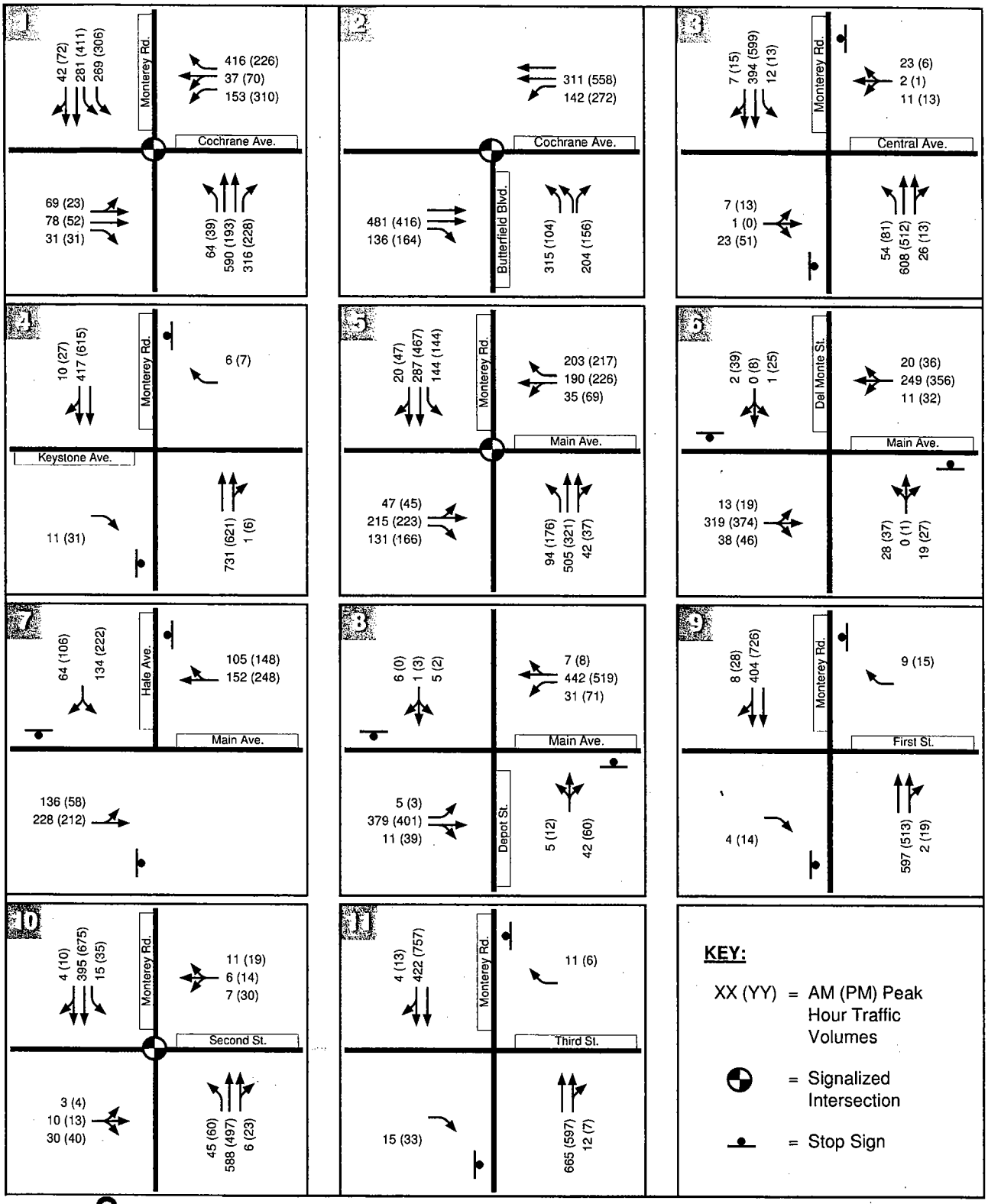
EXISTING TRANSIT
FIGURE 3



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EXISTING INTERSECTION LANE GEOMETRIES, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 4A

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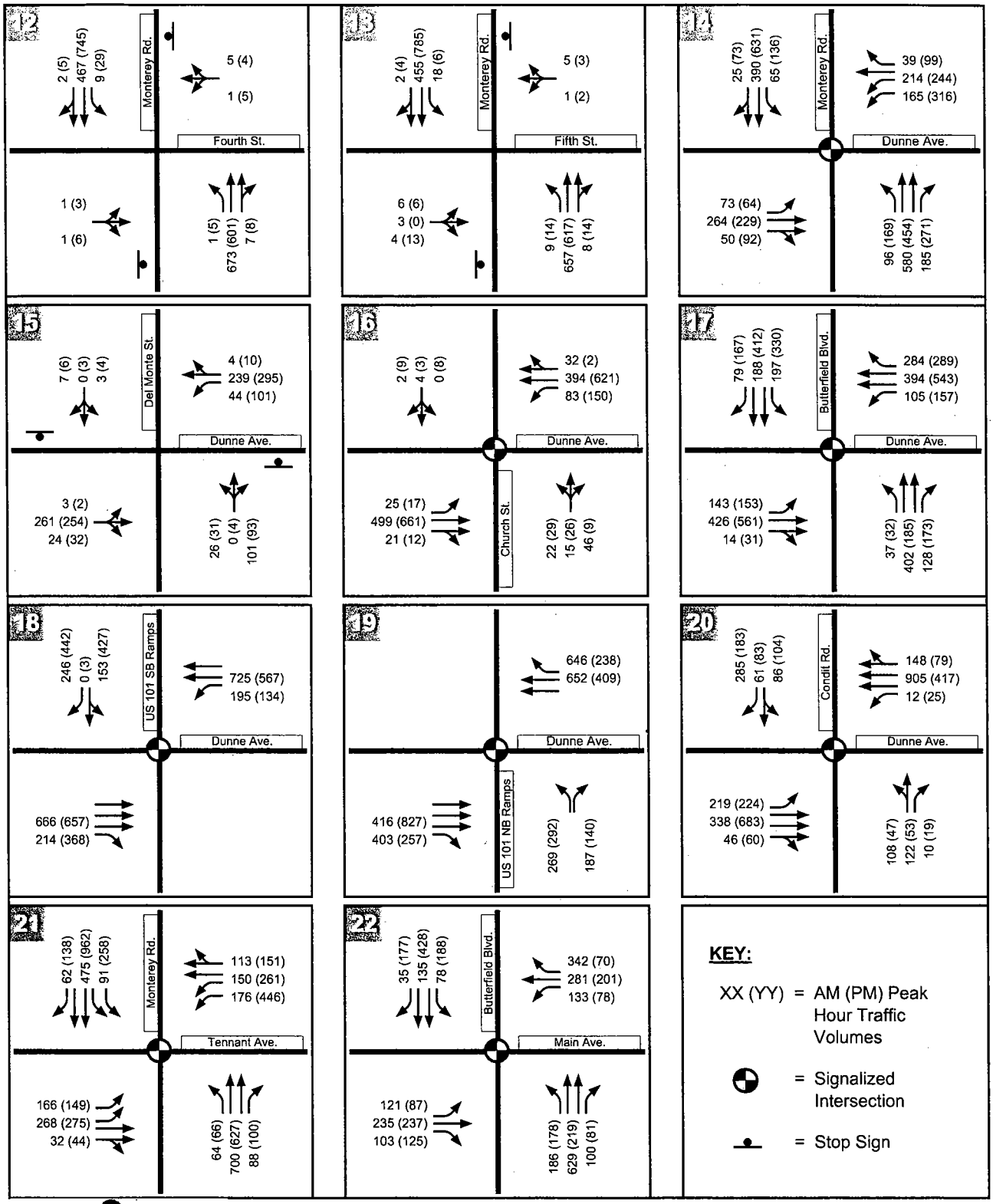

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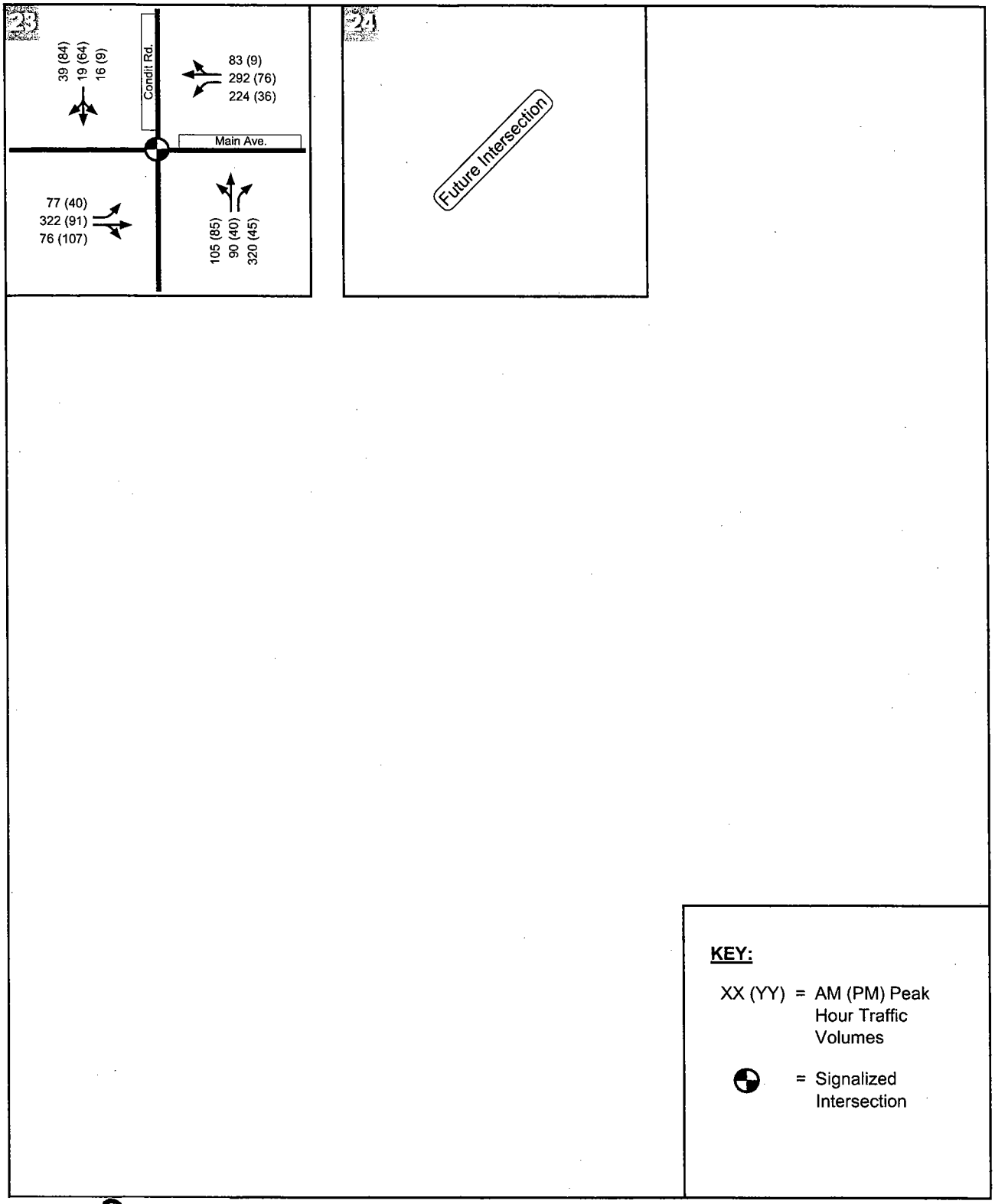
EXSITING INTERSECTION LANE GEOMETRIES, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 4B



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EXSITING INTERSECTION LANE GEOMETRIES, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 4C

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LEVEL OF SERVICE METHOD

The operations of roadway facilities are described with the term level of service (LOS). LOS is a qualitative description of traffic flow based on such factors as speed, travel time, delay, and freedom to maneuver. Six levels are defined from LOS A, with the best operating conditions, to LOS F, with the worst operating conditions. LOS E represents "at-capacity" operations. Operations are designated as LOS F when volumes exceed capacity, resulting in stop-and-go conditions.

Signalized Intersections

The level of service method for signalized intersections approved by the City of Morgan Hill and VTA analyzes intersection operations based on average control vehicular delay, as described in Chapter 16 of the *2000 Highway Capacity Manual* (*HCM*) published by the Transportation Research Board, with adjusted saturation flow rates to reflect conditions in Santa Clara County. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The average control delay for signalized intersections is calculated using TRAFFIX analysis software and is correlated to a LOS designation as shown in Table 1. The City of Morgan Hill's 2001 General Plan established a minimum acceptable operating level of service for signalized intersections of LOS D+ and LOS E at freeway ramp intersections. LOS D is allowed at the following intersections (where achieving LOS D+ would require extraordinary development expenditure and right-of-way acquisition): Madrone Parkway and Monterey Road, Tennant Avenue and Butterfield Boulevard, and Watsonville Road and Monterey Road.

TABLE 1
SIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS USING AVERAGE CONTROL VEHICULAR DELAY

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Operations with very low delay occurring with favorable progression and/or short cycle lengths.	≤ 10.0
B+	Operations with low delay occurring with good progression and/or short cycle lengths.	10.1 to 12.0
B		12.1 to 18.0
B-		18.1 to 20.0
C+	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	20.1 to 23.0
C		23.1 to 32.0
C-		32.1 to 35.0
D+	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, and high V/C ratios. Many vehicles stop and individual cycle failures are noticeable.	35.1 to 39.0
D		39.1 to 51.0
D-		51.1 to 55.0
E+	Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences.	55.1 to 60.0
E		60.1 to 75.0
E-		75.1 to 80.0
F	Operations with delays unacceptable to most drivers occurring due to over-saturation, poor progression, or very long cycle lengths.	> 80.0

Source: *Traffic Level of Service Analysis Guidelines*, VTA Congestion Management Program, June 2003; *Highway Capacity Manual*, Transportation Research Board, 2000.

Unsignalized Intersections

Operations of the unsignalized study intersections are evaluated using the method contained in Chapter 17 of the *2000 HCM* and calculated using TRAFFIX analysis software. LOS ratings for stop-sign controlled intersections are based on the average control delay expressed in seconds per vehicle. At two-way or side-street-stop controlled intersections, control delay is calculated for each movement, not for the intersection as a whole. For approaches composed of a single lane, delay is computed as the average of all movements in that lane. For all-way stop-controlled locations, a weighted average delay for the entire intersection is presented. Table 2 summarizes the relationship between delay and LOS for unsignalized intersections. The City does not have an adopted LOS policy for unsignalized intersections; however, LOS D is considered to be the minimum acceptable LOS and has been used for traffic studies within the City.

TABLE 2
UNSIGNALIZED INTERSECTION LEVEL OF SERVICE DEFINITIONS

Level of Service	Description	Average Control Delay Per Vehicle (Seconds)
A	Little or no delay.	≤ 10.0
B	Short traffic delays.	10.1 to 15.0
C	Average traffic delays.	15.1 to 25.0
D	Long traffic delays.	25.1 to 35.0
E	Very long traffic delays.	35.1 to 50.0
F	Extreme traffic delays with intersection capacity exceeded.	> 50.0

Source: *Highway Capacity Manual*, Transportation Research Board, 2000.

Freeway Segments

Freeway segments are evaluated using VTA's analysis procedure, which is based on the density of the traffic flow using methods described in the *2000 HCM*. Density is expressed in passenger cars per mile per lane. The Congestion Management Program (CMP) maintained by the VTA includes a range of densities for freeway segment level of service as shown in Table 3. The LOS standard for freeway segments is LOS E.

TABLE 3
FREEWAY SEGMENT LEVEL OF SERVICE DEFINITIONS

Level of Service	Density (passenger cars per mile per lane)
A	≤ 11
B	11.1 to 18.0
C	18.1 to 26.0
D	26.1 to 46.0
E	46.1 to 58.0
F	> 58.0

Sources: *Traffic Level of Service Analysis Guidelines*, VTA Congestion Management Program, June 2003; *Highway Capacity Manual*, Transportation Research Board, 2000.

EXISTING INTERSECTION LEVELS OF SERVICE

Existing intersection lane configurations, signal timings, and peak-hour turning movement volumes were used as inputs for the LOS calculations. The results of the LOS analysis for Existing Conditions are presented in Table 4. Appendix C contains the corresponding calculation sheets. All but one of the signalized study intersections currently operate at acceptable levels of service. The Monterey Road/Main Avenue intersection operates at LOS D during both the AM and PM peak hours, which is considered an unacceptable level. In addition, the Butterfield Boulevard/Dunne Avenue intersection currently operates at an unacceptable LOS D during the PM peak hour. All of the unsignalized study intersections currently operate at acceptable levels.

TABLE 4
EXISTING INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Delay[1]	LOS[2]
1. Monterey Road / Cochrane Road	Signal	AM PM	27.6 29.1	C C
2. Butterfield Boulevard / Cochrane Road	Signal	AM PM	16.7 13.0	B B
3. Monterey Road / Central Avenue (us)	Two-Way Stop Controlled	AM PM	16.0 23.2	C C
4. Monterey Road / Keystone Avenue (us)	Side Street Stop Controlled	AM PM	10.7 10.5	B B
5. Monterey Road / Main Avenue	Signal	AM PM	43.4 42.4	D D
6. Del Monte Avenue / Main Avenue (us)	Two-Way Stop Controlled	AM PM	13.5 19.1	B C
7. Hale Avenue / Main Avenue (us)	All-Way Stop Controlled	AM PM	11.0 13.2	B B
8. Depot Street / Main Avenue (us)	Side Street Stop Controlled	AM PM	15.9 25.6	C D
9. Monterey Road / 1st Street (us)	Two-Way Stop Controlled	AM PM	10.2 10.9	B B
10. Monterey Road / 2nd Street	Signal	AM PM	10.7 12.5	B+ B
11. Monterey Road / 3rd Street (us)	Two-Way Stop Controlled	AM PM	10.5 11.1	B B
12. Monterey Road / 4th Street (us)	Two-Way Stop Controlled	AM PM	14.2 18.9	B C
13. Monterey Road / 5th Street (us)	Two-Way Stop Controlled	AM PM	17.9 17.0	C C
14. Monterey Road / Dunne Avenue	Signal	AM PM	28.6 36.6	C D+
15. Del Monte Avenue / Dunne Avenue (us)	Two-Way Stop Controlled	AM PM	12.0 15.0	B B

TABLE 4
EXISTING INTERSECTION LEVELS OF SERVICE

16. Church Street / Dunne Avenue	Signal	AM PM	18.8 19.5	B- B-
17. Butterfield Boulevard / Dunne Avenue	Signal	AM PM	30.7 39.4	C D
18. US 101 SB Ramps / Dunne Avenue	Signal	AM PM	20.7 18.7	C+ B-
19. US 101 NB Ramps / Dunne Avenue	Signal	AM PM	14.4 12.7	B B
20. Condit Road / Dunne Avenue	Signal	AM PM	32.7 28.3	C- C
21. Monterey Road / Tennant Avenue	Signal	AM PM	25.6 32.8	C C-
22. Butterfield Boulevard / Main Avenue	Signal	AM PM	34.4 37.7	C- D+
23. Condit Road / Main Avenue	Signal	AM PM	10.8 9.9	B+ A
24. Hale Avenue / Dunne Avenue (Future only)	Signal	AM PM	Future Intersection	

Notes:
(us) = unsignalized intersection
1 Whole intersection weighted average control delay expressed in seconds per vehicle calculated using methods described in the *2000 HCM*, with adjusted saturation flow rates to reflect Santa Clara County Conditions for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
2 LOS = Level of service. LOS calculations conducted using the TRAFFIX level of service analysis software package.
Unacceptable operations identified in **bold** text.

EXISTING FREEWAY SEGMENT LEVELS OF SERVICE

Table 5 contains the existing freeway segment levels of service for the mixed-flow and HOV lanes based on the segment densities reported in the VTA's *2007 CMP Monitoring and Conformance Report*. Only one freeway segment currently includes an HOV lane, northbound US 101 from Cochrane Road to Burnett Avenue. The following mixed-flow freeway segments exceed the LOS E standard:

- US 101, Northbound between San Martin Avenue and Tennant Avenue (AM peak hour)
- US 101, Northbound between Tennant Avenue and Dunne Avenue (AM peak hour)
- US 101, Southbound between Burnett Avenue and Cochrane Road (PM peak hour)

TABLE 5
EXISTING FREEWAY SEGMENT LEVELS OF SERVICE

Direction	From/To	From/To	Peak Hour	Number of Lanes		Density		LOS	
				Mixed	HOV	Mixed	HOV	Mixed	HOV
NB US 101	San Martin Avenue	Tennant Avenue	AM	3	0	**59**	n/a	**F**	n/a
			PM	3	0	17	n/a	B	n/a
	Tennant Avenue	Dunne Avenue	AM	3	0	**71**	n/a	**F**	n/a
			PM	3	0	16	n/a	B	n/a
	Dunne Avenue	Cochrane Road	AM	3	0	47	n/a	E	n/a
			PM	3	0	16	n/a	B	n/a
	Cochrane Road	Burnett Avenue	AM	3	1	34	18	D	B
			PM	3	1	17	5	B	A
SB US 101	Burnett Avenue	Cochrane Road	AM	3	0	14	n/a	B	n/a
			PM	3	0	**66**	n/a	**F**	n/a
	Cochrane Road	Dunne Avenue	AM	3	0	15	n/a	B	n/a
			PM	3	0	56	n/a	E	n/a
	Dunne Avenue	Tennant Avenue	AM	3	0	13	n/a	B	n/a
			PM	3	0	28	n/a	D	n/a
	Tennant Avenue	San Martin Avenue	AM	3	0	10	n/a	A	n/a
			PM	3	0	32	n/a	D	n/a

Notes:
[1] Density based on volume from VTA's *2007 CMP Monitoring Data* (December 2007).
[2] NB - Northbound; SB - Southbound.
Unacceptable operations (LOS F) identified in **bold** text.

FIELD OBSERVATIONS

Field observations of the study intersections were conducted in June 2007 and April 2008 to verify their operations. In general, observations indicated that all of the study intersections are operating at or near the calculated levels of service. Queuing was observed at those intersections showing LOS D, however, most of the vehicle queues cleared these signalized study intersections within one cycle. All of the unsignalized intersections were observed to operate acceptably, with side street traffic volumes finding gaps to enter the intersections.

3. YEAR 2015 CURRENT GENERAL PLAN CONDITIONS

This chapter describes the expected traffic operations under Year 2015 Current General Plan Conditions. The City's traffic model was used to forecast future traffic volumes. The land use assumptions for Year 2015 Current General Plan Conditions are based on the General Plan land uses to year 2015. The roadway network includes the existing roadways plus the roadway improvements expected to be in place by 2015. This scenario is presented for informational purposes only and can serve as a comparison between Year 2015 Current General Plan with Project Conditions.

YEAR 2015 CURRENT GENERAL PLAN LAND USE ASSUMPTIONS

The City's travel demand forecasting model was used to develop Year 2015 Current General Plan traffic volume estimates. The City's model was recently developed by Fehr & Peers and was calibrated and validated to existing conditions. The model is the best available tool for forecasting future traffic volumes based on planned changes in land use and roadway infrastructure in the City of Morgan Hill. The area included in the model extends from just south of the US 101/SR 85 interchange in San Jose to just south of Gilroy.

The Morgan Hill TDF model has a base year of 2007 and horizon years of 2015 and 2030, thus reflecting eight (8) and 23 years of growth in the City of Morgan Hill and the region, respectively. Future land use data is instrumental in estimating daily and peak hour trip generation and subsequently future traffic demand. As discussed in the *Morgan Hill Travel Demand Forecasting Model & Future Improvements Study* (Fehr & Peers, May 2009), Year 2015 land use estimates were based on input from City of Morgan Hill staff and regionally approved data from the Association of Bay Area Governments (ABAG) Projections 2003 for the areas south of Morgan Hill in San Martin and Gilroy. Although the ABAG 2005 and 2007 projections were available at the time this model was prepared, that data set included inconsistencies in land use in the Gilroy area based on already built/occupied and planned development.

The 2015 land use assumptions used in the Morgan Hill model include a total employment of 10,000 jobs and a total of 2,000 households in Coyote Valley. This level of development is based on the regionally approved forecasts developed for the Santa Clara Valley Transportation Authority (VTA) model which includes a portion of the approved Cisco Systems project (Coyote Valley Research Park).

The City's model includes land uses aggregated into specific geographic areas, or traffic analysis zones (TAZs). There are 36 TAZs within the downtown study area. Table 6 summarizes the 2015 land uses in these TAZs based on the current General Plan and provided by City staff. These land uses include existing and all planned development that will occur by 2015. The existing land uses are also shown for comparison.

TABLE 6
MODEL LAND USE ASSUMPTIONS FOR DOWNTOWN SPECIFIC PLAN AREA

Land Use	Existing	Year 2015 Current General Plan[1]
Retail	204,000 s.f.	249,000 s.f.
Residential	196 du	626 du
Office/Service	99,000 s.f.	129,000 s.f.

Notes: du = dwelling unit, s.f. = square feet
[1] Existing uses plus all planned development to occur by 2015 in downtown planning area under the current General Plan.
Source: City of Morgan Hill Planning Department, May 2009.

YEAR 2015 CURRENT GENERAL PLAN TRANSPORTATION NETWORK ASSUMPTIONS

The following roadway improvements anticipated by 2015 are included:

- Extension of Butterfield Boulevard north of Cochrane Road to Madrone Parkway
- Extension of Butterfield Boulevard south of Tennant Avenue to Monterey Road
- Extension of Hale Avenue/Santa Teresa Boulevard between Main Avenue and Spring Avenue as a 4-lane arterial
- Closure of Fisher Avenue between Railroad Avenue and Butterfield Boulevard Extension
- Closure of DeWitt Avenue between Price Drive and Spring Avenue
- Extension of Walnut Grove Drive as a 2-lane collector between Dunne Avenue and Diana Avenue
- Extension of Jarvis Drive as a 2-lane local road between Monterey Road and Butterfield Boulevard
- Extension of Central Avenue as a 2-lane collector between Butterfield Boulevard and Calle Mazatan
- Tennant Ave widening as a 4-lane arterial between US 101 Southbound Ramps and Murphy Avenue
- Construct a loop on-ramp from eastbound Tennant Avenue to Northbound US 101
- Monterey Road widened to a 4-lane arterial between Cochrane Road and Old Monterey Road/Llagas Creek Drive
- Extension of Llagas Creek Drive as a 2-lane collector between Hale Avenue and Monterey Road
- Realignment of Old Monterey Road to intersect with Llagas Creek Drive extension
- Dunne Avenue widened to a 4-lane arterial between Monterey Road and Peak Avenue
- Edmundson Avenue widened to a 4-lane arterial between Monterey Road and Piazza Way
- Realignment of San Pedro Avenue to intersect with Spring Avenue

Based on the above improvements, the lane geometry required for LOS D+ operations for signalized intersections and LOS D for unsignalized intersections under Year 2015 Current General Plan Conditions was determined and shown on Figure 6. Recommended capacity improvements were identified based on field review, consistency with standard traffic engineering practice, and geometric feasibility. Specifically, improvements requiring minor right-of-way acquisition were considered feasible, but the demolition of existing buildings would deem a capacity enhancement infeasible.

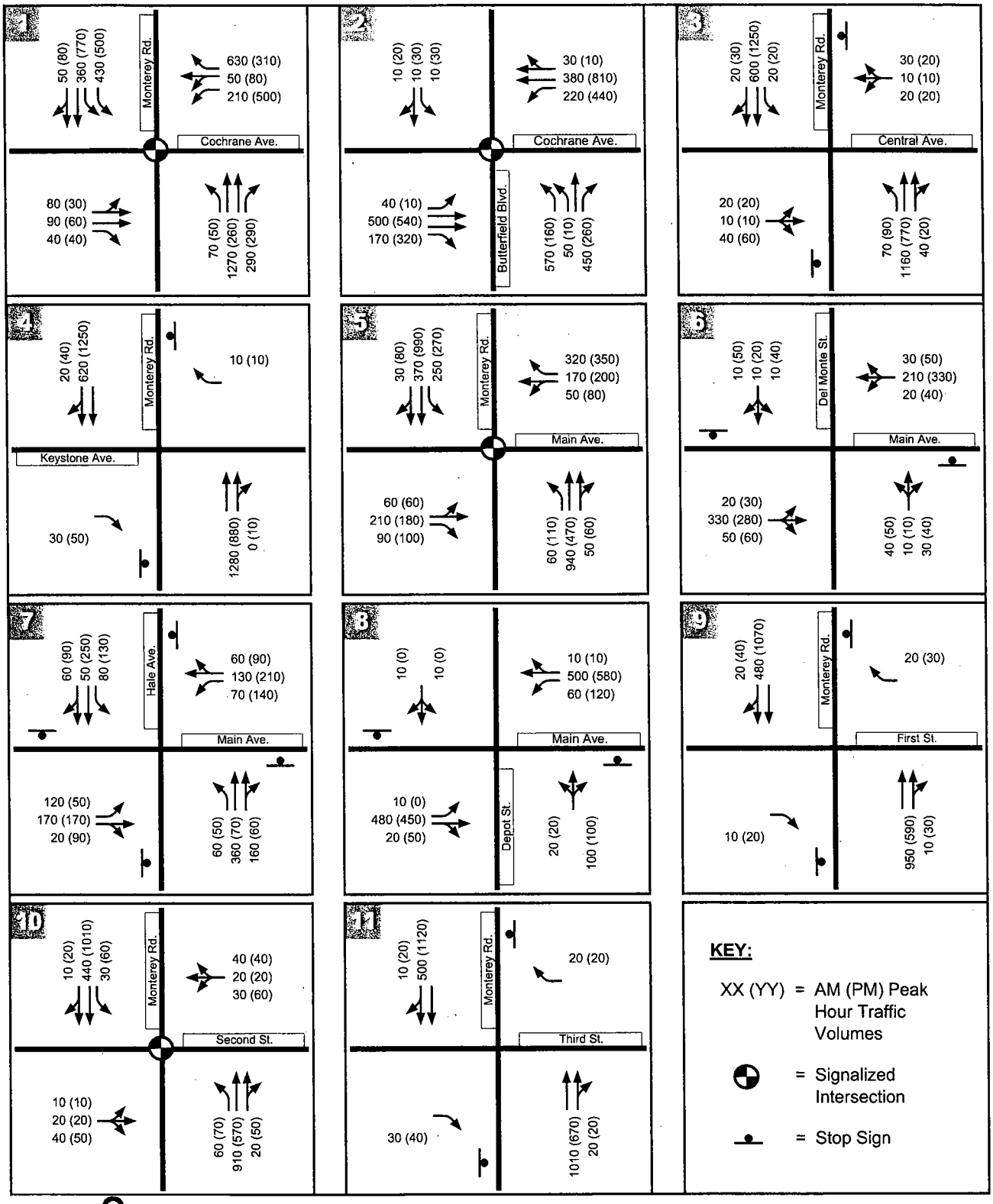
YEAR 2015 CURRENT GENERAL PLAN TRAFFIC VOLUME ESTIMATES

Model runs using the base year and future year models were conducted for the AM and PM peak hours under the Year 2015 Current General Plan Conditions. We developed forecasts for intersection turning movements at the 24 key intersections as well as project-generated traffic that would use the freeway.

For this study, we applied the guidelines published in National Cooperative Highway Research Program (NCHRP) Report 255[1] to refine the raw model forecasts. This method is based on the difference between counts and model volumes and results in the use of three possible adjustments: 1) use ratio (percent or growth factor) forecast method if the difference is less that 50%, 2) use the delta (increment or difference) forecast method if the difference is greater than 150%, otherwise 3) use a combination of both (average the results of the two methods). The ratio forecast method calculates the ratio of future model forecast volumes to base year model volumes and applies the ratio to the base year traffic count. The difference forecast method calculates the difference between the future year and base year model volume and adds this to the existing count to estimate the projected change in traffic growth. For the average method, the ratio and difference adjustments are averaged together.

Figures 5A – 5C present the AM and PM peak hour intersection turning movement forecasts volumes, intersection lane configurations, and traffic control devices for the 24 study intersections under Year 2015 Current General Plan Conditions.

[1] National Cooperative Highway Research Program (NCHRP). *Report 255: Highway Traffic Data for Urbanized Area Project Planning and Design.* Washington, D.C.: National Academy Press, 1982.



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2015 CURRENT GENERAL PLAN INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 5A

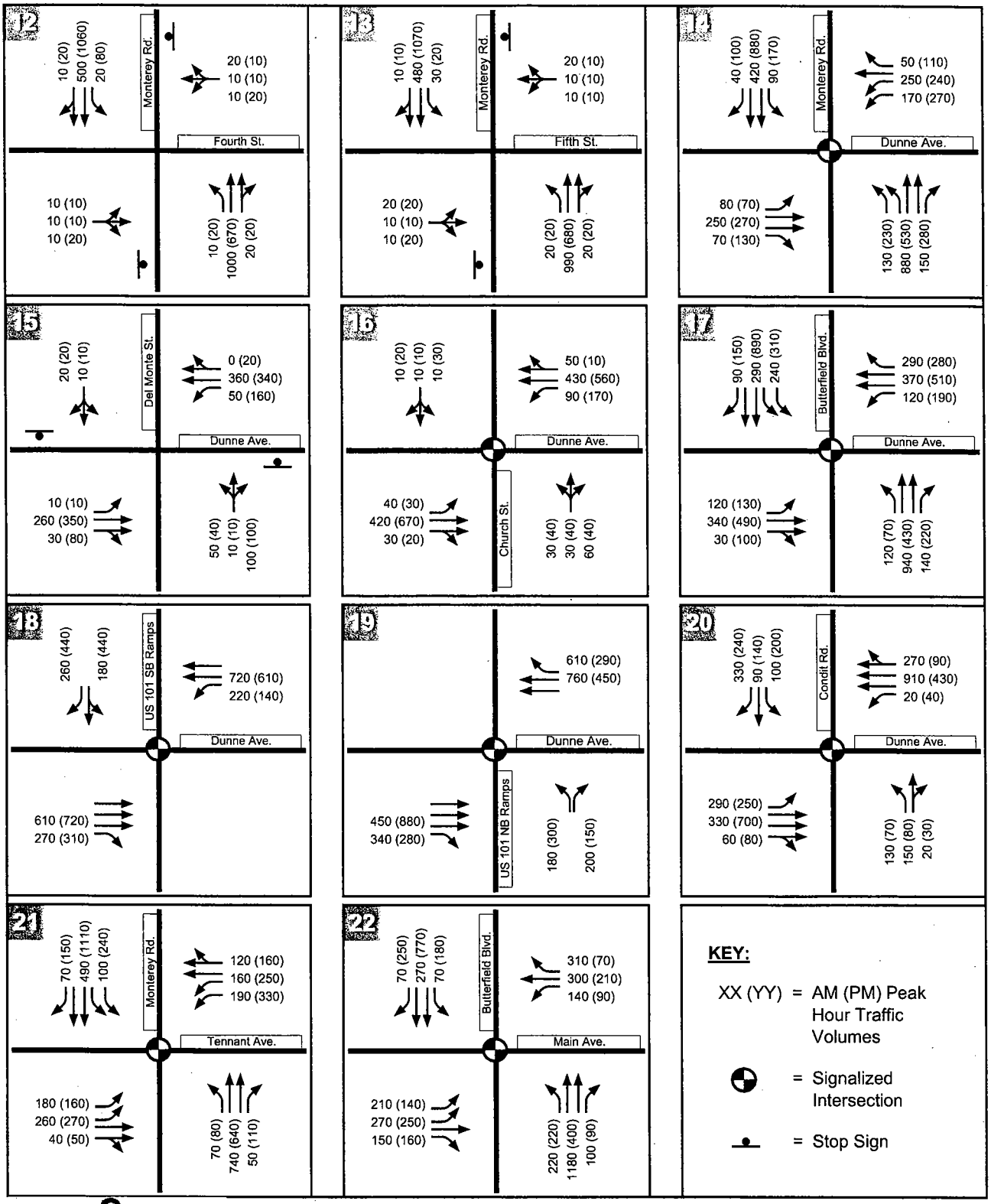

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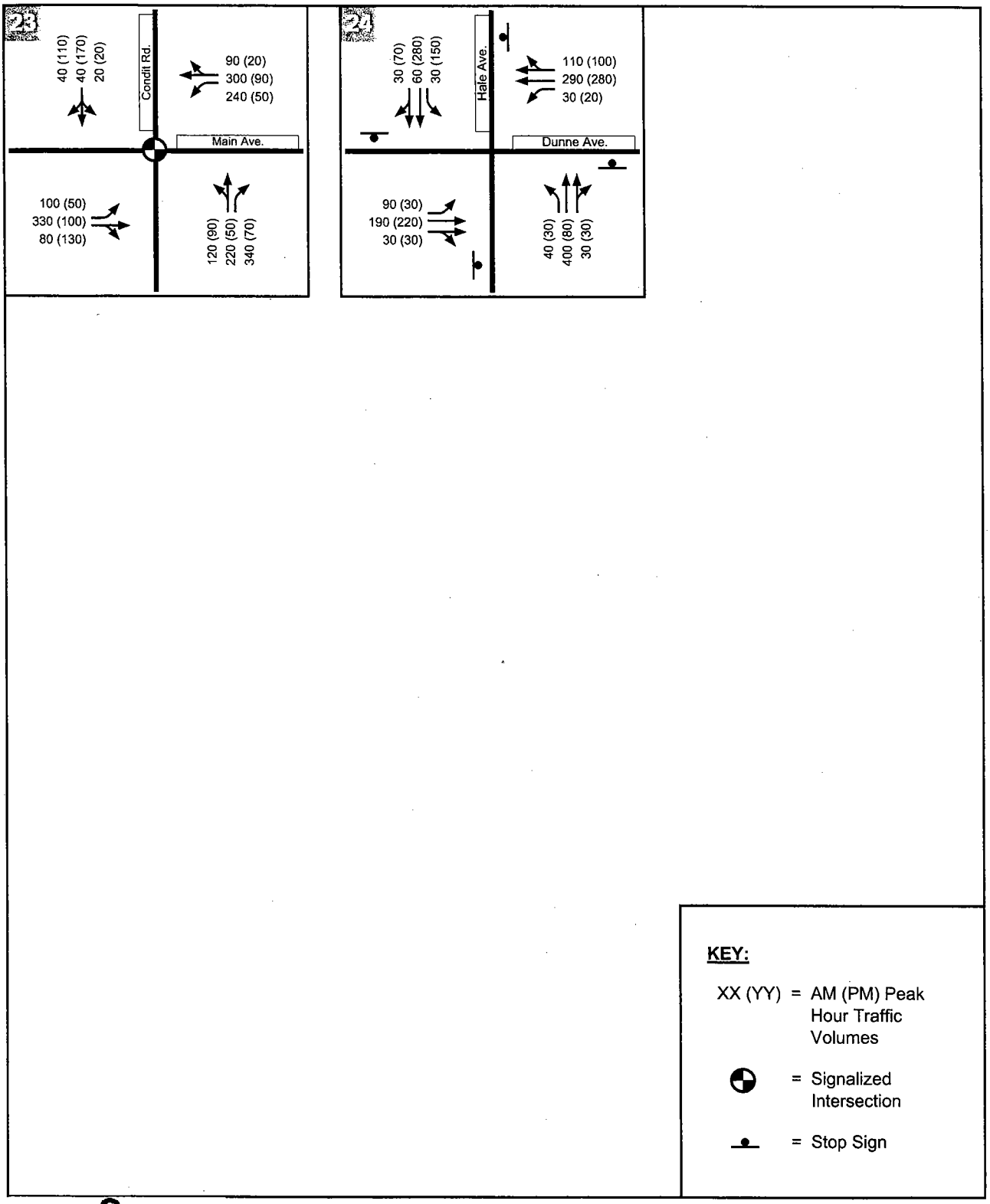
FIGURE 5B



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2015 CURRENT GENERAL PLAN INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 5C

YEAR 2015 CURRENT GENERAL PLAN INTERSECTION LEVELS OF SERVICE

Levels of service were evaluated to assess future intersection operating conditions with Year 2015 Current General Plan traffic volumes. The results are presented in Table 7. All but one of the signalized study intersections would operate at acceptable levels of service under Year 2015 Current General Plan Conditions. The Monterey Road/Main Avenue signalized study intersection is projected to operate at LOS D during both peak hours.

Under Year 2015 Current General Plan Conditions, the following three unsignalized study intersections are projected to operate unacceptably (LOS E or F) during one or both peak hours:

- Monterey Road/Central Avenue (LOS F, AM and PM peak hours)
- Monterey Road/Fourth Street (LOS F, PM peak hour)
- Monterey Road/Fifth Street (LOS F, PM peak hour)

The remaining study intersections would operate at acceptable levels of service during both peak hours without the project in place.

YEAR 2015 CURRENT GENERAL PLAN SIGNAL WARRANT ANALYSIS

Signal warrant analysis was conducted for each unsignalized study intersection operating at LOS E or F. The analysis applies the peak-hour traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices (2003)* and associated State guidelines. Under this scenario, none of the unsignalized study intersections would meet the peak-hour warrant criteria for signalization during either the AM or PM peak hours. The signal warrant worksheets are included in Appendix D.

This analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The City of Morgan Hill should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

TABLE 7
YEAR 2015 CURRENT GENERAL PLAN CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Delay[1]	LOS[2]
1. Monterey Road / Cochrane Road	Signal	AM PM	30.3 31.4	C C
2. Butterfield Boulevard / Cochrane Road	Signal	AM PM	33.0 27.3	C- C
3. Monterey Road / Central Avenue (us)	Side-Street Stop	AM PM	101.4 >150	F F
4. Monterey Road / Keystone Avenue (us)	Side-Street Stop	AM PM	13.7 14.7	B B
5. Monterey Road / Main Avenue	Signal	AM PM	49.4 43.2	D D
6. Del Monte Avenue / Main Avenue (us)	Side-Street Stop	AM PM	15.1 20.1	C C
7. Hale Avenue / Main Avenue (us)	All-Way Stop	AM PM	14.1 14.9	B B
8. Depot Street / Main Avenue (us)	Side Street Stop	AM PM	23.5 17.2	C C
9. Monterey Road / 1st Street (us)	Side-Street Stop	AM PM	12.0 12.8	B B
10. Monterey Road / 2nd Street	Signal	AM PM	12.0 13.1	B+ B
11. Monterey Road / 3rd Street (us)	Side-Street Stop	AM PM	12.3 13.4	B B
12. Monterey Road / 4th Street (us)	Side-Street Stop	AM PM	31.9 76.9	D F
13. Monterey Road / 5th Street (us)	Side-Street Stop	AM PM	34.5 63.2	D F
14. Monterey Road / Dunne Avenue	Signal	AM PM	30.1 34.9	C C-
15. Del Monte Avenue / Dunne Avenue (us)	Side-Street Stop	AM PM	13.7 19.9	B C
16. Church Street / Dunne Avenue	Signal	AM PM	21.5 21.0	C+ C+
17. Butterfield Boulevard / Dunne Avenue	Signal	AM PM	32.3 34.9	C- C-
18. US 101 SB Ramps / Dunne Avenue	Signal	AM PM	19.9 21.9	B- C+

TABLE 7
YEAR 2015 CURRENT GENERAL PLAN CONDITIONS INTERSECTION LEVELS OF SERVICE

19. US 101 NB Ramps / Dunne Avenue	Signal	AM PM	12.1 15.8	B B
20. Condit Road / Dunne Avenue	Signal	AM PM	32.8 33.8	C- C-
21. Monterey Road / Tennant Avenue	Signal	AM PM	32.6 31.1	C- C
22. Butterfield Boulevard / Main Avenue	Signal	AM PM	36.3 37.1	D+ D+
23. Condit Road / Main Avenue	Signal	AM PM	11.2 10.3	B+ B+
24. Hale Avenue / Dunne Avenue (Future only)	All-Way Stop	AM PM	13.9 13.4	B B

Notes:

(us) = unsignalized intersection

1 Whole intersection weighted average control delay expressed in seconds per vehicle calculated using methods described in the *2000 HCM*, with adjusted saturation flow rates to reflect Santa Clara County Conditions for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.

2 LOS = Level of service. LOS calculations conducted using the TRAFFIX level of service analysis software package.

Source: Fehr & Peers, May 2009.

4. YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT CONDITIONS

This chapter presents the results of the intersection and freeway analyses and describes the traffic impacts of the Downtown Specific Plan (DSP) in the year 2015. The City's travel demand model was used to forecast traffic with the proposed land use changes expected in the downtown area by 2015. This methodology would be similar to that described in Chapter 3 except that the DSP proposed land use changes were included in the analysis.

As described in Chapter 1, the City of Morgan Hill is proposing to change the current level of service policy. This chapter analyzes the proposed project using the existing level of service policy in addition to the proposed level of service policy change.

YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT LAND USE ASSUMPTIONS

The DSP proposes to add 60,000 s.f. of retail space, 580 residential dwelling units, and 16,000 s.f. of office/service space by 2015 within the downtown area and the two blocks just outside the downtown specific plan boundary. Table 8 summarizes the land use changes from the DSP by 2015.

TABLE 8
YEAR 2015 DOWNTOWN SPECIFIC PLAN LAND USE CHANGES

Land Use	Existing	2015 Current GP[1]	Increase in Downtown TAZs	2015 Current GP Plus Project
Retail	204,000 s.f.	249,000 s.f.	60,000 s.f.	309,000 s.f.
Residential	196 du	626 du	580 du	1,206 du
Office/Service	99,000 s.f.	129,000 s.f.	16,000 s.f.	145,000 s.f.

Notes: du = dwelling unit, s.f. = square feet
[1] Existing uses plus all planned development to occur by 2015 in downtown planning area under the current General Plan.
Source: City of Morgan Hill Planning Department, May 2009.

YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT TRANSPORTATION NETWORK ASSUMPTIONS

The Year 2015 Current General Plan Plus Project roadway network is the same as the Year 2015 Current General Plan roadway network.

YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT TRAFFIC VOLUME ESTIMATES

The proposed land use changes were added to the City's travel demand model and AM and PM peak-hour forecasts were generated. As shown in Table 9, the project would generate a total of 7,671 daily, 625 AM peak-hour, and 663 PM peak-hour trips according to the model. Of these total trips, 712 daily, 68 AM peak-hour, and 64 PM peak-hour trips are internal to the downtown area.

TABLE 9
YEAR 2015 DOWNTOWN SPECIFIC PLAN PROJECT TRIP GENERATION ESTIMATES

Land Use	Daily	AM Peak Hour	PM Peak Hour
External Trips	6,959 trips	557 trips	599 trips
Internal Trips	712 trips	68 trips	64 trips
Total Trips	7,671 trips	625 trips	663 trips

Source: Fehr & Peers, City of Morgan Hill Travel Demand Forecasting Model, May 2009.

Similar to the Year 2015 Current General Plan traffic volumes, the intersection turning movement volumes for Year 2015 Project Conditions were estimated using the methods described in Chapter 3. The model was also used to determine the number of project trips that would use the freeway segments. **Figures 6A – 6C** presents the Year 2015 Current General Plan Plus Project volumes and lane configurations for the study intersections.

YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT INTERSECTION LEVELS OF SERVICE

Intersection levels of service were calculated with Year 2015 Current General Plan Plus Project traffic volumes, and the results are summarized in Table 10. The results for Existing Conditions are included for comparison purposes, along with the projected increases in critical delay and critical volume-to-capacity (V/C) ratios. Critical delay represents the delay associated with the critical movements of the intersection, or the movements that require the most "green time" and have the greatest effect on overall intersection operations. The changes in critical delay and critical V/C ratios between Existing and Year 2015 Current General Plan Plus Project Conditions are used to identify significant impacts. In some instances, slight improvements in critical delay are reported. This is due to the method the program uses to allocate green time to the various turning movements.

Under the Year 2015 Current General Plan Plus Project Conditions all of the signalized intersections are projected to operate acceptably under the existing General Plan level of service policy except the Main Avenue/Monterey Road intersection which is projected to operate at LOS D during both the AM and PM peak periods.

Under the Year 2015 Current General Plan Plus Project Conditions the following three unsignalized study intersections are projected to operate unacceptably (LOS E or F) during one or both peak hours:

- Central Avenue/Monterey Road (LOS F, AM and PM peak hours)
- Fourth Street/Monterey Road (LOS F, AM and PM peak hours)
- Fifth Street/Monterey Road (LOS E, AM peak hour and LOS F, PM peak hour)

The remaining unsignalized study intersections are projected to operate at acceptable levels of service during both peak hours.

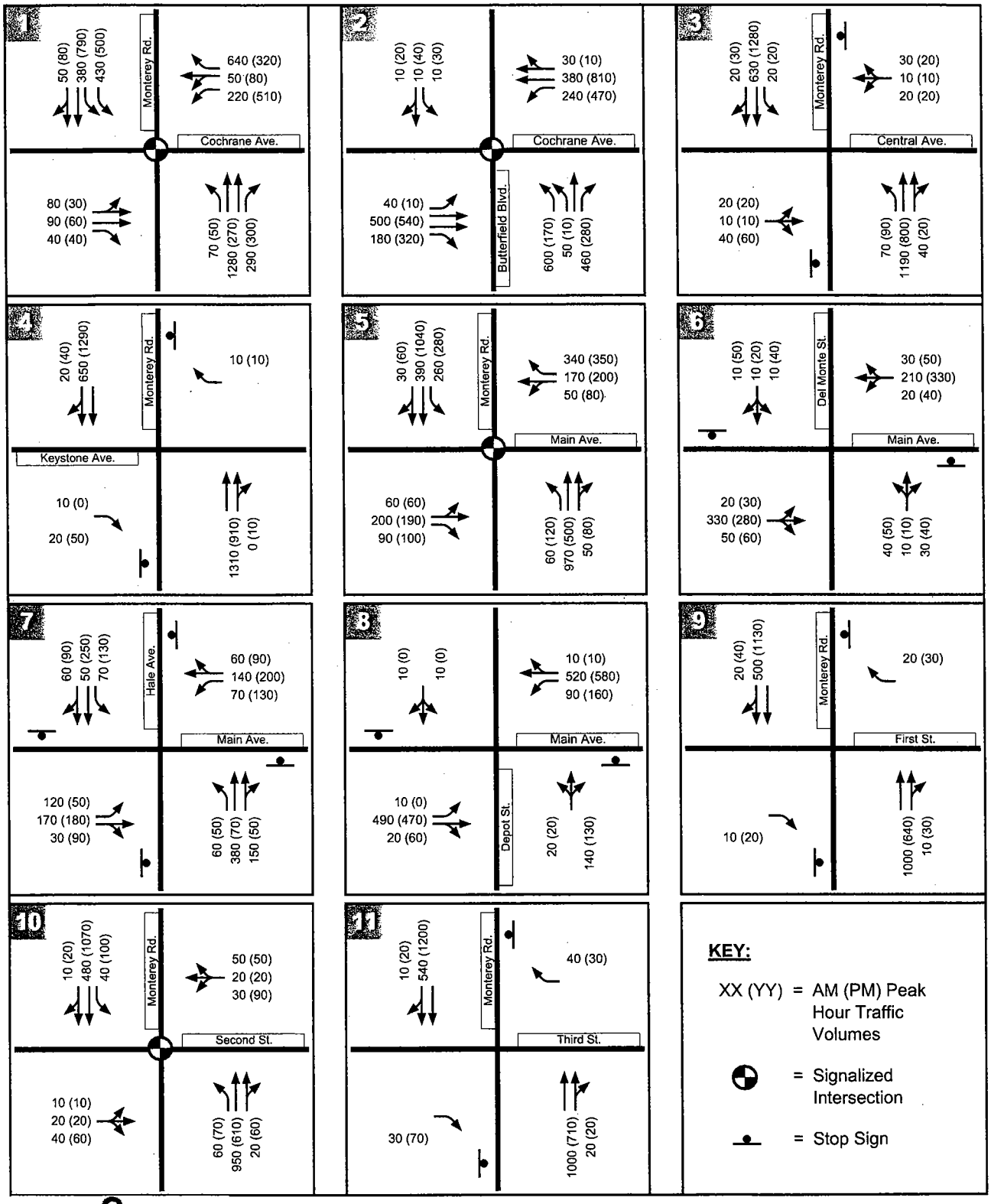

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FIGURE 6A

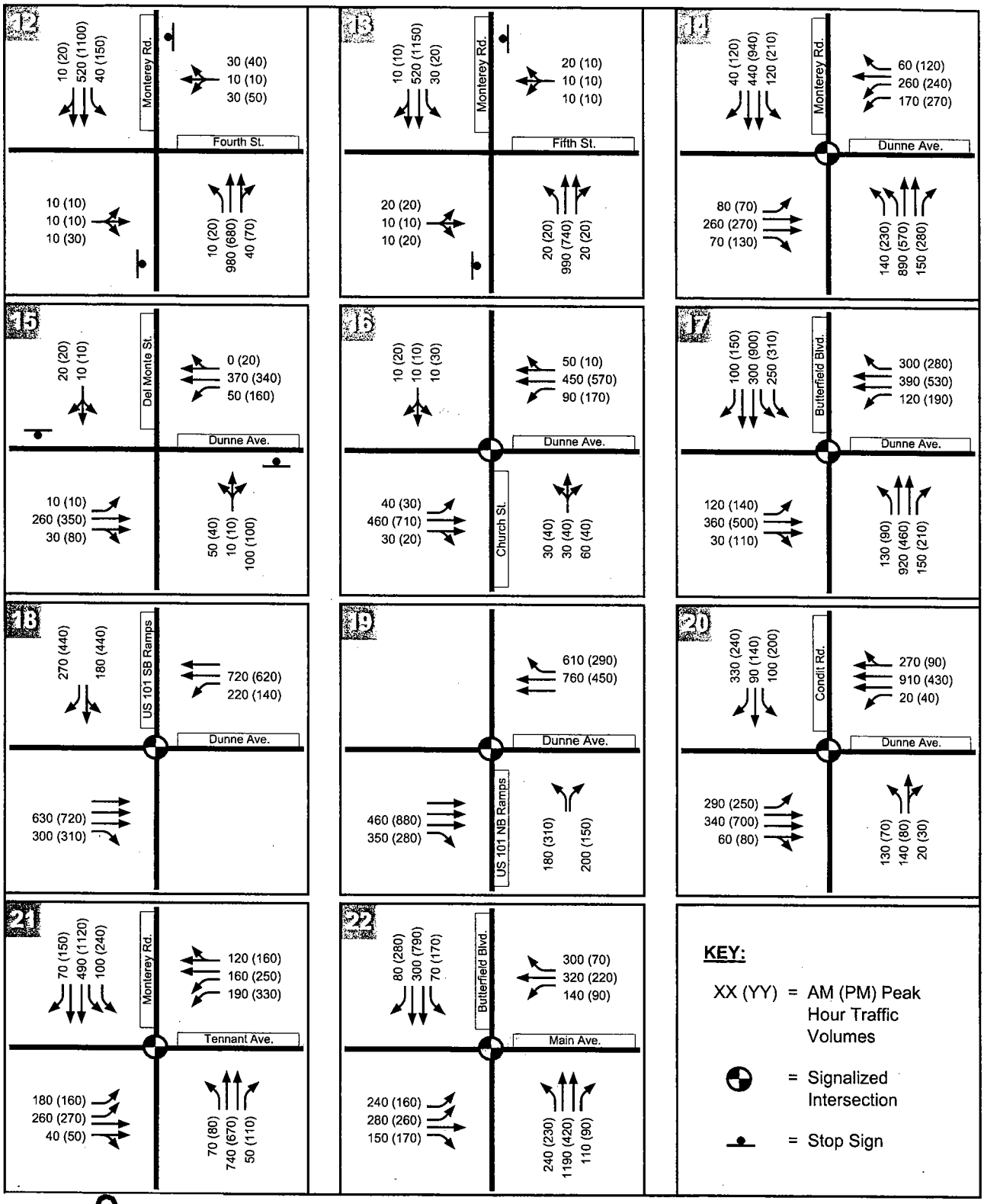

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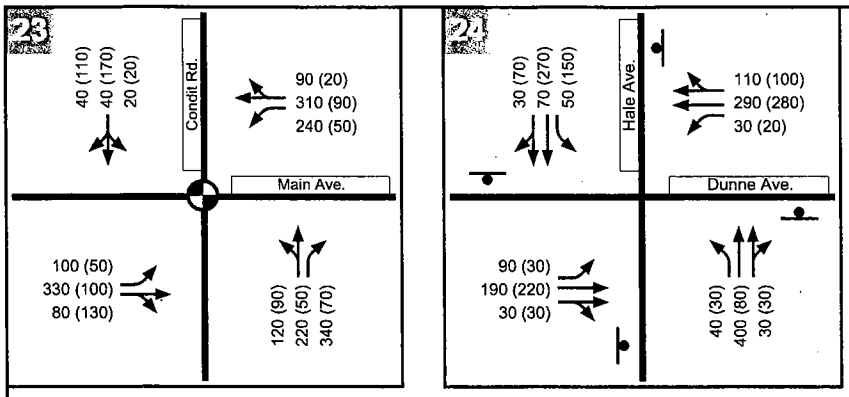
FIGURE 6B



KEY:

XX (YY) = AM (PM) Peak Hour Traffic Volumes

= Signalized Intersection

= Stop Sign

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2015 CURRENT GP PLUS PROJECT INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 6C

TABLE 10
EXISTING AND YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT
INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control (Existing Conditions / Year 2015 Project Conditions)	Peak Hour	Existing		Year 2015 Current General Plan Plus Project						
			Delay[1]	LOS[2]	Delay[1]	LOS[2]	Δ in Crit V/C[3]	Δ in Crit Delay[4]	Signal Warrants Met?[5]	Does Not Meet Current LOS Std.[6]	Does Not Meet Proposed LOS Std[7]
1. Monterey Road / Cochrane Road	Signal	AM	27.6	C	30.5	C	0.287	2.9	N/A		
		PM	29.1	C	31.5	C	0.194	-0.4	N/A		
2. Butterfield Boulevard / Cochrane Road	Signal	AM	16.7	B	33.5	C-	0.176	16.8	N/A		
		PM	13.0	B	27.9	C	0.263	17.6	N/A		
3. Monterey Road / Central Avenue (us)	Side-Street Stop	AM	16.0	C	72.7	F	N/A	N/A	No	√	√
		PM	23.2	C	>150	F	N/A	N/A	No		
4. Monterey Road / Keystone Avenue (us)	Side-Street Stop	AM	10.7	B	20.9	C	N/A	N/A	N/A		
		PM	10.5	B	15.1	C	N/A	N/A	N/A		
5. Monterey Road / Main Avenue[8]	Signal	AM	43.4	D	**50.5**	**D**	**0.289**	**11.4**	N/A	√	
		PM	42.4	D	44.3	D	0.169	0.9	N/A		
6. Del Monte Avenue / Main Avenue (us)	Side-Street Stop	AM	13.5	B	15.1	C	N/A	N/A	N/A		
		PM	19.1	C	20.1	C	N/A	N/A	N/A		
7. Hale Avenue / Main Avenue (us)	All-Way Stop	AM	11.0	B	14.4	B	N/A	N/A	N/A		
		PM	13.2	B	14.8	B	N/A	N/A	N/A		
8. Depot Street / Main Avenue (us)	Side Street Stop	AM	15.9	C	29.3	D	N/A	N/A	N/A	√	
		PM	25.6	D	19.1	C	N/A	N/A	N/A		
9. Monterey Road / 1st Street (us)	Side-Street Stop	AM	10.2	B	12.2	B	N/A	N/A	N/A		
		PM	10.9	B	13.2	B	N/A	N/A	N/A		
10. Monterey Road / 2nd Street	Signal	AM	10.7	B+	12.3	B	0.167	2.3	N/A		
		PM	12.5	B	14.4	B	0.192	2.5	N/A		
11. Monterey Road / 3rd Street (us)	Side-Street Stop	AM	10.5	B	12.6	B	N/A	N/A	N/A		
		PM	11.1	B	14.7	B	N/A	N/A	N/A		
12. Monterey Road / 4th Street (us)	Side-Street Stop	AM	14.2	B	51.5	F	N/A	N/A	No	√	
		PM	18.9	C	>150	F	N/A	N/A	No		

TABLE 10
EXISTING AND YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT
INTERSECTION LEVELS OF SERVICE

13. Monterey Road / 5th Street (us)	Side-Street Stop	AM PM	17.9 17.0	C C	37.1 90.2	E F	N/A N/A	N/A N/A	No No	√	
14. Monterey Road / Dunne Avenue	Signal	AM PM	28.6 36.6	C D+	31.0 35.2	C D+	0.154 0.014	3.3 -6.3	N/A N/A		
15. Del Monte Avenue / Dunne Avenue (us)	Side-Street Stop	AM PM	12.0 15.0	B B	13.8 19.9	B C	N/A N/A	N/A N/A	N/A N/A		
16. Church Street / Dunne Avenue	Signal	AM PM	18.8 19.5	B- B-	20.4 20.8	C+ C+	0.006 0.097	0.3 1.7	N/A N/A		
17. Butterfield Boulevard / Dunne Avenue	Signal	AM PM	30.7 39.4	C D	32.6 35.7	C- D+	0.027 0.024	-0.8 -4.8	N/A N/A		
18. US 101 SB Ramps / Dunne Avenue	Signal	AM PM	20.7 18.7	C+ B-	19.8 21.9	B- C+	0.092 -0.048	0.7 +2.5	N/A N/A		
19. US 101 NB Ramps / Dunne Avenue	Signal	AM PM	14.4 12.7	B B	12.1 16.0	B B	-0.012 0.014	-2.8 3.3	N/A N/A		
20. Condit Road / Dunne Avenue	Signal	AM PM	32.7 28.3	C- C	32.7 33.8	C- C-	0.041 0.028	0.4 6.7	N/A N/A		
21. Monterey Road / Tennant Avenue	Signal	AM PM	25.6 32.8	C C-	32.6 31.0	C- C	-0.005 0.015	6.5 -1.9	N/A N/A		
22. Butterfield Boulevard / Main Avenue	Signal	AM PM	34.4 37.7	C- D+	37.0 37.3	D+ D+	0.134 0.16	-0.7 -0.2	N/A N/A		
23. Condit Road / Main Avenue	Signal	AM PM	10.8 9.9	B+ A	11.3 10.3	B+ B+	0.014 0.111	0.1 0.6	N/A N/A		
24. Hale Avenue / Dunne Avenue	Future Intersection / All-Way Stop	AM PM	Future Intersection		14.2 13.3	B B	0.458 0.398	14.2 13.3	N/A N/A		

Notes:
1. Whole intersection weighted average control delay expressed in seconds per vehicle calculated using methods described in the *2000 HCM*, with adjusted saturation flow rates to reflect Santa Clara County Conditions for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
2. LOS = Level of service. LOS calculations conducted using the TRAFFIX LOS analysis software package.
3. Change in the critical volume-to-capacity ratio (V/C) between Existing and Year 2015 Current General Plan Conditions.
4. Change in Critical movement delay between Existing and Year 2015Current General Plan Conditions.
5. Peak hour signal warrant analysis completed for unacceptable unsignalized intersection operations.
6. Does not meet Current General Plan (GP) LOS Standard – Year 2015 Current General Plan Plus Project Conditions does not meet the LOS D+ standard at local signalized intersections (three intersections are allowed to operate at LOS D) and LOS E at freeway ramp intersections under the 2001 General Plan Circulation Element.
7. Does not meet Proposed General Plan (GP) LOS Standard – Year 2015 Current General Plan Plus Project Conditions does not meet the proposed General Plan Circulation Element LOS D standard at local intersections and LOS E and F at specified downtown, freeway access and regional intersections.
8. No feasible improvements are available to provide LOS D+ or better operations due to building and right-of-way constraints.

Significant impacts identified based on *2001 General Plan Circulation Element* LOS policy in **bold** text.
Source: Fehr & Peers, May 2009.

YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT SIGNAL WARRANT ANALYSIS

Signal warrant analysis was conducted for each unsignalized study intersection operating at LOS E or F. The analysis applies the peak-hour traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices (2003)* and associated State guidelines. Under Year 2015 Current General Plan Plus Project Conditions, none of the unsignalized study intersections would meet the peak-hour warrant criteria for signalization. The signal warrant worksheets are included in Appendix D.

This analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The City of Morgan Hill should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT FREEWAY SEGMENT LEVEL OF SERVICE

According to CMP guidelines, freeway segments to which a proposed development is projected to add trips equal to or greater than one percent of the freeway segment's capacity must be evaluated. Segments of US 101 were reviewed to determine if a significant amount of project traffic would be added to these freeway segments. Capacities of 2,300 vehicles per hour per lane (vphpl) for freeway segments were used in the freeway analysis.

Table 11 outlines the estimated number of new trips added to the freeway segments under Project Conditions. The proposed project is expected to add between 0.07 and 0.65 percent of the capacity to the freeway study segments. Therefore, the proposed project would not add new trips greater than one percent of the freeway segment capacity to any of the study freeway segments. Accordingly, no additional freeway segment analysis is required for the proposed project.

TABLE 11
YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT FREEWAY SEGMENT LEVELS OF SERVICE

Direction	From /To	From /To	Capacity	Peak Hour	Existing Conditions				Year 2015 Project Conditions									
					Density		LOS		Trips Added		Density		LOS		% Added		Impact	
					MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV
NB US 101	San Martin Avenue	Tennant Avenue	6,900	AM	59	-	F	-	18	-	59	-	F	-	0.26%	-	NO	-
				PM	17	-	B	-	38	-	17	-	B	-	0.55%	-	NO	-
	Tennant Avenue	Dunne Avenue	6,900	AM	71	-	F	-	5	-	71	-	F	-	0.07%	-	NO	-
				PM	16	-	B	-	27	-	16	-	B	-	0.39%	-	NO	-
	Dunne Avenue	Cochrane Road	6,900	AM	47	-	E	-	6	-	47	-	E	-	0.09%	-	NO	-
				PM	16	-	B	-	8	-	16	-	B	-	0.12%	-	NO	-
	Cochrane Road	Burnett Avenue	6,900	AM	34	18	D	B	43	8	34	18	D	C	0.63%	0.43%	NO	NO
				PM	17	5	B	A	27	3	17	5	B	A	0.40%	0.15%	NO	NO
SB US 101	Burnett Avenue	Cochrane Road	6,900	AM	14	-	B	-	30	-	14	-	B	-	0.43%	-	NO	-
				PM	66	-	F	-	45	-	66	-	F	-	0.65%	-	NO	-
	Cochrane Road	Dunne Avenue	6,900	AM	15	-	B	-	11	-	15	-	B	-	0.16%	-	NO	-
				PM	56	-	E	-	12	-	56	-	E	-	0.17%	-	NO	-
	Dunne Avenue	Tennant Avenue	6,900	AM	13	-	B	-	27	-	13	-	B	-	0.39%	-	NO	-
				PM	28	-	D	-	6	-	28	-	D	-	0.09%	-	NO	-
	Tennant Avenue	San Martin Avenue	6,900	AM	10	-	A	-	28	-	10	-	A	-	0.41%	-	NO	-
				PM	32	-	D	-	28	-	32	-	D	-	0.41%	-	NO	-

Notes:
[1] Density based on volume from VTA's *2007 CMP Monitoring Data*.
[2] NB - Northbound; SB - Southbound.
[3] MF – Mix-Flow; HOV – High-Occupancy Vehicle.
Source: Fehr & Peers, May 2009.

SIGNIFICANT IMPACT CRITERIA (BASED ON CURRENT POLICIES)

Signalized Intersections

Intersection impacts of the proposed project were evaluated by comparing the results of the Year 2015 General Plan Plus Project Conditions level of service calculations to the results for Existing Conditions. In the City of Morgan Hill, significant traffic impacts at signalized intersections are defined to occur when the addition of project traffic causes:

1. Operations at the signalized intersections in the City of Morgan Hill to deteriorate from an acceptable level (LOS D+ or better) under Existing Conditions to an unacceptable level (LOS D or worse); or

2. Exacerbation of unacceptable operations by increasing the critical delay by more than four seconds *and* increasing the volume-to-capacity (V/C) ratio by 0.01 or more at an intersection operating at unacceptable levels under Existing Conditions; or

3. Freeway ramp intersection operations to deteriorate from LOS E or better under Existing Conditions to an unacceptable LOS F.

Unsignalized Intersections

For this analysis, significant traffic impacts at unsignalized intersections are defined to occur when the addition of project traffic causes:

1. Intersection operations to deteriorate from an acceptable level under Existing Conditions (LOS D or better) to an unacceptable level (LOS E or LOS F) *and* the traffic volumes at the intersection to increase such that the Peak Hour Warrant for traffic signal installation is met; or

2. The exacerbation of operations at an unsignalized intersection already operating at an unacceptable level (LOS E or worse) under Existing Conditions and the Peak Hour Warrant for traffic signal installation is met under Year 2015 Current General Plan Plus Project Conditions.

Freeway Segments

According to VTA's Transportation Impact Analysis Guidelines (VTA, 2004) a freeway segment analysis should be included if the project meets one of the following requirements:

1. The proposed development project is expected to add traffic equal to at least one percent of a freeway segment's capacity.
2. The proposed development project is adjacent to one of the freeway segment's access or egress points
3. Based on engineering judgment, Lead Agency staff determines that the freeway segment should be included in the analysis.

According to CMP guidelines, freeway segments with project traffic equal to or greater than one percent of the freeway segment's capacity must be evaluated. For mixed-flow lanes, freeway segment capacities are defined as 2,200 vehicles per hour per lane (vphpl) for four-lane freeway segments and 2,300 vphpl for six-lane freeway segments. HOV lane capacities are defined between 1,800 to 1,900 vphpl.

If a project meets the criteria outlined above, then the implementation of the proposed project could result in a significant impact if the addition of project traffic on a freeway segment exceeded one of the following thresholds:

1. The addition of project traffic causes the operating level of a freeway segment to deteriorate from LOS E or better under Existing Conditions to LOS F; or
2. The number of new trips added by a proposed project to a segment already operating at LOS F under Existing Conditions is more than one percent of the freeway segment capacity.

YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT IMPACTS AND MITIGATION MEASURES

Intersections

Based on the significance impact criteria listed above, the proposed project would have a **significant impact** at Monterey Road/Main Avenue and Monterey Road/Fourth Street intersections under Year 2015 Current General Plan Plus Project Conditions. The following measures are recommended to mitigate the significant impacts. Appendix E contains the corresponding mitigation calculation sheets.

Monterey Road/Main Avenue – Under Year 2015 Current General Plan Plus Project Conditions the intersection operations are projected to be exacerbated during the AM peak hour compared to Existing Conditions. To mitigate the anticipated impact, Main Avenue would need protected east/west phasing with modifications to the eastbound approach (i.e., a left-turn lane and a shared-through right) and widening of the westbound approach (i.e., a separate left, through, and right lane with an overlap phase). However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location is considered ***significant and unavoidable***.

The unsignalized Monterey Road/Central Avenue, Monterey Road/Fourth Street, and Monterey Road/Fifth Street intersections are expected to operate at unacceptable levels during the AM and PM peak hours. However, these intersections would not meet the Peak Hour Warrant for traffic signal installation during either peak hour.[2] Based on the impact criteria described above, the proposed project would have a **less-than-significant** impact on these study unsignalized intersections. Therefore, no mitigation measures are required; however, the City of Morgan Hill should continue to monitor these locations and conduct an engineering study to evaluate the need for signals and/or turn movement restrictions as appropriate to maintain acceptable intersection operations.

Freeway Segments

The project would not add more than one percent of the freeway segment's capacity to any of the study freeway segments. Therefore, the project would have a **less-than-significant** impact to the study freeway segments under Year 2015 Current General Plan Plus Project Conditions. No mitigation measures are necessary.

PROPOSED TIERED LEVEL OF SERVICE POLICY GENERAL PLAN AMENDMENT

The City of Morgan Hill's General Plan currently establishes LOS D+ as the operating standard peak-hour level of service threshold at signalized intersections but does allow LOS E at freeway ramp intersections. The General Plan also allows LOS D operations at the following three locations because achieving LOS D+ would require extraordinary development expenditure and right-of-way acquisition:

[2] The use of peak-hour signal warrants is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. The traffic analysis presented in the document estimates future development-generated traffic compared against a sub-set (peak-hour warrant) of the standard traffic signal warrants recommended in the Manual of Uniform Traffic Control Devices (MUTCD), Federal Highway Administration 2000 and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

- Madrone Parkway/Monterey Road
- Tennant Avenue/Butterfield Boulevard
- Watsonville Road/Monterey Road

The City of Morgan Hill is proposing to change the Citywide peak hour LOS policy to LOS D as the operating standard for all intersections, with the following exceptions:

- Use LOS F for intersections and street segments within the Downtown Core area, which is the area bounded by the following streets: Dunne Avenue, Del Monte Avenue, Main Avenue, and Depot Street; and

- Use LOS E where road segments and intersections (1) provide a transition to and are located on the periphery of downtown; (2) provide access to freeway on-ramps and off-ramps; or (3) widening would be overly accommodating of regional through traffic, such that widening would tend to draw traffic off of the freeway and onto local arterials and streets. Based on these criteria, LOS E during peak hours of travel is acceptable at the following intersections:

    - Downtown Periphery Intersections
        - Monterey Road and Wright Road
        - Monterey Road and Central Avenue
        - Butterfield Boulevard and East Main Avenue
        - Butterfield Boulevard and East Dunne Avenue
        - Hale Avenue/Santa Teresa Boulevard and West Main Avenue
    - Freeway Access Zones
        - Cochrane Road intersections from Cochrane Road/Madrone Parkway to Cochrane Road/Mission View Drive
        - Dunne Avenue intersections from Dunne Avenue/Walnut Grove Drive to Dunne Avenue/Murphy Avenue
        - Tennant Avenue intersections from Tennant Avenue/Butterfield Boulevard to Butterfield Boulevard/Murphy Avenue
    - Regional Intersections
        - Hale Avenue/Santa Teresa Boulevard and West Dunne Avenue
        - Monterey Road and Cochrane Road
        - Monterey Road and Tennant Avenue
        - Monterey Road and Watsonville Road/Butterfield Boulevard
        - Monterey Road and Madrone Parkway

The impacts of the project using the proposed level of service policy are identified and compared to the previous policy (as illustrated in the last two columns of Table 10). The Monterey Road/Main Avenue intersection is projected to have a significant impact under the Year 2015 Current General Plan Plus Project scenario based on current LOS policy. During both peak hours, the intersection operates at LOS D, which is considered unacceptable under the existing level of service policy.

The proposed policy would eliminate a minimum operating standard at the Monterey Road/Main Avenue intersection (LOS F is acceptable) and would not cause the need for any vehicle capacity enhancements. This intersection would be considered as operating acceptably during both peak hours under the proposed policy. The impact identified above under the Year 2015 Current General Plan Plus Project Conditions at the Monterey Road/Main Avenue intersection would not be considered significant using the proposed level of service policy.

5. YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT AND ALTERNATE DOWNTOWN CIRCULATION CONDITIONS

This chapter presents the results of the intersection analyses and describes the traffic impacts of the Downtown Specific Plan (DSP) in the year 2015 with an alternate transportation network. The City of Morgan Hill is considering a scenario that includes the following two network changes: 1) narrowing of Monterey Road from 4 to 2 lanes from Main Avenue to Dunne Avenue and 2) leaving Depot Street open. Currently, the General Plan includes a grade separation of the railroad at the Dunne Avenue/Depot Street intersection so that Dunne Avenue would be depressed and built under the railroad crossing at Depot Street, which would be closed. This alternate transportation network does not include this improvement and would maintain the at-grade Dunne Avenue/Depot Street configuration.

The City's travel demand model was used to forecast traffic with the proposed land use changes expected in the downtown area by 2015 together with the proposed network changes. This methodology is similar to that described in Chapter 3 except that the DSP proposed land use and network changes were included in the analysis.

As described in Chapter 4, the City is also proposing to change the current level of service policy. This chapter analyzes the proposed project using the existing level of service policy in addition to the proposed level of service policy change.

YEAR 2015 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) LAND USE ASSUMPTIONS

The DSP proposes to add 60,000 s.f. of retail space, 580 residential dwelling units, and 16,000 s.f. of office/service space by 2015 within the downtown area and the two blocks just outside the downtown specific plan boundary.

YEAR 2015 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) TRANSPORTATION NETWORK ASSUMPTIONS

The Year 2015 Current General Plan Plus Project roadway network is the same as the Year 2015 Current General Plan roadway network except for the following two changes:

1) Monterey Road is narrowed from 4 to 2 lanes from Main Avenue to Dunne Avenue. The additional width will be used to provide wider sidewalks, on-street parking, and streetscape improvements to enhance the pedestrian and visual environment.

2) Maintain the existing roadway network at the Depot Street/Dunne Avenue intersection. Currently the General Plan includes a grade separation at the Dunne Avenue/Depot Street intersection so that Dunne Avenue would be built under the railroad crossing which is located east of Depot Street. This alternate transportation network would include the removal of this improvement and maintain the at-grade Dunne Avenue/Depot Street configuration.

YEAR 2015 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) TRAFFIC VOLUME ESTIMATES

The proposed land use and network changes were added to the City's travel demand model and AM and PM peak-hour forecasts were generated. The project would generate a total of 7,671 daily, 625 AM peak-hour,

and 663 PM peak-hour vehicle trips according to the model. Of these total vehicle trips, 712 daily, 68 AM peak-hour, and 64 PM peak-hour trips are internal to the downtown area.

Similar to the Year 2015 Current General Plan traffic volumes, the intersection turning movement volumes for Year 2015 Project Conditions were estimated using the methods described in Chapter 3. **Figures 7A – 7C** presents the Year 2015 Current General Plan Plus Project (Alternate Network) volumes and lane configurations for the study intersections.

YEAR 2015 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) INTERSECTION LEVELS OF SERVICE

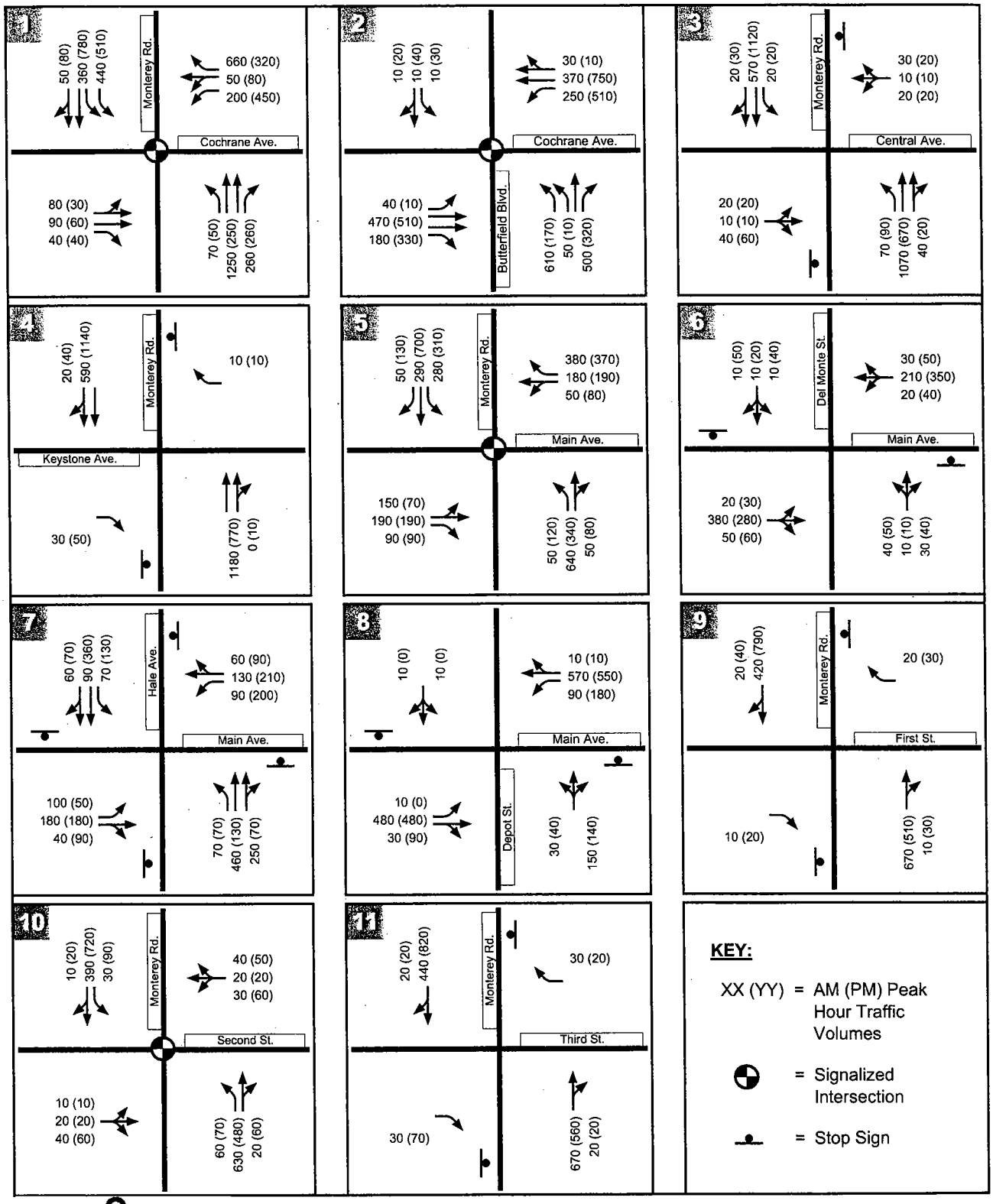
Intersection levels of service were calculated with Year 2015 Current General Plan Plus Project (Alternate Network) traffic volumes, and the results are summarized in Table 12. The results for Existing Conditions are included for comparison purposes, along with the projected increases in critical delay and critical volume-to-capacity (V/C) ratios. Critical delay represents the delay associated with the critical movements of the intersection, or the movements that require the most "green time" and have the greatest effect on overall intersection operations. The changes in critical delay and critical V/C ratios between Existing and this future scenario are used to identify significant impacts. In some instances, slight improvements in critical delay are reported. This is due to the method the program uses to allocate green time to the various turning movements.

Under the Year 2015 Current General Plan Plus Project (Alternate Network) Conditions, all of the signalized intersections are projected to operate acceptably under the existing General Plan LOS policy except the Main Avenue/Monterey Road (LOS F during AM and LOS D- during PM) and Dunne Avenue/Monterey Road (LOS C- during AM and LOS D during PM) intersections.

Under the Year 2015 Current GP Plus Project (Alternate Network) Conditions the following three unsignalized study intersections are projected to operate unacceptably (LOS E or F) during one or both peak hours:

- Central Avenue/Monterey Road (LOS F, AM and PM peak hours)
- Fourth Street/Monterey Road (LOS F, PM peak hour)
- Fifth Street/Monterey Road (LOS E, AM peak hour and LOS F, PM peak hour)

The remaining unsignalized study intersections are projected to operate at acceptable levels of service during both peak hours.



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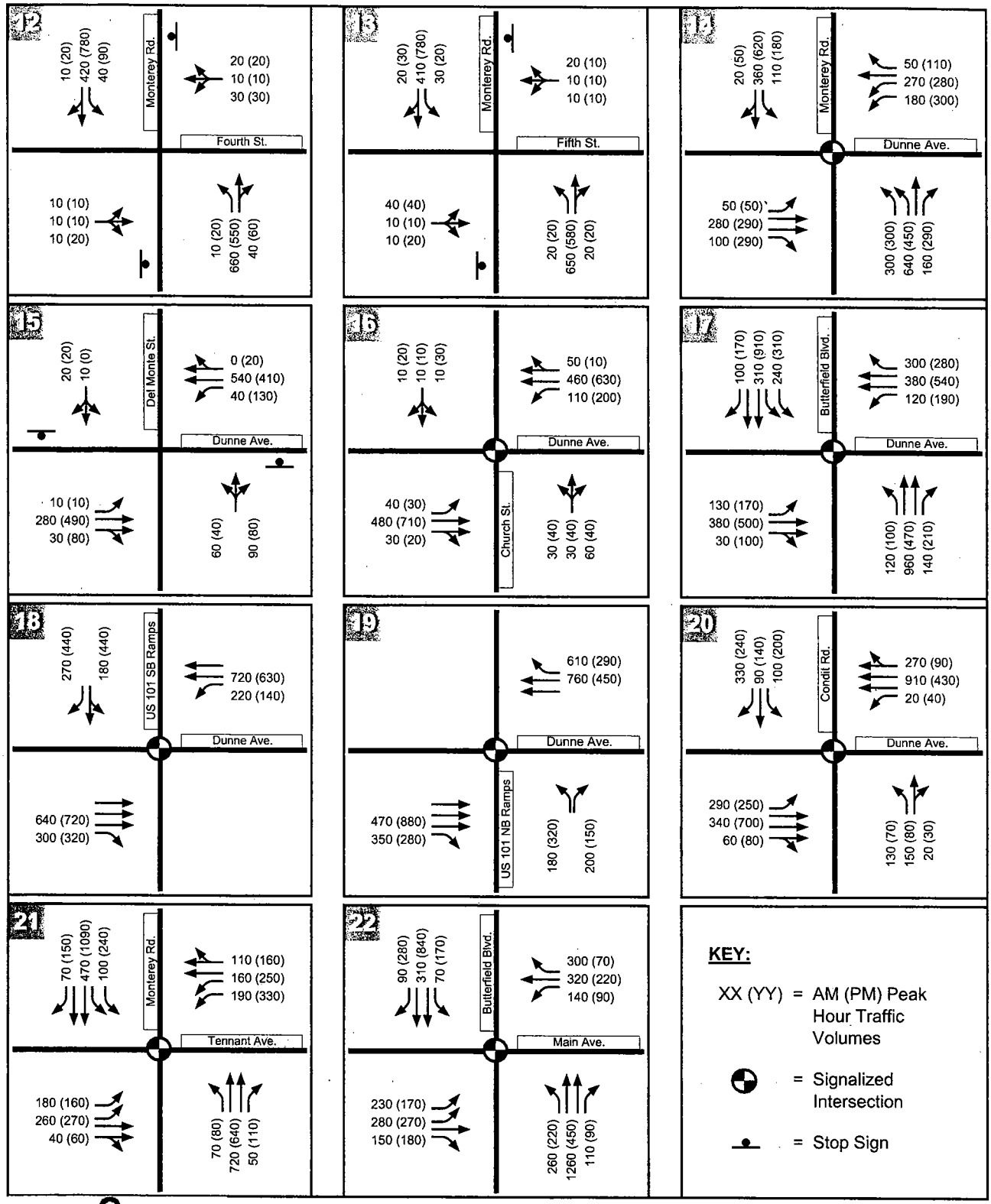
2015 CURRENT GP PLUS PROJ (ALT) INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 7A

May 2009
SJ08-1039



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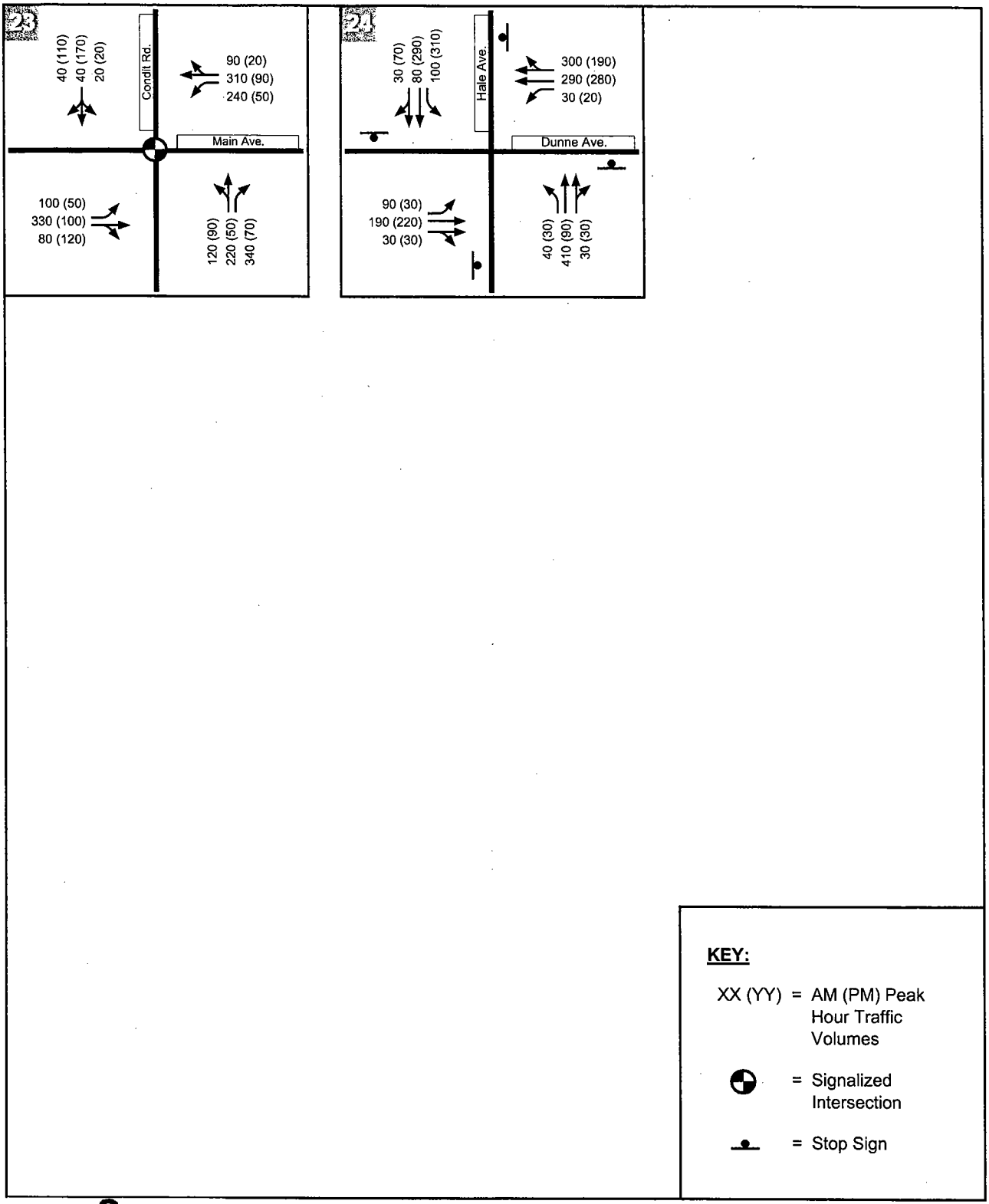
2015 CURRENT GP PLUS PROJ (ALT) INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

May 2009
SJ08-1039

FIGURE 7B



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2015 CURRENT GP PLUS PROJ (ALT) INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 7C

TABLE 12
EXISTING AND YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT (ALTERNATE NETWORK) INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control (Existing Conditions / Year 2015 Project Conditions)	Peak Hour	Existing		Year 2015 Current GP Plus Project (Alternate Network)						
			Delay[1]	LOS[2]	Delay[1]	LOS[2]	Δ in Crit V/C[3]	Δ in Crit Delay[4]	Signal Warrants Met?[5]	Does Not Meet Current LOS Std.[6]	Does Not Meet Proposed LOS Std[7]
1. Cochrane Rd and Monterey Rd	Signal	AM	27.6	C	30.5	C	0.275	2.6	N/A		
		PM	29.1	C	30.9	C	0.172	-1.1	N/A		
2. Cochrane Rd and Butterfield Blvd	Signal	AM	16.7	B	33.1	C-	0.177	16.8	N/A		
		PM	13.0	B	28.5	C	0.295	18.2	N/A		
3. Central Ave and Monterey Rd	Side-Street Stop	AM	16.0	C	93.5	F	N/A	N/A	No	√	√
		PM	23.2	C	146.0	F	N/A	N/A	No		
4. Monterey Rd and Keystone Ave	Side-Street Stop	AM	10.7	B	13.0	B	N/A	N/A	N/A		
		PM	10.5	B	13.9	B	N/A	N/A	N/A		
5. Main Ave and Monterey Rd[6]	Signal	AM	43.4	D	**85.5**	**F**	**0.494**	**60.7**	N/A	√	
		PM	42.4	D	**53.6**	**D-**	**0.267**	**14.8**	N/A		
6. Main Ave and Del Monte St	Side-Street Stop	AM	13.5	B	16.1	C	N/A	N/A	N/A		
		PM	19.1	C	20.7	C	N/A	N/A	N/A		
7. Main Ave and Hale Ave	All-Way Stop	AM	11.0	B	19.2	C	N/A	N/A	N/A		
		PM	13.2	B	18.3	C	N/A	N/A	N/A		
8. Main Ave and Depot St	Side Street Stop	AM	15.9	C	32.1	D	N/A	N/A	N/A		
		PM	25.6	D	30.0	D	N/A	N/A	N/A		
9. 1st St and Monterey Rd	Side-Street Stop	AM	10.2	B	13.2	B	N/A	N/A	N/A		
		PM	10.9	B	14.9	B	N/A	N/A	N/A		
10. 2nd St and Monterey Rd	Signal	AM	10.7	B+	12.9	B	0.266	3.7	N/A		
		PM	12.5	B	14.8	B	0.304	4.0	N/A		
11. 3rd St and Monterey Rd	Side-Street Stop	AM	10.5	B	13.5	B	N/A	N/A	N/A		
		PM	11.1	B	16.9	C	N/A	N/A	N/A		
12. 4th St and Monterey Rd	Side-Street Stop	AM	14.2	B	31.7	D	N/A	N/A	N/A	√	
		PM	18.9	C	80.4	F	N/A	N/A	No		
13. 5th St and Monterey Rd	Side-Street Stop	AM	17.9	C	36.4	E	N/A	N/A	No	√	
		PM	17.0	C	65.3	F	N/A	N/A	No		

TABLE 12
EXISTING AND YEAR 2015 CURRENT GENERAL PLAN PLUS PROJECT (ALTERNATE NETWORK) INTERSECTION LEVELS OF SERVICE

14. Dunne Ave and Monterey Rd	Signal	AM PM	28.6 36.6	C D+	33.2 **43.3**	C- **D**	0.249 **0.283**	5.0 **11.4**	N/A N/A	√	
15. Dunne Ave and Del Monte St	Side-Street Stop	AM PM	12.0 15.0	B B	14.9 20.8	B C	N/A N/A	N/A N/A	N/A N/A		
16. Dunne Ave and Church St	Signal	AM PM	18.8 19.5	B- B-	21.2 21.2	C+ C+	0.057 0.118	3.0 2.6	N/A N/A		
17. Dunne Ave and Butterfield Blvd	Signal	AM PM	30.7 39.4	C D	32.7 36.4	C- D+	0.041 0.030	-0.9 -4.4	N/A N/A		
18. Dunne Ave and SB US 101 Ramps	Signal	AM PM	20.7 18.7	C+ B-	19.8 21.8	B- C+	0.092 -0.042	0.7 2.7	N/A N/A		
19. Dunne Ave and NB US 101 Ramps	Signal	AM PM	14.4 12.7	B B	12.1 16.2	B B	-0.012 0.020	-2.8 3.5	N/A N/A		
20. Dunne Ave and Condit Rd	Signal	AM PM	32.7 28.3	C- C	32.8 33.8	C- C-	0.041 0.028	0.4 6.7	N/A N/A		
21. Tennant Ave and Monterey Rd	Signal	AM PM	25.6 32.8	C C-	33.0 31.3	C- C	-0.001 0.009	7.3 -1.6	N/A N/A		
22. Main Ave and Butterfield Blvd	Signal	AM PM	34.4 37.7	C- D+	37.1 37.1	D+ D+	0.151 0.174	-1.1 -0.5	N/A N/A		
23. Condit Road and Main Ave	Signal	AM PM	10.8 9.9	B+ A	11.3 10.3	B+ B+	0.014 0.104	0.1 0.5	N/A N/A		
24. Dunne Ave and Hale Ave	Future Intersection / All-Way Stop	AM PM	Future Intersection		18.6 18.2	C C	0.663 0.718	18.6 18.2	N/A N/A		

Notes:
1. Whole intersection weighted average control delay expressed in seconds per vehicle calculated using methods described in the *2000 HCM*, with adjusted saturation flow rates to reflect Santa Clara County Conditions for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
2. LOS = Level of service. LOS calculations conducted using the TRAFFIX LOS analysis software package.
3. Change in the critical volume-to-capacity ratio (V/C) between Existing and Year 2015 Current GP (Alternate Network) Conditions.
4. Change in Critical movement delay between Existing and Year 2015Current GP Plus Project (Alternate Network) Conditions.
5. Peak hour signal warrant analysis completed for unacceptable unsignalized intersection operations.
6. Does not meet Current General Plan (GP) LOS Standard – Year 2015 Current GP Plus Project GP (Alternate Network) Conditions does not meet the LOS D+ standard at local signalized intersections (three intersections are allowed to operate at LOS D) and LOS E at freeway ramp intersections under the 2001 General Plan Circulation Element.
7. Does not meet Proposed General Plan (GP) LOS Standard – Year 2015 Current GP Plus Project GP (Alternate Network) Conditions does not meet the proposed General Plan Circulation Element LOS D standard at local intersections and LOS E and F at specified downtown, freeway access and regional intersections.
8. No feasible improvements are available to provide LOS D+ or better operations due to building and right-of-way constraints.

Significant impacts identified based on *2001 General Plan Circulation Element* LOS policy in **bold** text.
Source: Fehr & Peers, May 2009.

YEAR 2015 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) SIGNAL WARRANT ANALYSIS

Signal warrant analysis was conducted for each unsignalized study intersection operating at LOS E or F. The analysis applies the peak-hour traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices (2003)* and associated State guidelines. Under Year 2015 Current General Plan Plus Project (Alternate Network) Conditions no unsignalized study intersections would meet the peak-hour warrant criteria for signalization during either peak hour. The signal warrant worksheets are included in Appendix D.

This analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The City of Morgan Hill should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

SIGNIFICANT IMPACT CRITERIA

The significance criteria is the same used to identify impacts in Chapter 4 for the Year 2015 Current General Plan Plus Project Conditions.

YEAR 2015 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) IMPACTS AND MITIGATION MEASURES

Intersections

Based on the significance impact criteria listed above and current LOS policy, the proposed project would have a **significant impact** at Monterey Road/Main Avenue and Monterey Road/Dunne Avenue intersections under Year 2015 Current GP Plus Project (Alternate Network) Conditions. The following measures are recommended to mitigate the significant impacts. Appendix E contains the corresponding mitigation calculation sheets.

Monterey Road/Main Avenue – Under this scenario, intersection operations are projected to be exacerbated during both the AM and PM peak hours compared to Existing Conditions. To mitigate the anticipated impact, Main Avenue would need protected east/west phasing with modifications to the eastbound approach (i.e., a left-turn lane and a shared-through right) and widening of the westbound approach (i.e., separate left, through, and right lane with an overlap phase). The southbound approach would need to be widened to include two southbound left-turn lanes, a through lane, and right turn-lane. These improvements would not conflict with the narrowing of Monterey Road from four to two lanes. However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location is considered ***significant and unavoidable***.

Monterey Road/Dunne Avenue – The intersection of Monterey Road/Dunne Avenue is projected to degrade from an acceptable (LOS D+ under Existing Conditions) to an unacceptable level of service (LOS D) under Year 2015 Current GP Plus Project (Alternate Network) Conditions during the PM peak hour. This impact is due to the narrowing of Monterey Road from four (4) to two (2) lanes between Main Avenue and Dunne Avenue. This intersection requires an eastbound right-turn overlap phase, and a southbound approach with a left-turn, through lane and shared through-right lane to operate acceptably (LOS D+ or better). The project impact at this location would be considered **less than significant** with this improvement. This configuration would be inconsistent with narrowing Monterey Road from four to two-lanes between Dunne Avenue and 5th Street. Thus, a modification of the proposed narrowing is required to mitigate this impact.

During a future Monterey Road streetscape planning process, the City of Morgan Hill should explore the feasibility and desirability of incorporating this mitigation measure, to retain additional lanes in the block of Monterey Road between Dunne and Fifth Street. However, should the City of Morgan Hill implement the narrowing of Monterey Road at Dunne Avenue to achieve the Monterey Road streetscape objectives (rather than between Dunne Avenue and Fifth Street) this impact would remain **significant and unavoidable**.

The unsignalized Monterey Road/Central Avenue, Monterey Road/Fourth Street, and Monterey Road/Fifth Street intersections are expected to operate at unacceptable levels during the AM and/or PM peak hours. However, these intersections would not meet the Peak Hour Warrant for traffic signal installation during either peak hour.[3] Based on the impact criteria described above, the proposed project would have a **less-than-significant** impact on these study unsignalized intersections. Therefore, no mitigation measures are required; however, the City of Morgan Hill should continue to monitor these locations and conduct an engineering study to evaluate the need for signals and/or turn movement restrictions as appropriate to maintain acceptable intersection operations.

Freeway Segments

The project would not add more than one percent of the freeway segment's capacity to any of the study freeway segments. Therefore, the project would have a **less-than-significant** impact to the study freeway segments under Year 2015 Current General Plan Plus Project (Alternate Network) Conditions. No mitigation measures are necessary.

PROPOSED TIERED LEVEL OF SERVICE POLICY GENERAL PLAN AMENDMENT

As described in Chapter 4, the City is proposing to change the Citywide peak hour LOS policy from LOS D+ to LOS D with exemption from the policy in the Downtown area (i.e., allowing LOS E and F), as well as select locations where LOS E would be considered acceptable.

The impacts of the project under this scenario using the proposed level of service policy were identified and compared to the previous policy. The Monterey Road/Main Avenue intersection is projected to be significantly impacted under the Year 2015 Current General Plan Plus Project (Alternate Network) scenario. The intersection is projected to operate at LOS F during the AM peak hour and LOS D- during the PM peak hour,

[3] The use of peak-hour signal warrants is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. The traffic analysis presented in the document estimates future development-generated traffic compared against a sub-set (peak-hour warrant) of the standard traffic signal warrants recommended in the Manual of Uniform Traffic Control Devices (MUTCD), Federal Highway Administration 2000 and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

which is considered unacceptable under the existing level of service policy. The Monterey Road/Dunne Avenue intersection is projected to have a significant impact under the Year 2015 Current General Plan Plus Project (Alternate Network) scenario. The intersection operates at LOS D during the PM peak hour which is considered unacceptable under the existing level of service policy.

The LOS under the proposed policy would establish an LOS F standard at both the Monterey Road/Main Avenue and Monterey Road/Dunne Avenue intersections. These intersections would be considered to operate at an acceptable level of service during both peak hours under the proposed policy. The significant impacts identified above under the Year 2015 Current General Plan Plus Project (Alternate Network) Conditions at the Monterey Road/Main Avenue and Monterey Road/Dunne Avenue intersections would not be considered a significant impact using the proposed level of service policy.

6. YEAR 2030 CURRENT GENERAL PLAN CONDITIONS

This chapter describes the expected traffic operations under Year 2030 Current General Plan Conditions. The City's traffic model was used to forecast future traffic volumes at all of the study locations. The land use assumptions for Year 2030 Current General Plan Conditions are based on the General Plan land uses expected to be in place by 2030 (as opposed to buildout of the General Plan). The roadway network includes the existing roadways plus the roadway improvements expected to be in place by 2030. This scenario is presented for informational purposes only and serves as a basis of comparison for Year 2030 Current General Plan with Project Conditions presented in the next chapter.

YEAR 2030 CURRENT GENERAL PLAN LAND USE ASSUMPTIONS

The City's travel demand forecasting (TDF) model was used to develop Year 2030 Current General Plan traffic volume estimates. The model was recently developed by Fehr & Peers and was calibrated and validated to existing conditions. The model is the best available tool for forecasting future traffic volumes based on planned changes in land use and roadway infrastructure in the City of Morgan Hill. The area included in the model extends from just south of the US 101/SR 85 interchange in San Jose to just south of Gilroy.

The Morgan Hill TDF model has a base year of 2007 and horizon years of 2015 and 2030, thus reflecting eight (8) and 23 years of growth in the City of Morgan Hill and the region, respectively. Future land use data is instrumental in estimating daily and peak hour trip generation and subsequently future traffic demand. As discussed in the *Morgan Hill Travel Demand Forecasting Model & Future Improvements Study* (Fehr & Peers, May 2009), Year 2030 land use estimates were based on input from City of Morgan Hill staff and regionally approved data from the Association of Bay Area Governments (ABAG) Projections 2003 for the areas south of Morgan Hill in San Martin and Gilroy. Although the ABAG 2005 and 2007 projections were available at the time this model was prepared, that data set included inconsistencies in land use in the Gilroy area based on already built/occupied and planned development. The City's model includes land uses aggregated into specific geographic areas, or traffic analysis zones (TAZs).

The 2030 land use assumptions used in the Morgan Hill model include total employment of approximately 20,000 jobs and a total of 2,000 households in Coyote Valley. This level of development is based on the regionally approved forecasts developed for the Santa Clara Valley Transportation Authority (VTA) model which includes the approved Cisco Systems project (Coyote Valley Research Park) and discussions with City of San Jose staff.

The downtown study area is represented by 36 TAZs in the model. Table 13 summarizes the 2030 land uses in these TAZs based on the current General Plan provided by City of Morgan Hill staff. These land uses include existing and all planned development that will occur by 2030. The existing and Year 2015 land use totals are also shown for comparison.

TABLE 13
MODEL LAND USE ASSUMPTIONS FOR DOWNTOWN SPECIFIC PLAN AREA

Land Use	Existing	2015 Current General Plan[1]	2030 Current General Plan[2]
Retail	204,000 s.f.	249,000 s.f.	273,000 s.f.
Residential	196 du	626 du	764 du
Office/Service	99,000 s.f.	129,000 s.f.	199,000 s.f.

Notes: du = dwelling unit, s.f. = square feet
[1] Existing uses plus all planned development to occur by 2015 in downtown planning area under the current General Plan.
[2] Existing uses plus all planned development to occur by 2030 in downtown planning area under the current General Plan.
Source: City of Morgan Hill Planning Department, May 2009.

YEAR 2030 CURRENT GENERAL PLAN TRANSPORTATION NETWORK ASSUMPTIONS

The following roadway improvements anticipated by 2030 are included in the model network:

- Extension of Butterfield Boulevard north of Cochrane Road to Madrone Parkway
- Extension of Butterfield Boulevard south of Tennant Avenue to Monterey Road
- Extension of Hale Avenue/Santa Teresa Boulevard between Main Avenue and Spring Avenue as a 4-lane arterial
- Closure of Fisher Avenue between Railroad Avenue and Butterfield Boulevard Extension
- Closure of DeWitt Avenue between Price Drive and Spring Avenue
- Extension of Walnut Grove Drive as a 2-lane collector between Dunne Avenue and Diana Avenue
- Extension of Jarvis Drive as a 2-lane local road between Monterey Road and Butterfield Boulevard
- Extension of Central Avenue as a 2-lane collector between Butterfield Boulevard and Calle Mazatan
- Tennant Ave widening as a 4-lane arterial between US 101 Southbound Ramps and Murphy Avenue
- Construct a loop on-ramp from eastbound Tennant Avenue to Northbound US 101
- Monterey Road widened to a 4-lane arterial between Cochrane Road and Old Monterey Road/Llagas Creek Drive
- Extension of Llagas Creek Drive as a 2-lane collector between Hale Avenue and Monterey Road
- Realignment of Old Monterey Road to intersect with Llagas Creek Drive extension
- Dunne Avenue widened to a 4-lane arterial between Monterey Road and Peak Avenue
- Edmundson Avenue widened to a 4-lane arterial between Monterey Road and Piazza Way
- Realignment of San Pedro Avenue to intersect with Spring Avenue
- Extension of Madrone Parkway as a 4-lane arterial between Hale Avenue and Monterey Road
- Edmundson Avenue widened to a 4-lane arterial between Piazza Way and Sunnyside Avenue
- Hale Avenue widening to a 4-lane arterial between Tilton Avenue and Main Avenue
- Realignment of DeWitt Avenue as a 2-lane arterial with Sunnyside Avenue
- Extension of Mission View Drive as a 2-lane collector between Cochrane Road and Vista del Lomas Avenue
- Extension and widening of Murphy Avenue/DePaul Avenue as a 4-lane arterial between Cochrane Road and Dunne Avenue
- Tennant Avenue widened to a 4-lane arterial between Murphy Avenue and Hill Road
- Monterey Road widened to a 6-lane arterial between Burnett Avenue and Cochrane Road
- Monterey Road widened to a 6-lane arterial between Watsonville Road and Middle Avenue
- Butterfield Boulevard widened to a 6-lane arterial between Cochrane Road and Tennant Avenue

- Murphy Road widened to a 4-lane arterial between Dunne Avenue and Middle Avenue
- Cochrane Road widened to a 6-lane arterial between Monterey Road and Mission View Drive
- Cochrane Road widened to a 4-lane arterial between Mission View Drive and Peet Road
- Main Avenue widened to a 4-lane arterial between Depot Street and Hill Road
- Watsonville Road widened to a 4-lane arterial between Santa Teresa Boulevard and Monterey Road
- Middle Avenue widened to a 4-lane arterial between Monterey Road and Murphy Avenue
- Extension of Serene Drive as a 2-lane collector between Jarvis Drive and Central Avenue
- Extension of Foothill Avenue as a 2-lane collector between Barrett Avenue and Tennant Avenue
- Dunne Avenue intersection at Depot Street closed with Dunne Avenue grade separation from Union Pacific railroad tracks
- Extension of McKevly Lane as a 2-lane collector between West Edmundson Avenue and La Crosse Drive
- Extension of Hill Road/Peet Road as a 2-lane collector between Half Road and Main Avenue

Based on the above improvements, the lane geometry required for LOS D+ operations for signalized intersections and LOS D for unsignalized intersections under Year 2030 Current General Plan Conditions was determined and shown on Figure 9. These same lane geometries were used in the Cumulative General Plan Amendment (June 2009) analysis in the update of the Circulation Element for the General Plan. Recommended capacity improvements were identified based on field review, consistency with standard traffic engineering practice, and geometric feasibility. Specifically, improvements requiring minor right-of-way acquisition were considered feasible, but the demolition of existing buildings would deem a capacity enhancement infeasible.

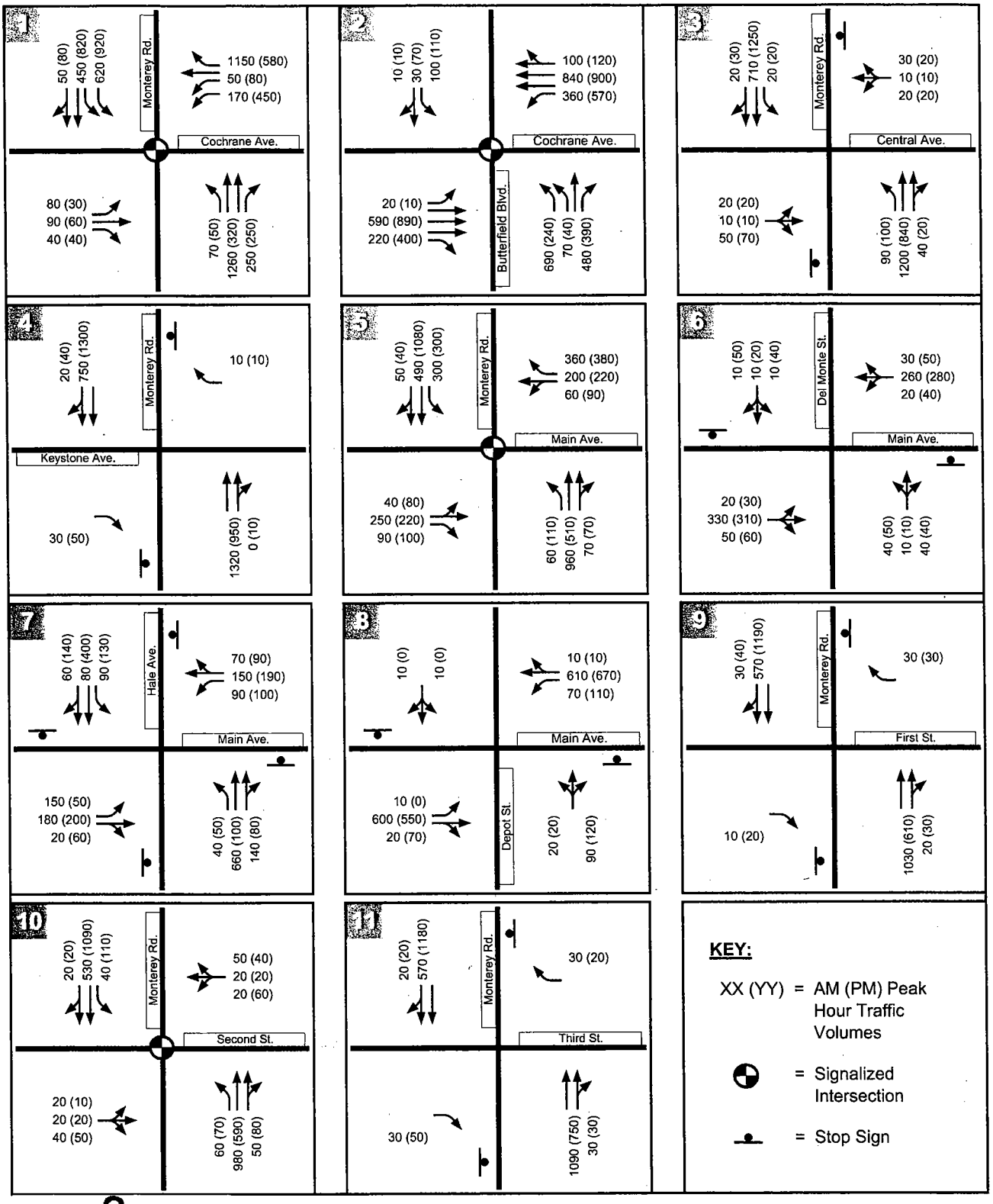
YEAR 2030 CURRENT GENERAL PLAN TRAFFIC VOLUME ESTIMATES

Model runs using the base year and future year models were conducted for the AM and PM peak hours under the Year 2030 Current General Plan Conditions. We developed forecasts for intersection turning movements at the 24 key intersections.

For this study, we applied the guidelines published in National Cooperative Highway Research Program (NCHRP) Report 255[4] to refine the raw model forecasts. This method is based on the difference between counts and model volumes and results in the use of three possible adjustments: 1) use ratio (percent or growth factor) forecast method if the difference is less that 50%, 2) use the delta (increment or difference) forecast method if the difference is greater than 150%, otherwise 3) use a combination of both (average the results of the two methods). The ratio forecast method calculates the ratio of future model forecast volumes to base year model volumes and applies the ratio to the base year traffic count. The difference forecast method calculates the difference between the future year and base year model volume and adds this to the existing count to estimate the projected change in traffic growth. For the average method, the ratio and difference adjustments are averaged together.

Figures 8A – 8C present the AM and PM peak hour intersection turning movement forecasts volumes, intersection lane configurations, and traffic control devices for the 24 study intersections under Year 2030 Current General Plan Conditions.

[4] National Cooperative Highway Research Program (NCHRP). *Report 255: Highway Traffic Data for Urbanized Area Project Planning and Design.* Washington, D.C.: National Academy Press, 1982.



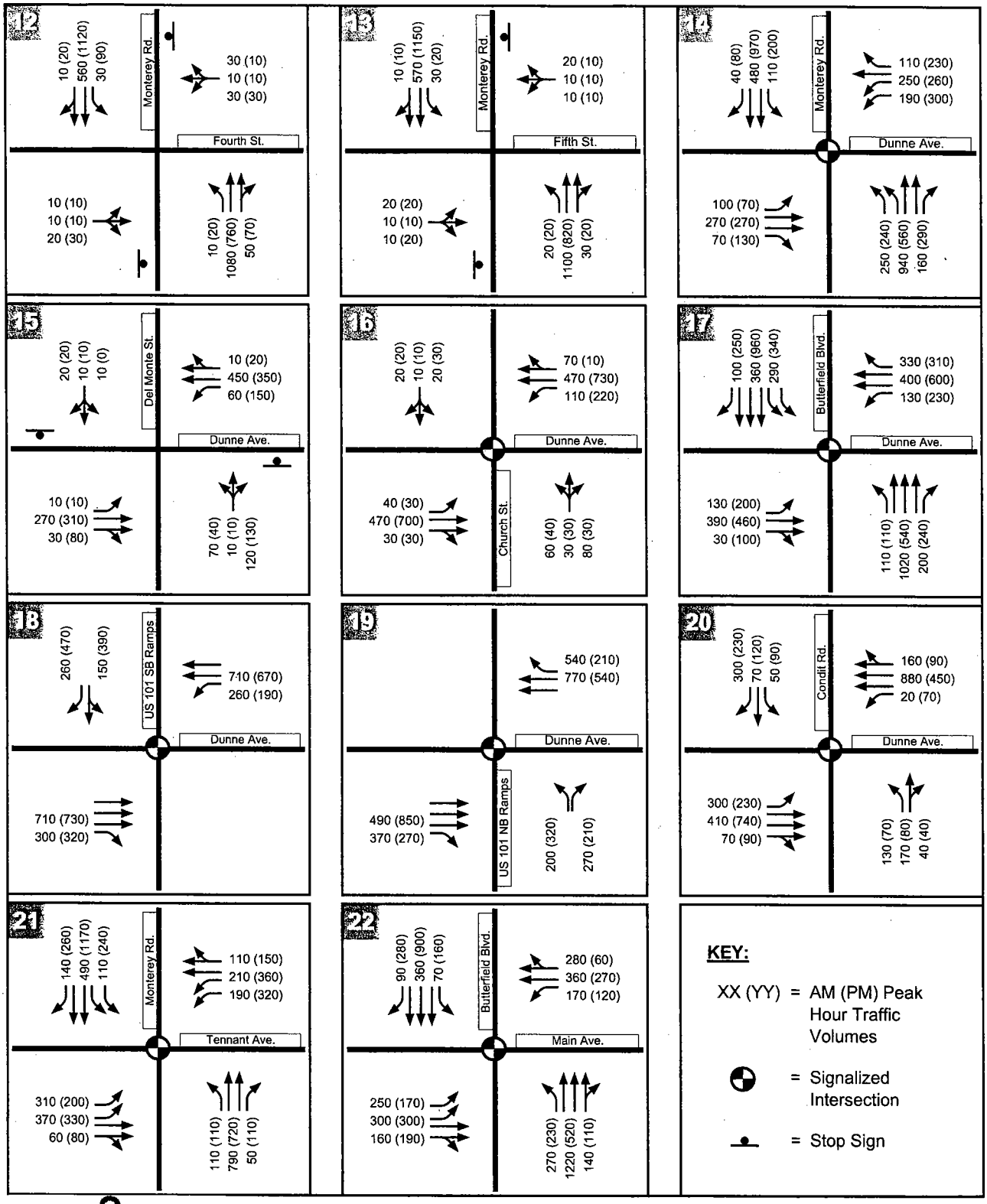
Morgan Hill Downtown Specific Plan Draft TIA

2030 CURRENT GENERAL PLAN INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 8A

FEHR & PEERS
TRANSPORTATION CONSULTANTS

May 2009
SJ08-1039



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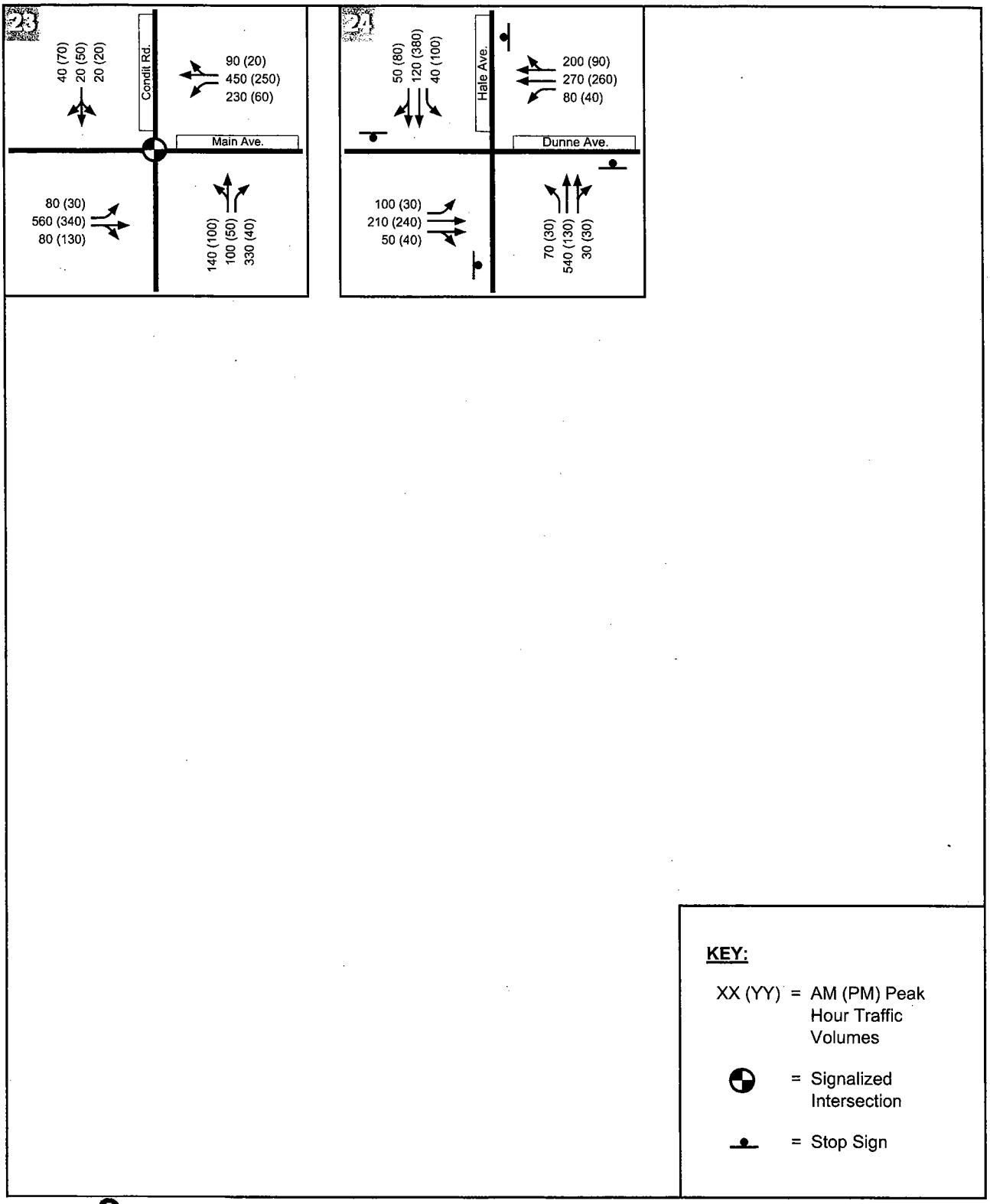
FEHR & PEERS
TRANSPORTATION CONSULTANTS

2030 CURRENT GENERAL PLAN INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

May 2009
SJ08-1039

FIGURE 8B



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May 2009
SJ08-1039

2030 CURRENT GENERAL PLAN INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

FIGURE 8C

YEAR 2030 CURRENT GENERAL PLAN INTERSECTION LEVELS OF SERVICE

Levels of service were evaluated to assess future intersection operating conditions with Year 2030 Current General Plan traffic volumes. The results are presented in Table 14. All but one of the signalized study intersections would operate at acceptable levels of service under the Year 2030 Current General Plan Conditions. The Monterey Road/Main Avenue signalized study intersection is projected to operate at LOS E+ during the AM peak hour and LOS D during the PM peak hour.

Under the Year 2030 Current General Plan Conditions the following three unsignalized study intersections are projected to operate unacceptably (LOS E or F) during one or both peak hours:

- Monterey Road/Central Avenue (LOS F, AM and PM peak hours)
- Monterey Road/Fourth Street (LOS F, AM and PM peak hours)
- Monterey Road/Fifth Street (LOS E, AM peak hour and LOS F, PM peak hour)

The remaining study intersections would operate at acceptable levels of service during both peak hours.

YEAR 2030 CURRENT GENERAL PLAN SIGNAL WARRANT ANALYSIS

Signal warrant analysis was conducted for each unsignalized study intersection operating at LOS E or F. The analysis applies the peak-hour traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices (2003)* and associated State guidelines. Under Year 2030 Current General Plan Conditions, none of the unsignalized study intersections would meet the peak-hour warrant criteria for signalization during either the AM or PM peak hours. The signal warrant worksheets are included in Appendix D.

This analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The City of Morgan Hill should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

TABLE 14
YEAR 2030 CURRENT GENERAL PLAN CONDITIONS INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control	Peak Hour	Delay[1]	LOS[2]
1. Monterey Road / Cochrane Road	Signal	AM PM	32.7 34.7	C- C-
2. Butterfield Boulevard / Cochrane Road	Signal	AM PM	35.2 33.0	D+ C-
3. Monterey Road / Central Avenue (us)	Side-Street Stop	AM PM	>150 >150	F F
4. Monterey Road / Keystone Avenue (us)	Side-Street Stop	AM PM	13.9 15.2	B C
5. Monterey Road / Main Avenue	Signal	AM PM	55.4 48.0	E+ D
6. Del Monte Avenue / Main Avenue (us)	Side-Street Stop	AM PM	15.6 19.6	C C
7. Hale Avenue / Main Avenue (us)	All-Way Stop	AM PM	26.8 17.7	D C
8. Depot Street / Main Avenue (us)	Side Street Stop	AM PM	33.0 21.3	D C
9. Monterey Road / 1st Street (us)	Side-Street Stop	AM PM	12.6 13.6	B B
10. Monterey Road / 2nd Street	Signal	AM PM	11.6 12.9	B+ B
11. Monterey Road / 3rd Street (us)	Side-Street Stop	AM PM	13.1 14.0	B B
12. Monterey Road / 4th Street (us)	Side-Street Stop	AM PM	70.0 >150	F F
13. Monterey Road / 5th Street (us)	Side-Street Stop	AM PM	48.2 102.9	E F
14. Monterey Road / Dunne Avenue	Signal	AM PM	31.6 36.0	C D+
15. Del Monte Avenue / Dunne Avenue (us)	Side-Street Stop	AM PM	16.5 17.9	C C
16. Church Street / Dunne Avenue	Signal	AM PM	22.0 21.1	C+ C+
17. Butterfield Boulevard / Dunne Avenue	Signal	AM PM	32.3 37.3	C- D+
18. US 101 SB Ramps / Dunne Avenue	Signal	AM PM	20.2 23.0	C+ C

TABLE 14
YEAR 2030 CURRENT GENERAL PLAN CONDITIONS INTERSECTION LEVELS OF SERVICE

19. US 101 NB Ramps / Dunne Avenue	Signal	AM PM	13.8 16.5	B B
20. Condit Road / Dunne Avenue	Signal	AM PM	31.9 32.9	C C-
21. Monterey Road / Tennant Avenue	Signal	AM PM	33.9 31.7	C- C
22. Butterfield Boulevard / Main Avenue	Signal	AM PM	36.8 38.5	D+ D+
23. Condit Road / Main Avenue	Signal	AM PM	10.9 8.6	B+ A
24. Hale Avenue / Dunne Avenue (Future only)	All-Way Stop	AM PM	20.5 14.8	C B

Notes:

(us) = unsignalized intersection

1 Whole intersection weighted average control delay expressed in seconds per vehicle calculated using methods described in the *2000 HCM*, with adjusted saturation flow rates to reflect Santa Clara County Conditions for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.

2 LOS = Level of service. LOS calculations conducted using the TRAFFIX level of service analysis software package.

Source: Fehr & Peers, May 2009.

7. YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT CONDITIONS

This chapter presents the results of the intersection and freeway analyses and describes the traffic impacts of the Downtown Specific Plan (DSP) in the year 2030. The City's travel demand model was used to forecast traffic with the proposed land use changes expected in the downtown area by 2030. This methodology would be similar to that described in Chapter 5 except that the DSP proposed land use changes were included in the analysis.

As described in Chapter 4, the City is proposing to change the current level of service policy. This chapter analyzes the proposed project using the existing level of service policy in addition to the proposed level of service policy change.

YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT LAND USE ASSUMPTIONS

The DSP proposes to add a total of 117,000 s.f. of retail space and 636 residential dwelling units by 2030 within the downtown area and the two blocks just outside the downtown specific plan boundary. Table 15 summarizes the land use changes from the DSP by 2030.

TABLE 15
YEAR 2030 DOWNTOWN SPECIFIC PLAN LAND USE CHANGES

Land Use	Existing	2030 Current GP[1]	Increase in Downtown TAZs	2030 Current GP Plus Project
Retail	204,000 s.f.	273,000 s.f.	117,000 s.f.	390,000 s.f.
Residential	196 du	764 du	636 du	1,400 du
Office/Service	99,000 s.f.	199,000 s.f.	--	199,000 s.f.

Notes: du = dwelling unit, s.f. = square feet
[1] Existing uses plus all planned development to occur by 2030 in downtown planning area under the current General Plan.
Source: City of Morgan Hill Planning Department, May 2009.

YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT TRANSPORTATION NETWORK ASSUMPTIONS

The Year 2030 Current General Plan Plus Project roadway network is the same as the Year 2030 Current General Plan roadway network.

YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT TRAFFIC VOLUME ESTIMATES

The proposed land use changes were added to the City's travel demand model and AM and PM peak-hour forecasts were generated. As shown in Table 16, the project would generate a total of 10,520 daily, 807 AM peak-hour, and 911 PM peak-hour trips by 2030 according to the model. Of these total vehicle trips, 961 daily, 82 AM peak-hour, and 87 PM peak-hour trips are internal to the downtown area.

TABLE 16
YEAR 2030 DOWNTOWN SPECIFIC PLAN PROJECT TRIP GENERATION ESTIMATES

Land Use	Daily	AM Peak Hour	PM Peak Hour
External Trips	9,559 trips	725 trips	824 trips
Internal Trips	961 trips	82 trips	87 trips
Total Trips	10,520 trips	807 trips	911 trips

Source: Fehr & Peers, City of Morgan Hill Travel Demand Forecasting Model, May 2009.

Similar to the Year 2030 Current General Plan traffic volumes, the intersection turning movement volumes for Year 2030 Project Conditions were estimated using the methods described in Chapter 3. **Figures 9A – 9C** present the Year 2030 Current General Plan Plus Project volumes and lane configurations for the study intersections.

YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT INTERSECTION LEVELS OF SERVICE

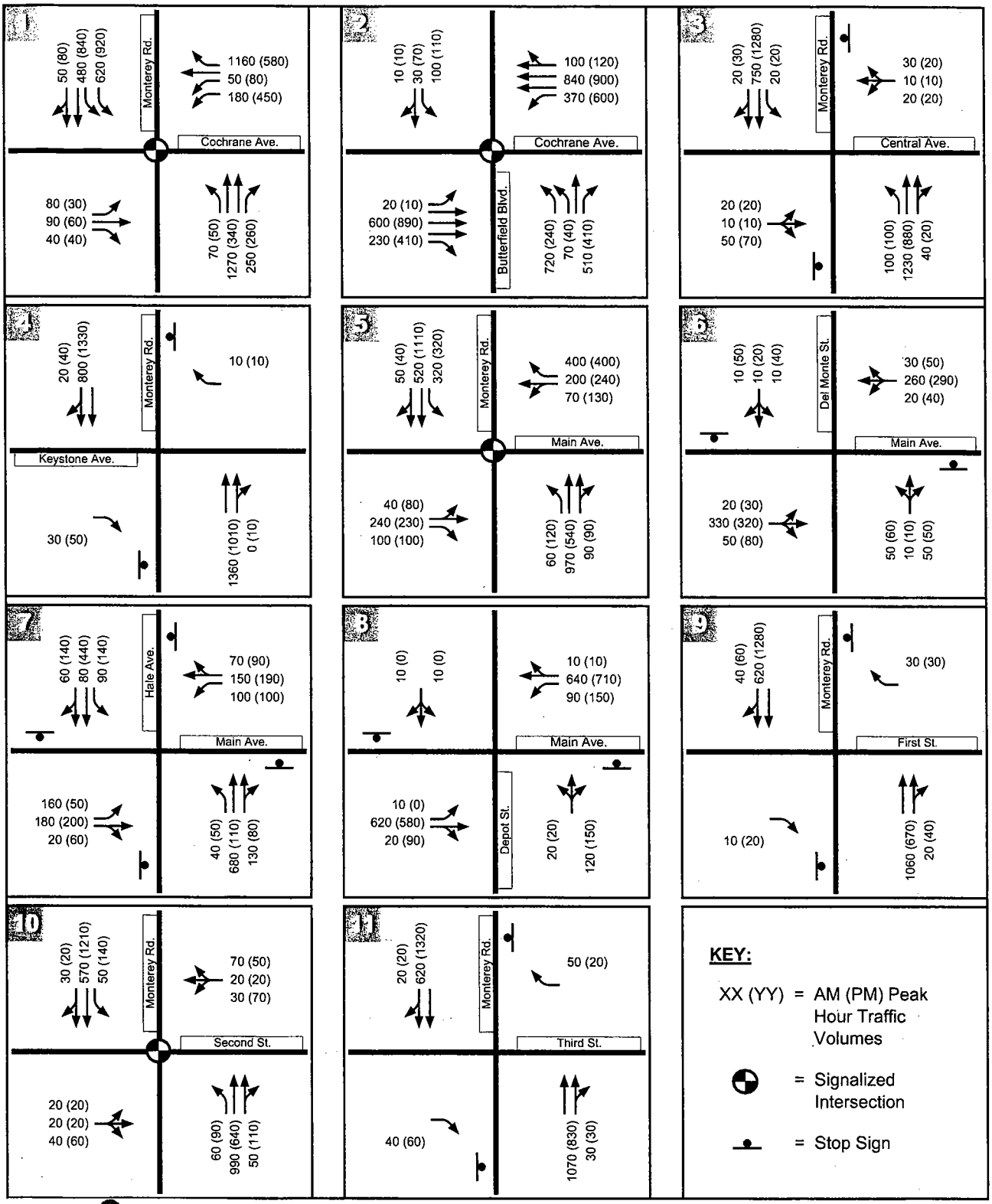
Intersection levels of service were calculated with Year 2030 Current General Plan Plus Project traffic volumes, and the results are summarized in Table 17. The results for Existing Conditions are included for comparison purposes, along with the projected increases in critical delay and critical volume-to-capacity (V/C) ratios. Critical delay represents the delay associated with the critical movements of the intersection, or the movements that require the most "green time" and have the greatest effect on overall intersection operations. The changes in critical delay and critical V/C ratios between Existing and Year 2030 Current General Plan Plus Project Conditions are used to identify significant impacts. In some instances, slight improvements in critical delay are reported. This is due to the method the program uses to allocate green time to the various turning movements.

Under the Year 2030 Current General Plan Plus Project Conditions all of the signalized intersections are projected to operate acceptably during one or both peak hours under the existing LOS policy except the Main Avenue/Monterey Road intersection, which is projected to operate at LOS E during the AM peak hour and LOS D- during the PM peak hour.

Under the Year 2030 Current General Plan Plus Project Conditions the following four unsignalized study intersections are projected to operate unacceptably (LOS E or F) during one or both peak hours:

- Central Avenue/Monterey Road (LOS F, AM and PM peak hours)
- Main Avenue/Depot Street (LOS E, AM peak hour)
- Fourth Street/Monterey Road (LOS F, AM and PM peak hours)
- Fifth Street/Monterey Road (LOS F, AM and PM peak hours)

The remaining unsignalized study intersections are projected to operate at acceptable levels of service during both peak hours.



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2030 CURRENT GP PLUS PROJECT INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

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FIGURE 9A

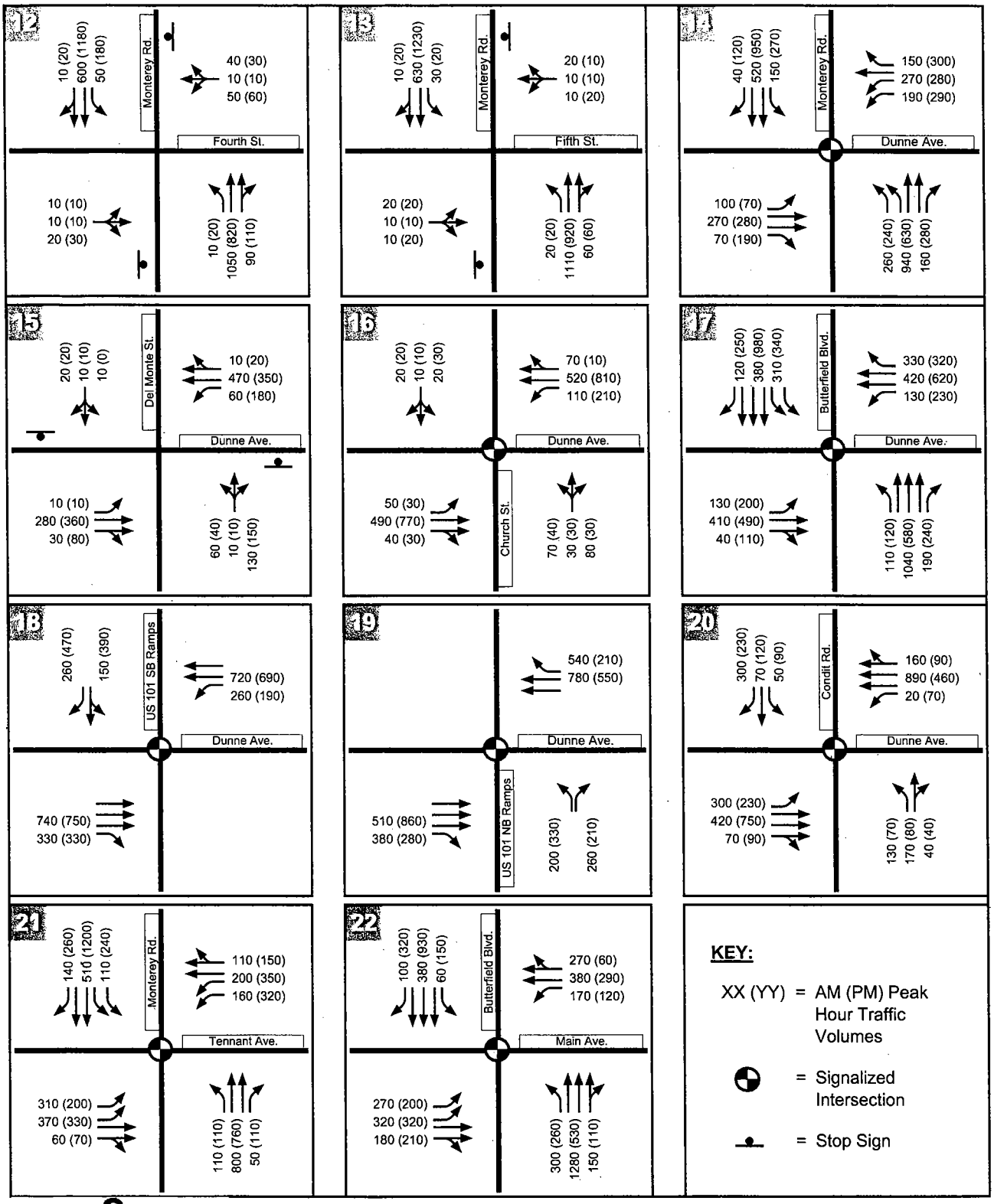

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FIGURE 9B

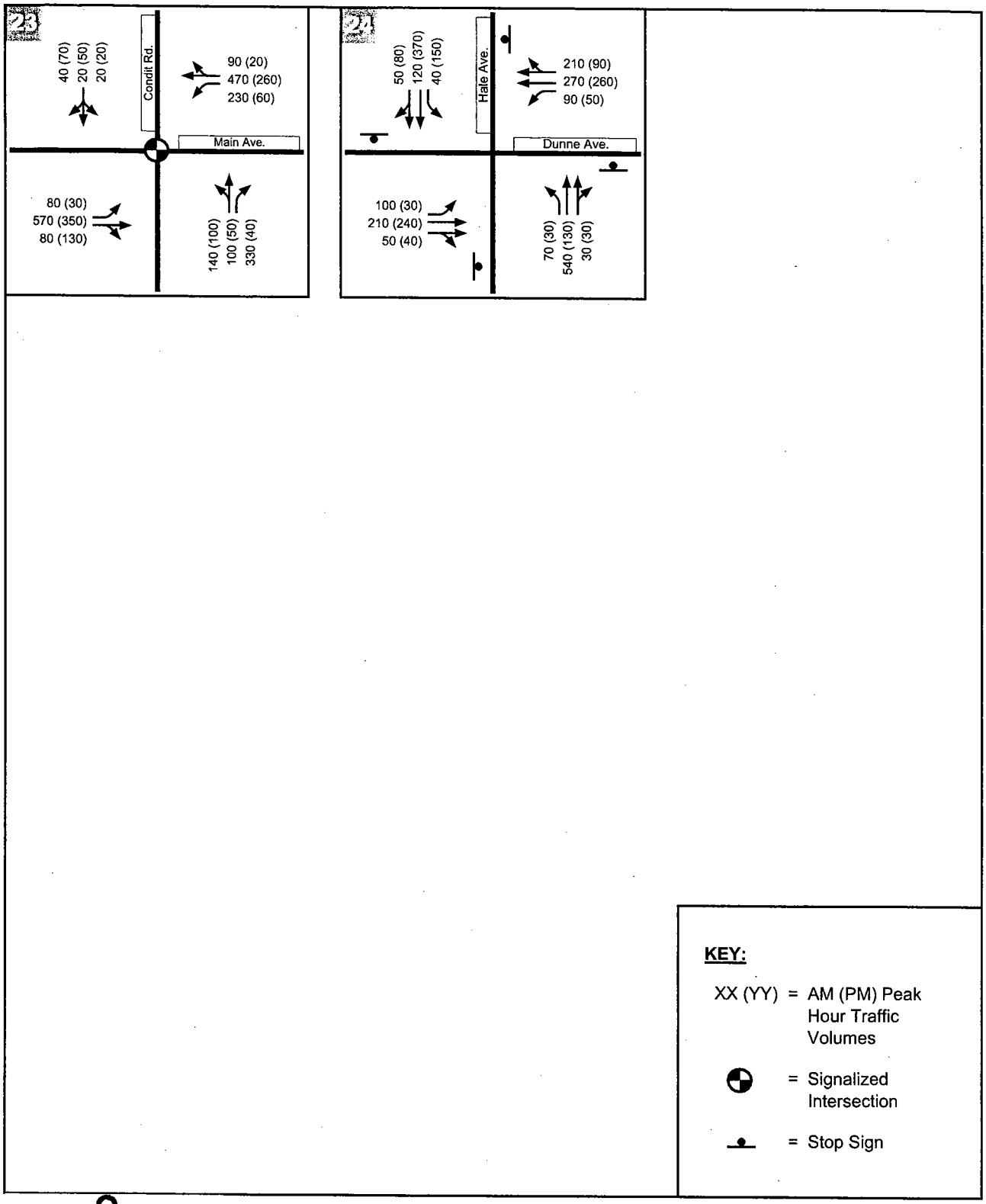

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FIGURE 9C

TABLE 17
EXISTING AND YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT
INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control (Existing Conditions / Year 2030 Project Conditions)	Peak Hour	Existing		Year 2030 Current General Plan Plus Project						
			Delay[1]	LOS[2]	Delay[1]	LOS[2]	Δ in Crit V/C[3]	Δ in Crit Delay[4]	Signal Warrants Met?[5]	Does Not Meet Current LOS Std.[6]	Does Not Meet Proposed LOS Std[7]
1. Monterey Road / Cochrane Road	Signal	AM	27.6	C	32.8	C-	0.331	4.2	N/A		
		PM	29.1	C	34.8	C-	0.373	8.7	N/A		
2. Butterfield Boulevard / Cochrane Road	Signal	AM	16.7	B	35.6	D+	0.313	20.3	N/A		
		PM	13.0	B	33.7	C-	0.440	26.4	N/A		
3. Monterey Road / Central Avenue (us)	Side-Street Stop	AM	16.0	C	>150	F	N/A	N/A	No	√	√
		PM	23.2	C	>150	F	N/A	N/A	No		
4. Monterey Road / Keystone Avenue (us)	Side-Street Stop	AM	10.7	B	14.2	B	N/A	N/A	N/A		
		PM	10.5	B	15.4	C	N/A	N/A	N/A		
5. Monterey Road / Main Avenue[8]	Signal	AM	43.4	D	**60.0**	**E**	**0.389**	**26.6**	N/A	√	
		PM	42.4	D	**51.7**	**D-**	**0.253**	**8.6**	N/A		
6. Del Monte Avenue / Main Avenue (us)	Side-Street Stop	AM	13.5	B	16.2	C	N/A	N/A	N/A		
		PM	19.1	C	21.7	C	N/A	N/A	N/A		
7. Hale Avenue / Main Avenue (us)	All-Way Stop	AM	11.0	B	28.4	D	N/A	N/A	N/A		
		PM	13.2	B	18.9	C	N/A	N/A	N/A		
8. Depot Street / Main Avenue (us)	Side Street Stop	AM	15.9	C	**42.1**	**E**	N/A	N/A	Yes	√	
		PM	25.6	D	26.7	D	N/A	N/A	N/A		
9. Monterey Road / 1st Street (us)	Side-Street Stop	AM	10.2	B	12.8	B	N/A	N/A	N/A		
		PM	10.9	B	14.4	B	N/A	N/A	N/A		
10. Monterey Road / 2nd Street	Signal	AM	10.7	B+	12.8	B	0.208	3.3	N/A		
		PM	12.5	B	13.9	B	0.232	2.0	N/A		
11. Monterey Road / 3rd Street (us)	Side-Street Stop	AM	10.5	B	13.3	B	N/A	N/A	N/A		
		PM	11.1	B	15.4	C	N/A	N/A	N/A		
12. Monterey Road / 4th Street (us)	Side-Street Stop	AM	14.2	B	>150	F	N/A	N/A	No	√	
		PM	18.9	C	>150	F	N/A	N/A	No		

TABLE 17
EXISTING AND YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT
INTERSECTION LEVELS OF SERVICE

13. Monterey Road / 5th Street (us)	Side-Street Stop	AM PM	17.9 17.0	C C	57.5 >150	F F	N/A N/A	N/A N/A	No No	√	
14. Monterey Road / Dunne Avenue	Signal	AM PM	28.6 36.6	C D+	32.9 37.9	C- D+	0.206 0.071	5.6 -3.6	N/A N/A		
15. Del Monte Avenue / Dunne Avenue (us)	Side-Street Stop	AM PM	12.0 15.0	B B	16.0 21.4	C C	N/A N/A	N/A N/A	N/A N/A		
16. Church Street / Dunne Avenue	Signal	AM PM	18.8 19.5	B- B-	22.0 20.8	C+ C+	0.096 0.133	2.3 2.7	N/A N/A		
17. Butterfield Boulevard / Dunne Avenue	Signal	AM PM	30.7 39.4	C D	32.7 37.7	C- D+	0.006 -0.007	1.1 -2.9	N/A N/A		
18. US 101 SB Ramps / Dunne Avenue	Signal	AM PM	20.7 18.7	C+ B-	19.9 23.0	B- C+	0.130 0.016	1.5 5.0	N/A N/A		
19. US 101 NB Ramps / Dunne Avenue	Signal	AM PM	14.4 12.7	B B	13.5 16.7	B B	0.031 0.023	-0.9 3.8	N/A N/A		
20. Condit Road / Dunne Avenue	Signal	AM PM	32.7 28.3	C- C	31.9 32.8	C C-	0.001 0.016	-0.4 5.5	N/A N/A		
21. Monterey Road / Tennant Avenue	Signal	AM PM	25.6 32.8	C C-	33.5 31.4	C- C	0.071 0.078	9.4 0.6	N/A N/A		
22. Butterfield Boulevard / Main Avenue	Signal	AM PM	34.4 37.7	C- D+	37.0 38.7	D+ D+	0.082 0.177	-0.8 4.2	N/A N/A		
23. Condit Road / Main Avenue	Signal	AM PM	10.8 9.9	B+ A	10.9 8.6	B+ A	0.162 0.167	0.9 -1.9	N/A N/A		
24. Hale Avenue / Dunne Avenue	Future Intersection / All-Way Stop	AM PM	Future Intersection		20.9 15.1	C C	0.691 0.486	20.9 15.1	N/A N/A		

TABLE 17
EXISTING AND YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT
INTERSECTION LEVELS OF SERVICE

Notes:
1. Whole intersection weighted average control delay expressed in seconds per vehicle calculated using methods described in the *2000 HCM*, with adjusted saturation flow rates to reflect Santa Clara County Conditions for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
2. LOS = Level of service. LOS calculations conducted using the TRAFFIX LOS analysis software package.
3. Change in the critical volume-to-capacity ratio (V/C) between Existing and Year 2030 Current General Plan Conditions.
4. Change in Critical movement delay between Existing and Year 2030Current General Plan Conditions.
5. Peak hour signal warrant analysis completed for unacceptable unsignalized intersection operations.
6. Does not meet Current General Plan (GP) LOS Standard – Year 2030 Current General Plan Plus Project Conditions does not meet the LOS D+ standard at local signalized intersections (three intersections are allowed to operate at LOS D) and LOS E at freeway ramp intersections under the 2001 General Plan Circulation Element.
7. Does not meet Proposed General Plan (GP) LOS Standard – Year 2030 Current General Plan Plus Project Conditions does not meet the proposed General Plan Circulation Element LOS D standard at local intersections and LOS E and F at specified downtown, freeway access and regional intersections.
8. No feasible improvements are available to provide LOS D+ or better operations due to building and right-of-way constraints.

Significant impacts identified based on *2001 General Plan Circulation Element* LOS policy in **bold** text.
Source: Fehr & Peers, May 2009.

YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT SIGNAL WARRANT ANALYSIS

Signal warrant analysis was conducted for each unsignalized study intersection operating at LOS E or F. The analysis applies the peak-hour traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices (2003)* and associated State guidelines. Under Year 2030 Current General Plan Plus Project Conditions, the unsignalized study intersection of Main Avenue/Depot Street would meet the peak-hour warrant criteria for signalization during the AM peak hour. The remaining unsignalized intersections operating at LOS E or F do not exceed the warrant.

This analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The City of Morgan Hill should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT FREEWAY SEGMENT LEVEL OF SERVICE

Table 18 outlines the estimated number of new trips added to the freeway segments under Project Conditions. The proposed project is expected to add between 0.14 and 0.54 percent of the capacity to the freeway study segments. Therefore, the proposed project would not add new trips greater than one percent of the freeway segment capacity to any of the study freeway segments. Therefore, no additional freeway

segment analysis is required for the proposed project. These findings are reasonable given: 1) the local serving nature of the proposed commercial uses in the downtown area, 2) the number of work trips from the residential units to other cities during the peak hour (i.e., only 25 to 30 percent of all peak hour trips), and 3) the future freeway congestion that will cause some sub-regional and regional trips to be made using non-freeway facilities such as Monterey Road and Hale Avenue/Santa Teresa Boulevard.

TABLE 18
YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT FREEWAY SEGMENT LEVELS OF SERVICE

Direction	From /To	From /To	Capacity	Peak Hour	Existing Conditions				Year 2030 Project Conditions									
					Density		LOS		Trips Added		Density		LOS		% Added		Impact	
					MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV	MF	HOV
NB US 101	San Martin Avenue	Tennant Avenue	6,900	AM	59	-	F	-	16	-	59	-	F	-	0.23%	-	NO	-
				PM	17	-	B	-	37	-	17	-	B	-	0.54%	-	NO	-
	Tennant Avenue	Dunne Avenue	6,900	AM	71	-	F	-	10	-	71	-	F	-	0.14%	-	NO	-
				PM	16	-	B	-	25	-	16	-	B	-	0.36%	-	NO	-
	Dunne Avenue	Cochrane Road	6,900	AM	47	-	E	-	8	-	47	-	E	-	0.12%	-	NO	-
				PM	16	-	B	-	8	-	16	-	B	-	0.12%	-	NO	-
	Cochrane Road	Burnett Avenue	6,900	AM	34	18	D	B	28	5	34	18	D	C	0.41%	0.28%	NO	NO
				PM	17	5	B	A	27	3	17	5	B	A	0.40%	0.15%	NO	NO
SB US 101	Burnett Avenue	Cochrane Road	6,900	AM	14	-	B	-	27	-	14	-	B	-	0.39%	-	NO	-
				PM	66	-	F	-	30	-	66	-	F	-	0.43%	-	NO	-
	Cochrane Road	Dunne Avenue	6,900	AM	15	-	B	-	10	-	15	-	B	-	0.14%	-	NO	-
				PM	56	-	E	-	13	-	56	-	E	-	0.19%	-	NO	-
	Dunne Avenue	Tennant Avenue	6,900	AM	13	-	B	-	25	-	13	-	B	-	0.36%	-	NO	-
				PM	28	-	D	-	11	-	28	-	D	-	0.16%	-	NO	-
	Tennant Avenue	San Martin Avenue	6,900	AM	10	-	A	-	25	-	10	-	A	-	0.36%	-	NO	-
				PM	32	-	D	-	29	-	32	-	D	-	0.42%	-	NO	-

Notes:
[1] Density based on volume from VTA's *2007 CMP Monitoring Data*.
[2] NB - Northbound; SB - Southbound.
[3] MF – Mix-Flow; HOV – High-Occupancy Vehicle.
Unacceptable operations (LOS F) identified in **bold** text.
Source: Fehr & Peers, May 2009.

SIGNIFICANT IMPACT CRITERIA

The same significance criteria is used as described in Chapter 4 for impacts except that the Year 2030 Current General Plan Plus Project Conditions are compared to Existing Conditions to identify impacts.

YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT IMPACTS AND MITIGATION MEASURES

Intersections

Based on the impact criteria, the proposed project would have a **significant impact** at the Monterey Road/Main Avenue and Main Avenue/Depot Street intersection under Year 2030 Current General Plan Plus Project Conditions. The following measures are recommended to mitigate the significant impacts. Appendix E contains the corresponding mitigation calculation sheets.

Monterey Road/Main Avenue – Under Year 2030 Current General Plan Plus Project Conditions, intersection operations are projected to be exacerbated during the AM and PM peak hours compared to Existing Conditions. To mitigate the anticipated impact, Main Avenue would need protected east/west phasing with modifications to the eastbound approach (i.e., a left-turn lane and a shared-through right) and widening of the westbound approach (i.e., separate left, through, and right lane with an overlap phase). However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location is considered ***significant and unavoidable***.

Main Avenue/Depot Street – Under Year 2030 Current General Plan Plus Project Conditions, intersection operations are projected to operate unacceptably during the AM peak hour. The peak-hour signal warrant is also met during the AM peak hour. Therefore, the project is determined to result in a **significant impact** at this location. Signalizing this intersection would mitigate this impact to a less than significant level. It should be noted that signalization at this location was recommended in the Circulation Element update that is currently in progress.

The unsignalized Monterey Road/Central Avenue, Monterey Road/Fourth Street, and Monterey Road/Fifth Street intersections are expected to operate at unacceptable levels during the AM and PM peak hours. However, these intersections would not meet the Peak Hour Warrant for traffic signal installation during either peak hour.[5] Based on the impact criteria, the proposed project would have a **less-than-significant** impact on these study unsignalized intersections. Therefore, no mitigation measures are required; however, the City of Morgan Hill should continue to monitor these locations and conduct an engineering study to evaluate the need for signals and/or turn movement restrictions as appropriate to maintain acceptable intersection operations.

Freeway Segments

The project would not add more than one percent of the freeway segment's capacity to any of the study freeway segments. Therefore, the project would have a **less-than-significant** impact to the study freeway segments under Year 2015 Current General Plan Plus Project Conditions. No mitigation measures are necessary.

[5] The use of peak-hour signal warrants is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. The traffic analysis presented in the document estimates future development-generated traffic compared against a sub-set (peak-hour warrant) of the standard traffic signal warrants recommended in the Manual of Uniform Traffic Control Devices (MUTCD), Federal Highway Administration 2000 and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

PROPOSED TIERED LEVEL OF SERVICE POLICY GENERAL PLAN AMENDMENT

As described in Chapter 4 the City of Morgan Hill is proposing to change the Citywide peak hour LOS policy from LOS D+ to LOS D with exemption from the policy in the Downtown area (i.e., allowing LOS E and F), as well as select locations where LOS E would be considered acceptable.

The impacts of the project under the Year 2030 Current General Plan Plus Project Conditions scenario using the proposed level of service policy are identified and compared to the previous policy. The Monterey Road/Main Avenue intersection is projected to have a significant impact under the Year 2030 Current General Plan Plus Project scenario. The intersection operates at LOS E during the AM peak hour and LOS D- during the PM peak hour which is considered unacceptable under the existing level of service policy. The Main Avenue/Depot Street intersection is also projected to have a significant impact under the Year 2030 Current General Plan Plus Project scenario. This unsignalized intersection operates at LOS E during the PM peak hour which is considered unacceptable under the existing level of service policy.

The level of service under the proposed policy would establish an LOS F standard at both the Monterey Road/Main Avenue and Main Avenue/Depot Street intersections. These intersections would be considered to operate at an acceptable level of service during both peak hours under the proposed policy. The significant impacts identified above under the Year 2030 Current General Plan Plus Project Conditions at the Monterey Road/Main Avenue and Main Avenue /Depot Street intersections would not be considered a significant impact using the proposed level of service policy.

8. YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT AND ALTERNATE DOWNTOWN CIRCULATION CONDITIONS

This chapter presents the results of the intersection analyses and describes the traffic impacts of the Downtown Specific Plan (DSP) in the year 2030 with an alternate transportation network. The City of Morgan Hill is considering a scenario that includes the following two network changes: 1) narrowing of Monterey Road from 4 to 2 lanes from Main Avenue to Dunne Avenue and 2) leaving Depot Street open. Currently the General Plan includes a grade separation at the Dunne Avenue/Depot Street intersection so that Dunne Avenue would be built under the railroad crossing just east of Depot Street. This alternate transportation network would include the removal of this improvement and maintain the at-grade Dunne Avenue/Depot Street configuration.

The City's travel demand model was used to forecast traffic with the proposed land use changes expected in the downtown area by 2030 together with the proposed network changes. This methodology would be similar to that described in Chapter 3 except that the DSP proposed land use and network changes were included in the analysis.

As described in Chapter 4, the City of Morgan Hill is also proposing to change the current level of service policy. This chapter analyzes the proposed project using the existing level of service policy in addition to the proposed level of service policy change.

YEAR 2030 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) LAND USE ASSUMPTIONS

The DSP proposes to add a total of 117,000 s.f. of retail space and 636 residential dwelling units by 2030 within the downtown area and the two blocks just outside the downtown specific plan boundary.

YEAR 2030 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) TRANSPORTATION NETWORK ASSUMPTIONS

The Year 2030 Current General Plan Plus Project roadway network is the same as the Year 2030 Current General Plan roadway network except for the following two changes:

1) The narrowing of Monterey Road from 4 to 2 lanes from Main Avenue to Dunne Avenue.

2) Maintaining the existing roadway network at the Depot Street/Dunne Avenue intersection. Currently the General Plan includes a grade separation at the Dunne Avenue/Depot Street intersection so that Dunne Avenue would be built under the railroad crossing which is located east of Depot Street. This alternate transportation network would include the removal of this improvement and maintain the at-grade Dunne Avenue/Depot Street configuration.

YEAR 2030 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) TRAFFIC VOLUME ESTIMATES

The proposed land use changes were added to the City's travel demand model and AM and PM peak-hour forecasts were generated. The project would generate a total of 10,520 daily, 807 AM peak-hour, and 911 PM peak-hour trips according to the model. Of these total trips, 961 daily, 82 AM peak-hour, and 87 PM peak-hour trips are internal to the downtown area.

Similar to the Year 2030 Current General Plan Plus Project traffic volumes, the intersection turning movement volumes for Year 2030 Current General Plan Plus Project (Alternate Network) Conditions were estimated using the methods described in Chapter 3. Figure 11 presents the Year 2030 Current General Plan Plus Project (Alternate Network) volumes and lane configurations for the study intersections.

YEAR 2030 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) INTERSECTION LEVELS OF SERVICE

Intersection levels of service were calculated with Year 2030 Current General Plan Plus Project (Alternate Network) traffic volumes, and the results are summarized in Table 19. The results for Existing Conditions are included for comparison purposes, along with the projected increases in critical delay and critical volume-to-capacity (V/C) ratios. Critical delay represents the delay associated with the critical movements of the intersection, or the movements that require the most "green time" and have the greatest effect on overall intersection operations. The changes in critical delay and critical V/C ratios between Existing and Year 2030 Current General Plan Plus Project (Alternate Network) Conditions are used to identify significant impacts. In some instances, slight improvements in critical delay are reported. This is due to the method the program uses to allocate green time to the various turning movements.

Under the Year 2030 Current GP Plus Project (Alternate Network) Conditions the following three signalized study intersections are projected to operate unacceptably (LOS D, E, or F) during one or both peak hours:

- Main Avenue/Monterey Road (LOS F, AM peak hour and LOS E, PM peak hour)
- Dunne Avenue/Monterey Road (LOS D, PM peak hour)
- Main Avenue/Butterfield Boulevard (LOS D, PM peak hour)

Under the Year 2030 Current GP Plus Project (Alternate Network) Conditions the following five unsignalized study intersections are projected to operate unacceptably (LOS E or F) during one or both peak hours:

- Central Avenue/Monterey Road (LOS F, AM and PM peak hours)
- Main Avenue/Hale Avenue (LOS E, AM peak hour)
- Main Avenue/Depot Street (LOS E, AM peak hour and LOS F, PM peak hour)
- Fourth Street/Monterey Road (LOS E, AM peak hour and LOS F, PM peak hour)
- Fifth Street/Monterey Road (LOS F, AM and PM peak hours)

The remaining unsignalized study intersections are projected to operate at acceptable levels of service during both peak hours.

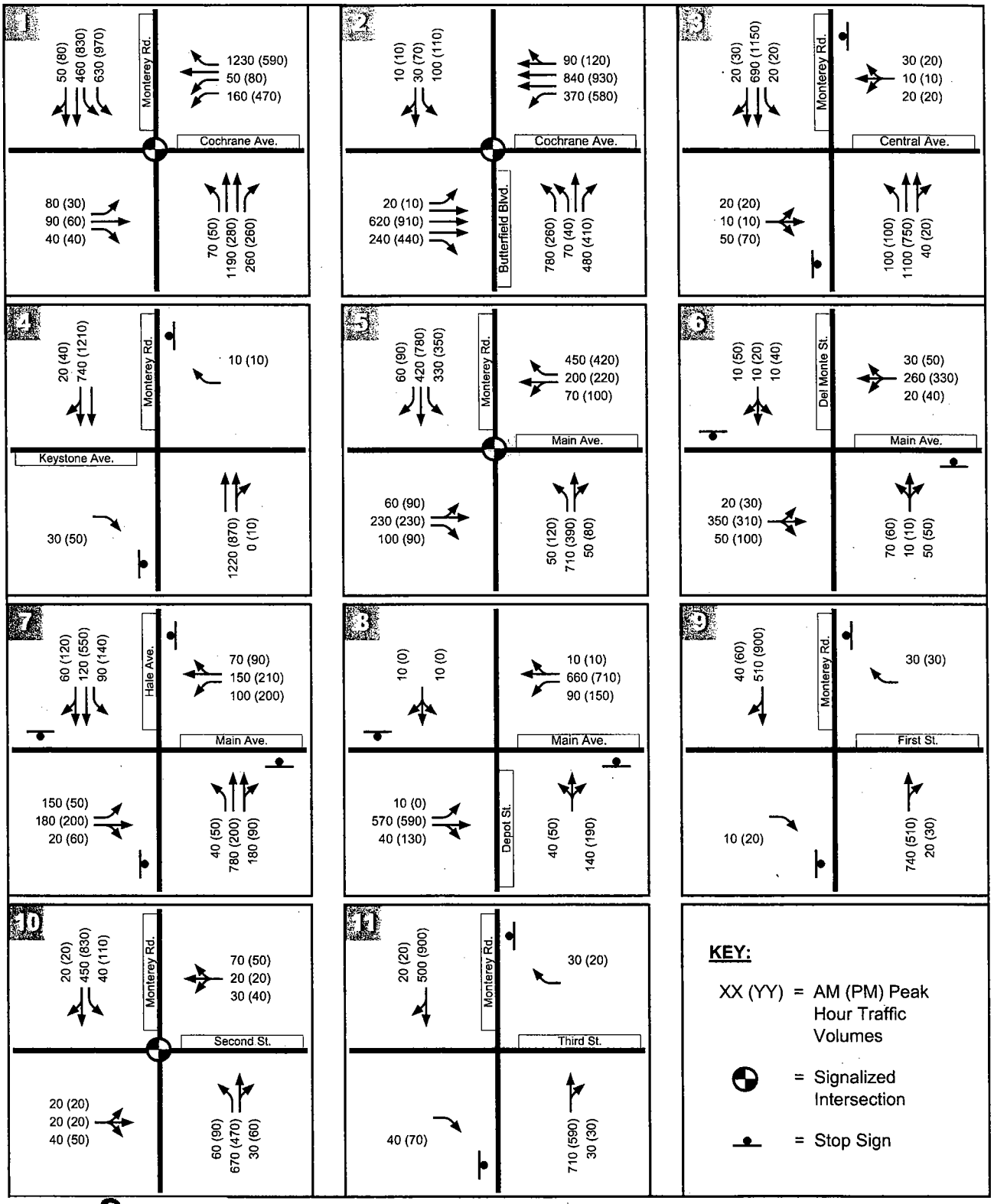

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FIGURE 10A

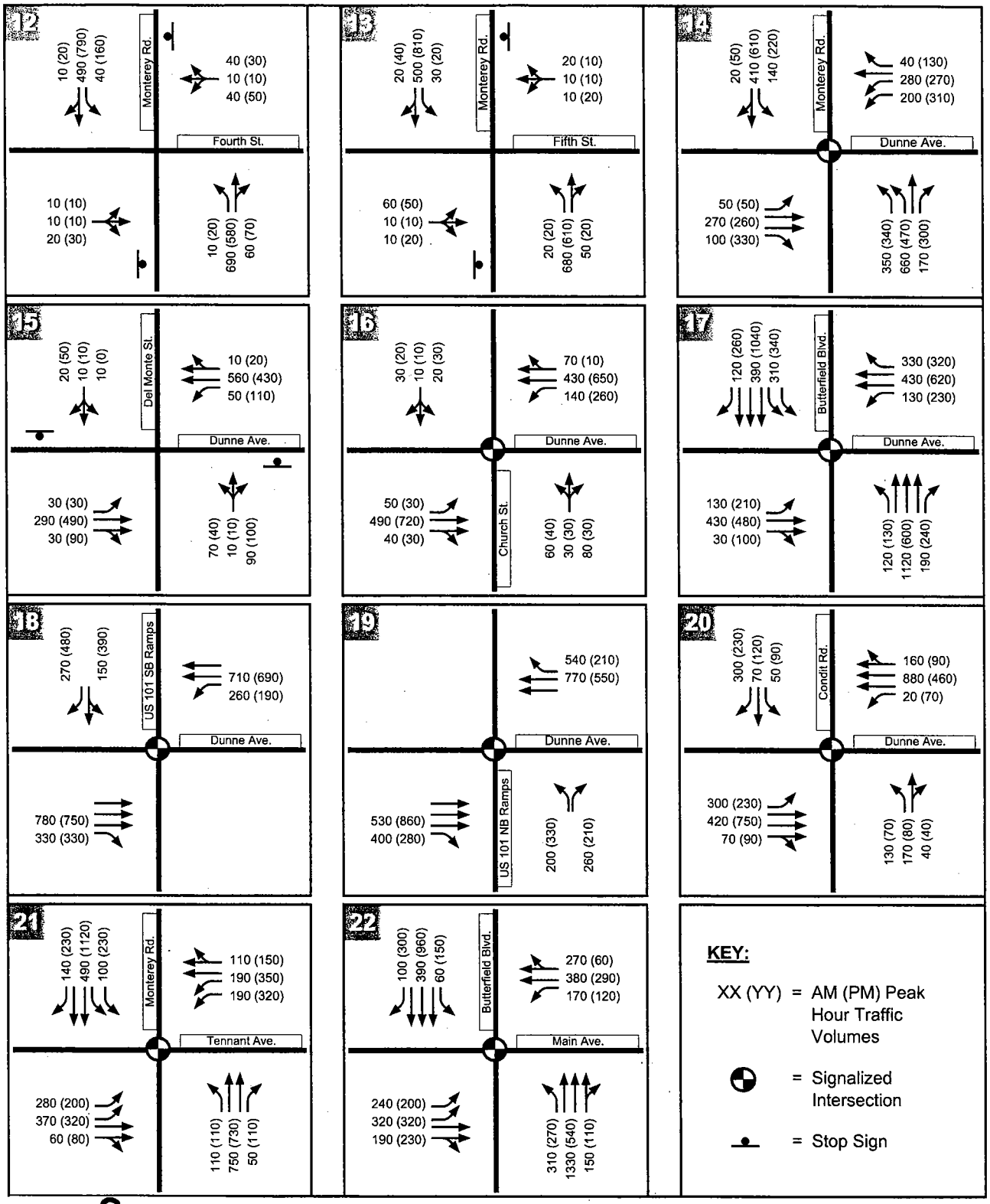

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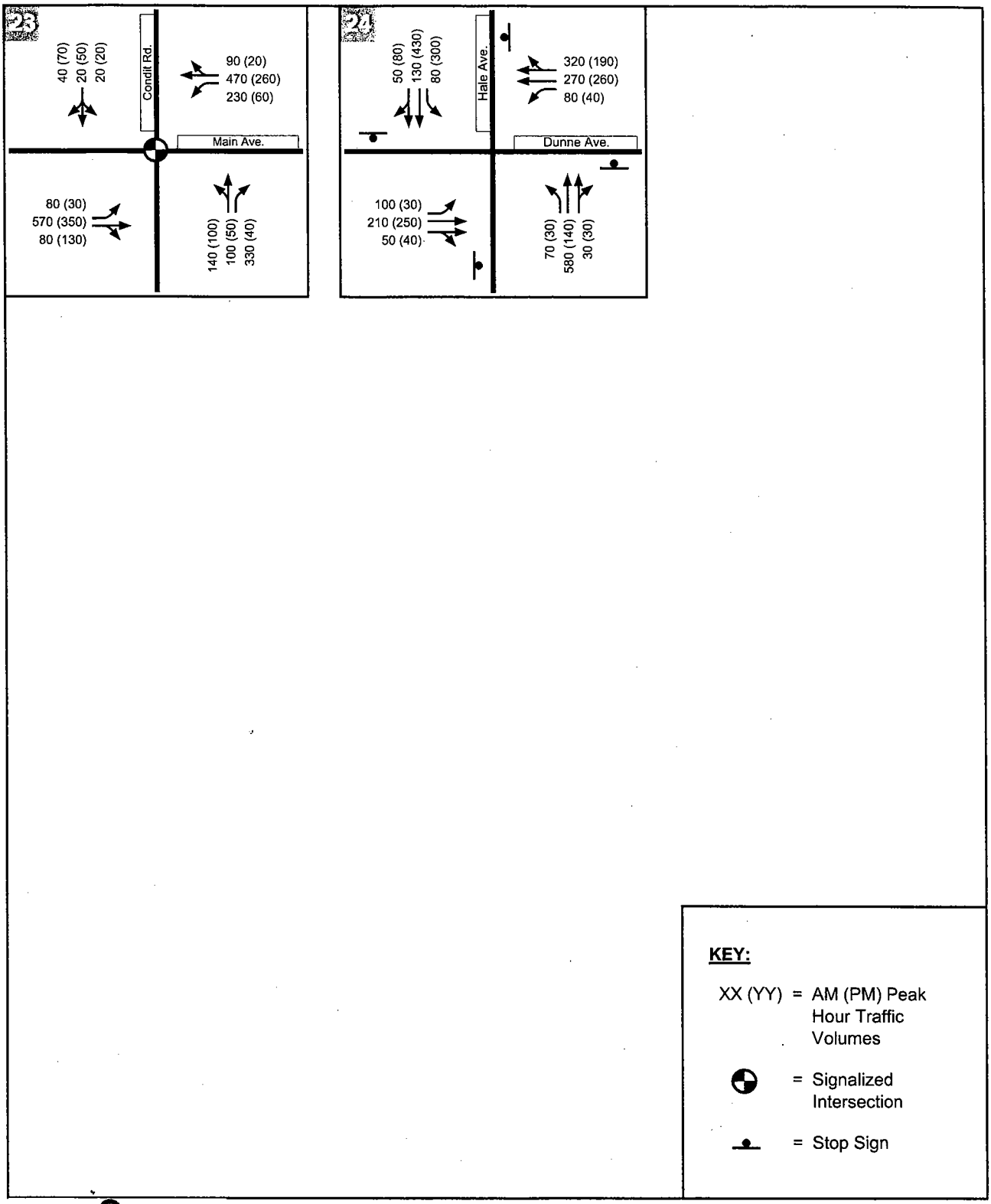
FIGURE 10B



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2030 CURRENT GP PLUS PROJ (ALT) INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

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FIGURE 10C

TABLE 19
EXISTING AND YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT (ALTERNATE NETWORK) INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control (Existing Conditions / Year 2015 Project Conditions)	Peak Hour	Existing		Year 2030 Current GP Plus Project (Alternate Network)						
			Delay[1]	LOS[2]	Delay[1]	LOS[2]	Δ in Crit V/C[3]	Δ in Crit Delay[4]	Signal Warrants Met?[5]	Does Not Meet Current LOS Std.[6]	Does Not Meet Proposed LOS Std[7]
1. Cochrane Rd and Monterey Rd	Signal	AM	27.6	C	32.4	C-	0.304	3.5	N/A		
		PM	29.1	C	35.3	D+	0.397	9.4	N/A		
2. Cochrane Rd and Butterfield Blvd	Signal	AM	16.7	B	36.5	D+	0.340	21.1	N/A		
		PM	13.0	B	33.9	C-	0.453	28.1	N/A		
3. Central Ave and Monterey Rd	Side-Street Stop	AM	16.0	C	>150	F	N/A	N/A	No	√	√
		PM	23.2	C	>150	F	N/A	N/A	No		
4. Monterey Rd and Keystone Ave	Side-Street Stop	AM	10.7	B	13.3	B	N/A	N/A	N/A		
		PM	10.5	B	14.4	B	N/A	N/A	N/A		
5. Main Ave and Monterey Rd[6]	Signal	AM	43.4	D	**102.2**	**F**	**0.582**	**89.7**	N/A	√	
		PM	42.4	D	**75.0**	**E**	**0.383**	**39.9**	N/A		
6. Main Ave and Del Monte St	Side-Street Stop	AM	13.5	B	18.3	C	N/A	N/A	N/A		
		PM	19.1	C	23.2	C	N/A	N/A	N/A		
7. Main Ave and Hale Ave	All-Way Stop	AM	11.0	B	**49.9**	**E**	N/A	N/A	Yes	√	
		PM	13.2	B	27.9	D	N/A	N/A	N/A		
8. Main Ave and Depot St	Side Street Stop	AM	15.9	C	**43.8**	**E**	N/A	N/A	Yes	√	
		PM	25.6	D	**84.6**	**F**	N/A	N/A	Yes		
9. 1st St and Monterey Rd	Side-Street Stop	AM	10.2	B	14.4	B	N/A	N/A	N/A		
		PM	10.9	B	16.7	C	N/A	N/A	N/A		
10. 2nd St and Monterey Rd	Signal	AM	10.7	B+	13.7	B	0.323	5.3	N/A		
		PM	12.5	B	15.4	B	0.373	4.8	N/A		
11. 3rd St and Monterey Rd	Side-Street Stop	AM	10.5	B	14.0	B	N/A	N/A	N/A		
		PM	11.1	B	18.5	C	N/A	N/A	N/A		
12. 4th St and Monterey Rd	Side-Street Stop	AM	14.2	B	43.9	E	N/A	N/A	No	√	
		PM	18.9	C	>150	F	N/A	N/A	No		
13. 5th St and Monterey Rd	Side-Street Stop	AM	17.9	C	67.0	F	N/A	N/A	No	√	
		PM	17.0	C	100.4	F	N/A	N/A	No		

TABLE 19
EXISTING AND YEAR 2030 CURRENT GENERAL PLAN PLUS PROJECT (ALTERNATE NETWORK) INTERSECTION LEVELS OF SERVICE

14. Dunne Ave and Monterey Rd	Signal	AM PM	28.6 36.6	C D+	34.6 **46.2**	C- **D**	0.286 **0.320**	7.3 **15.8**	N/A N/A	√	
15. Dunne Ave and Del Monte St	Side-Street Stop	AM PM	12.0 15.0	B B	19.6 26.2	C D	N/A N/A	N/A N/A	N/A N/A		
16. Dunne Ave and Church St	Signal	AM PM	18.8 19.5	B- B-	23.2 22.2	C C+	0.138 0.151	5.2 4.2	N/A N/A		
17. Dunne Ave and Butterfield Blvd	Signal	AM PM	30.7 39.4	C D	32.8 37.9	C- D+	0.025 0.006	0.9 -2.8	N/A N/A		
18. Dunne Ave and SB US 101 Ramps	Signal	AM PM	20.7 18.7	C+ B-	20.3 23.1	C+ C	0.136 0.022	1.7 5.1	N/A N/A		
19. Dunne Ave and NB US 101 Ramps	Signal	AM PM	14.4 12.7	B B	13.6 16.7	B B	0.028 0.023	-0.9 3.8	N/A N/A		
20. Dunne Ave and Condit Rd	Signal	AM PM	32.7 28.3	C- C	31.9 32.8	C C-	-0.001 0.016	-0.4 5.5	N/A N/A		
21. Tennant Ave and Monterey Rd	Signal	AM PM	25.6 32.8	C C-	33.6 31.6	C- C	0.047 0.055	8.6 0.7	N/A N/A		
22. Main Ave and Butterfield Blvd	Signal	AM PM	34.4 37.7	C- D+	36.6 **39.3**	D+ **D**	0.082 0.174	-1.7 2.3	N/A N/A	√	
23. Condit Road and Main Ave	Signal	AM PM	10.8 9.9	B+ A	10.9 8.6	B+ A	0.162 0.167	0.9 -1.9	N/A N/A		
24. Dunne Ave and Hale Ave	Future Intersection / All-Way Stop	AM PM	Future Intersection		28.6 21.5	D C	0.796 0.742	28.6 21.5	N/A N/A		

Notes:
1. Whole intersection weighted average control delay expressed in seconds per vehicle calculated using methods described in the *2000 HCM*, with adjusted saturation flow rates to reflect Santa Clara County Conditions for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
2. LOS = Level of service. LOS calculations conducted using the TRAFFIX LOS analysis software package.
3. Change in the critical volume-to-capacity ratio (V/C) between Existing and Year 2030 Current GP (Alternate Network) Conditions.
4. Change in Critical movement delay between Existing and Year 2030 Current GP Plus Project (Alternate Network) Conditions.
5. Peak hour signal warrant analysis completed for unacceptable unsignalized intersection operations.
6. Does not meet Current General Plan (GP) LOS Standard – Year 2030 Current GP Plus Project GP (Alternate Network) Conditions does not meet the LOS D+ standard at local signalized intersections (three intersections are allowed to operate at LOS D) and LOS E at freeway ramp intersections under the 2001 General Plan Circulation Element.
7. Does not meet Proposed General Plan (GP) LOS Standard – Year 2030 Current GP Plus Project GP (Alternate Network) Conditions does not meet the proposed General Plan Circulation Element LOS D standard at local intersections and LOS E and F at specified downtown, freeway access and regional intersections.
8. No feasible improvements are available to provide LOS D+ or better operations due to building and right-of-way constraints.

Significant impacts identified based on *2001 General Plan Circulation Element* LOS policy in **bold** text.
Source: Fehr & Peers, May 2009.

YEAR 2030 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) SIGNAL WARRANT ANALYSIS

Signal warrant analysis was conducted for each unsignalized study intersection operating at LOS E or F. The analysis applies the peak-hour traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices (2003)* and associated State guidelines. Under Year 2030 Current General Plan Plus Project (Alternate Network) Conditions, the unsignalized study intersection of Main Avenue/Hale Avenue (during the AM peak hour) and Main Avenue/Depot Street (during both the AM and PM peak hours) would meet the peak-hour warrant criteria for signalization. The remaining unsignalized intersections operating at LOS E or F are not expected to meet the peak-hour criteria. The signal warrant worksheets are included in Appendix D.

This analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The City of Morgan Hill should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

SIGNIFICANT IMPACT CRITERIA

The significance criteria is the same used to identify impacts in Chapter 7 for the Year 2030 Current General Plan Plus Project Conditions.

YEAR 2030 CURRENT GP PLUS PROJECT (ALTERNATE NETWORK) IMPACTS AND MITIGATION MEASURES

Intersections

Based on the impact criteria listed above, the proposed project would have a **significant impact** at Monterey Road/Main Avenue, Main Avenue/Hale Avenue, Main Avenue/Depot Street, Monterey Road/Dunne Avenue, and Main Avenue/Butterfield Boulevard intersections under Year 2030 Current GP Plus Project (Alternate Network) Conditions. The following measures are recommended to mitigate the significant impacts. Appendix E contains the corresponding mitigation calculation sheets.

- *Monterey Road/Main Avenue* – Under Year 2030 Current GP Plus Project (Alternate Network) Conditions the intersection operations are projected to be exacerbated during the AM and PM peak hours compared to Existing Conditions. The following improvements would mitigate the impact and improve the intersection operations to LOS D+ (36.6 seconds of average delay) during the AM peak hour and LOS D+ (37.0 seconds of average delay) during the PM peak hour:
    - Install protected east/west phasing with modifications to the eastbound approach (i.e., a left-turn lane and a shared-through right) and widening the westbound approach (i.e., separate left, through, and right lane with an overlap phase).

- The southbound approach would need to be widened to include two southbound left-turn lanes, a through lane, and right lane and the northbound approach would include a northbound left-turn lane, a through lane, and a shared through-right lane. The northbound approach would conflict with the potential narrowing of Monterey Road from four to two lanes between Main Avenue and either 5th Street or Dunne Avenue.

However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location would be considered ***significant and unavoidable***.

Main Avenue/Hale Avenue – Under the Year 2030 Current GP Plus Project (Alternate Network) Conditions the unsignalized intersection operations are projected to degrade to an unacceptable level of service (LOS E) during the AM peak hour. In addition, the peak hour warrant is exceeded during the AM peak hour. Providing a signal at this location would reduce this impact to a **less than significant** level and provide acceptable (LOS D+ or better) operations during both peak hours. It should be noted that the recommendation for a signal is also identified in the recommended roadway network for the General Plan Circulation Element update that is in process.

Main Avenue/Depot Street – Under the Year 2030 Current GP Plus Project (Alternate Network) Conditions the unsignalized intersection operations are projected to degrade to an unacceptable level of service (LOS E and LOS F) during both peak hours. In addition, the peak hour warrant is exceeded during both peak hours. Providing a signal at this location would reduce this impact to a **less than significant** level and provide acceptable (LOS D+ or better) operations during both peak hours. It should be noted that the recommendation for a signal is also identified in the recommended roadway network for the General Plan Circulation Element update that is in process.

Monterey Road/Dunne Avenue – The intersection of Monterey Road/Dunne Avenue is projected to degrade from an acceptable (LOS D+ under Existing Conditions) to an unacceptable level of service (LOS D) under Year 2030 Current GP Plus Project (Alternate Network) Conditions during the PM peak hour. This impact is due to the narrowing of Monterey Road from four (4) to two (2) lanes between Main Avenue and Dunne Avenue. This intersection requires an eastbound right-turn overlap phase, and a southbound approach with a left-turn, through lane and shared through-right lane to operate acceptably (LOS D+ or better). The project impact at this location would be considered **less than significant** with this proposed modification. This configuration would be inconsistent with narrowing Monterey Road from four to two-lanes between Dunne Avenue and 5th Street. Thus, a modification of the proposed narrowing would be required to mitigate this impact.

During a future Monterey Road streetscape planning process, the City of Morgan Hill should explore the feasibility and desirability of incorporating this mitigation measure, to retain additional lanes in the block of Monterey Road between Dunne and Fifth Street. However, should the City of Morgan Hill implement the narrowing of Monterey Road at Dunne Avenue to achieve the Monterey Road streetscape objectives (rather than between Dunne Avenue and Fifth Street) this impact would remain **significant and unavoidable**.

Main Avenue/Butterfield Boulevard – The intersection of Main Avenue/Butterfield Boulevard is projected to degrade from an acceptable (LOS D+ under Existing Conditions) to an unacceptable level of service (LOS D) under Year 2030 Current GP Plus Project (Alternate Network) Conditions during the PM peak hour. This intersection requires a second northbound left-turn to operate acceptably (LOS D+ or better) under Year 2030 Current GP Plus Project (Alternate Network) Conditions. However, this improvement may require right-of-way from the northwest and southeast corners of the intersection, and physical constraints exist along the east side of Butterfield Boulevard due to the open canal. Overall, the implementation of a second northbound left-turn lane is considered physically feasible and would mitigate this impact to a less than significant level.

The unsignalized Monterey Road/Central Avenue, Monterey Road/Forth Street, and Monterey Road/Fifth Street intersections are expected to operate at unacceptable levels during the AM and/or PM peak hours. However, these intersections would not meet the Peak Hour Warrant for traffic signal installation during either peak hour.[6] Based on the impact criteria described above, the proposed project would have a **less-than-significant** impact on these study unsignalized intersections. Therefore, no mitigation measures are required; however, the City of Morgan Hill should continue to monitor these locations and conduct an engineering study to evaluate the need for signals and/or turn movement restrictions as appropriate to maintain acceptable intersection operations.

Freeway Segments

The project would not add more than one percent of the freeway segment's capacity to any of the study freeway segments. Therefore, the project would have a **less-than-significant** impact to the study freeway segments under Year 2030 Current General Plan Plus Project (Alternate Network) Conditions. No mitigation measures are necessary.

PROPOSED TIERED LEVEL OF SERVICE POLICY GENERAL PLAN AMENDMENT

As described in Chapter 4, the City of Morgan Hill is proposing to change the Citywide peak hour LOS policy from LOS D+ to LOS D exemption from the policy in the Downtown area (i.e., allowing LOS E and F), as well as select locations where LOS E would be considered acceptable.

The impacts of the project under the Year 2030 Current General Plan Plus Project (Alternate Network) Conditions scenario using the proposed level of service policy are identified and compared to the previous policy. The following intersections are projected to have a significant impact under the Year 2030 Current General Plan Plus Project (Alternate Network) scenario with the existing LOS policy:

- Main Avenue/Monterey Road (LOS F, AM peak hour and LOS E, PM peak hour)
- Main Avenue/Hale Avenue (LOS E, AM peak hour)
- Main Avenue/Depot Street (LOS E, AM peak hour and LOS F, PM peak hour)
- Dunne Avenue/Monterey Road (LOS D, PM peak hour)
- Main Avenue/Butterfield Boulevard (LOS D, PM peak hour)

The proposed policy would establish an LOS F standard at the Monterey Road/Main Avenue, Main Avenue/Depot Street, and Monterey Road/Dunne Avenue intersections. These intersections would be considered to operate at an acceptable LOS during both peak hours under the proposed policy. The level of service under the proposed policy would establish an LOS E standard at the Main Avenue/Hale Avenue and Main Avenue/Butterfield Boulevard intersections.

[6] The use of peak-hour signal warrants is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. The traffic analysis presented in the document estimates future development-generated traffic compared against a sub-set (peak-hour warrant) of the standard traffic signal warrants recommended in the Manual of Uniform Traffic Control Devices (MUTCD), Federal Highway Administration 2000 and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

The significant impacts identified above under the Year 2030 Current General Plan Plus Project (Alternate Network) Conditions at the above intersections would not be considered a significant impact using the proposed level of service policy.

9. YEAR 2030 CUMULATIVE GENERAL PLAN AMENDMENT CONDITIONS

This chapter describes the projected traffic operations under Year 2030 Conditions with the proposed project and all of the proposed General Plan Amendments (GPA) in place. Fehr & Peers conducted a General Plan Circulation Element traffic impact analysis that identified the appropriate transportation roadway network needed to support the future network and land use changes. The City's travel demand forecasting model was used to estimate Year 2030 Cumulative GPA Condition traffic volumes for this project as well as the General Plan Circulation Element study. This scenario includes model-recommended roadway traffic volumes plus vehicle trips generated by the new GPA land uses, as well as changes in travel patterns caused by proposed GPA roadway network changes. The proposed GPA land use and network assumptions are briefly discussed and followed by a more detailed discussion of the resulting transportation operations.

ROADWAY NETWORK GENERAL PLAN AMENDMENTS

The Year 2030 Cumulative GPA roadway network includes the "Model-Recommended Roadway Capacity General Plan Amendments" described in Chapter 4 of the General Plan Circulation Element Analysis conducted by Fehr & Peers. In addition, four City-initiated roadway network amendments were included to study possible further modifications of the planned roadway network as described below:

- Monterey Road narrowed to a 2-lane arterial between Main Avenue and Dunne Avenue - The Monterey Road narrowing removes a northbound and southbound through lane from the intersections at Main Avenue/Monterey Road, and Dunne Avenue/Monterey Road. The purpose of this modification is to allow for wider sidewalks, increased on-street parking supply, and enhancement of the downtown area as a more walkable, bikeable, and transit-friendly environment.

- Removal of the planned Dunne Avenue Grade Separation – The current General Plan includes a planned grade separation at the Dunne Avenue railroad crossing, which requires the closure of Depot Street at Dunne Avenue. However, the existing connection of Depot Street to Dunne Avenue would remain if the grade separation is not built. With this proposal, traffic on Dunne Avenue would continue to stop for trains as they pass through the City and would continue to experience temporary delays.

- Walnut Grove Extension Realignment – The current alignment would extend from Walnut Grove Drive south to Laurel Road. The realignment is proposed to connect to Diana Avenue west of the currently planned extension by approximately 1,500 feet.

- San Pedro Avenue – Rather than connecting San Pedro Avenue to Spring Avenue as planned in the *2001 General Plan Circulation Element,* the proposed amendment maintains existing alignment with modifications to intersection control and access on Monterey Road at Spring Avenue and San Pedro Avenue.

LAND USE GENERAL PLAN AMENDMENTS (GPAs) AND URBAN SERVICE AREA AMENDMENTS (USAs)

The City of Morgan Hill provided the following changes in land uses and roadway network based on the pending GPAs:

- Downtown Specific Plan: This amendment also includes Downtown Redevelopment, Dunne Avenue/Depot Street: This application proposes to redevelop the Downtown area with approximately 1,400 residential units and approximately 390,000 s.f. of retail space. The Downtown area is

generally bounded by Depot Street on the east, Dunne Avenue on the south, Del Monte Street on the west and Main Avenue on the north.

- West Hills Community Church USA: Add parcels totaling 8.7 acres into the Urban Service Area and replace approximately 11,600 s.f. of church and school space with approximately 20,000 s.f. of the same land use.

- Peet – Trumpp USA: Add 6 acres of single family residences on the west side of Peet Road and north of Half Road into the Urban Service Area.

- Monterey – Morgan Hill Bible Church GPA and USA: Add parcels totaling 8.7 acres into the Urban Service Area and replace approximately 11,600 s.f. of church and school space with approximately 20,000 s.f. of the same land use.

- Watsonville – Royal Oaks GPA and USA: Change one parcel from Single Family Medium (3-5 du/ac) to Light Commercial/Residential on 8.19 acres at the southwest corner of Watsonville Road and Monterey Road, and change a second parcel from Single Family Medium to Multi-Family Medium (14-21 du/ac) on 7.5 acres on the Watsonville Road, west of Monterey Road.

- Walnut Grove/Simonsen – DeRose Applications (GPA): Amend General Plan Land Use Designation from Multi-Family Low and Commercial to 100 percent Commercial. The anticipated square footage for the development will be approximately 113,500 s.f.

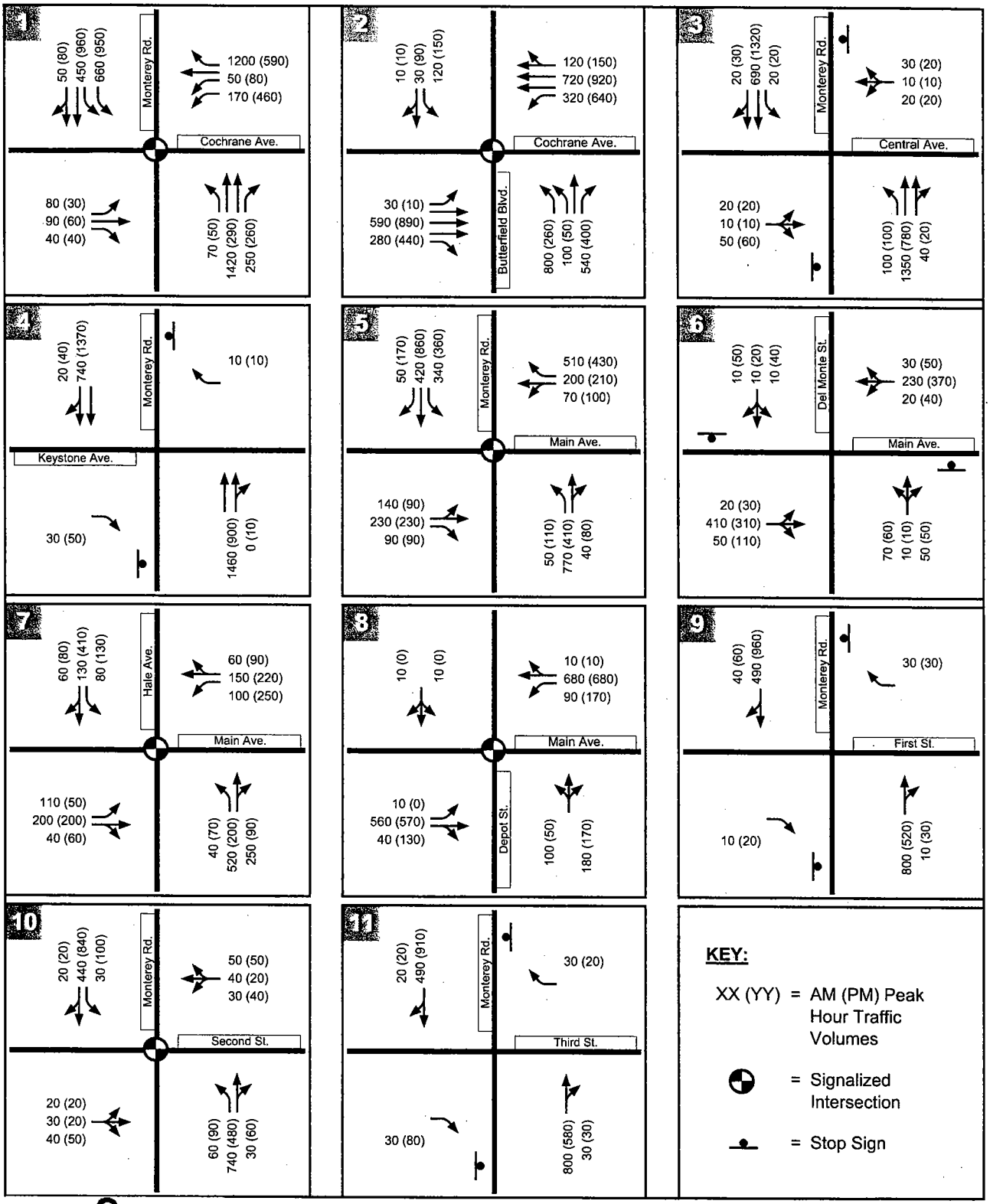
- Hale-Signature Properties GPA: The proposed GPA will amend 30 vacant acres from Public Facilities to Single Family Residential to accommodate approximately 120 units in the Single Family Medium (3-5 du/acre) designation and/or a new Single Family High (5-11 du/acre) land use designation the City is creating in conjunction with its 2009 Housing Element Update. The subject area is bounded by the Union Pacific Railroad tracks to the east, residential land use to the south (Campoli Drive) and north (Tarragon Avenue), and Hale Avenue to the west.

- Berg & Berg GPA: The proposed GPA will amend approximately 56 acres of Industrial to a combination of Commercial and Multi-Family Low, Multi-Family Medium, and the new Single Family High (5-11 du/acre) land use designation the City is creating in conjunction with its 2009 Housing Element Update. The proposed land uses include approximately 446 small-lot single family residential units (which may be "senior housing" but which are analyzed as standard housing units), about 60 apartment units, and about 25,000 square feet of retail commercial uses. This project is generally bounded by the Union Pacific Railroad tracks to the west, Jarvis Drive to the north, Sutter Boulevard to the south, Butterfield Boulevard to the east.

The General Plan Circulation Element Analysis provides detailed description of the ratio of jobs to dwelling units and students to dwelling units for Morgan Hill, Gilroy, Coyote Valley and the entire model area for 2030 Model-Recommended Roadway Conditions and 2030 Cumulative GPA.

YEAR 2030 CUMULATIVE TRAFFIC VOLUME ESTIMATES

The proposed land use and network changes were added to the City's travel demand model and AM and PM peak-hour forecasts were generated. **Figures 11A – 11C** present the Year 2030 Cumulative GPA volumes for the study intersections.



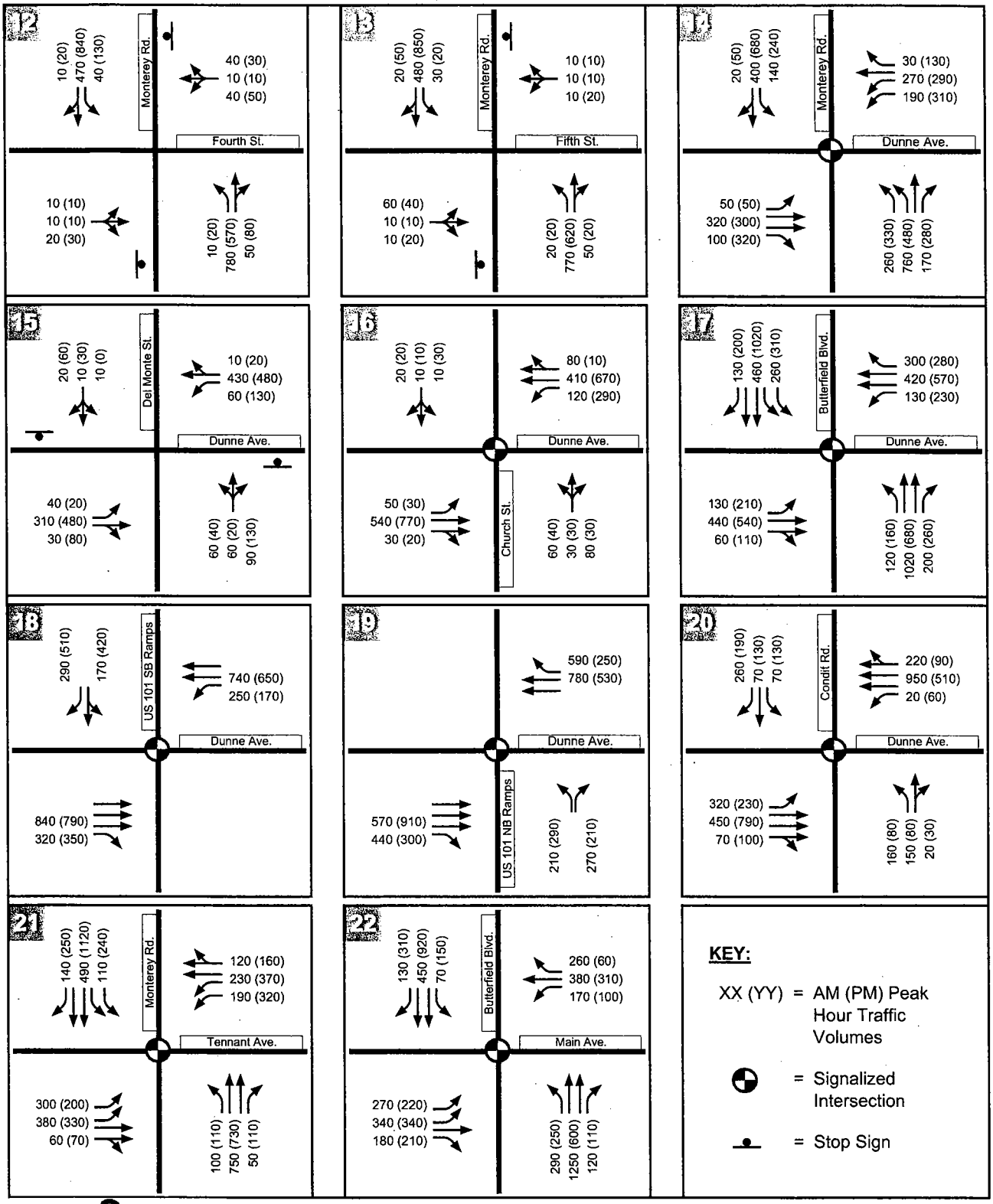
Morgan Hill Downtown Specific Plan Draft TIA

FEHR & PEERS TRANSPORTATION CONSULTANTS

2030 CUMULATIVE GP AMENDMENT INTERSECTION LANE GEOMETRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

May 2009
SJ08-1039

FIGURE 11A



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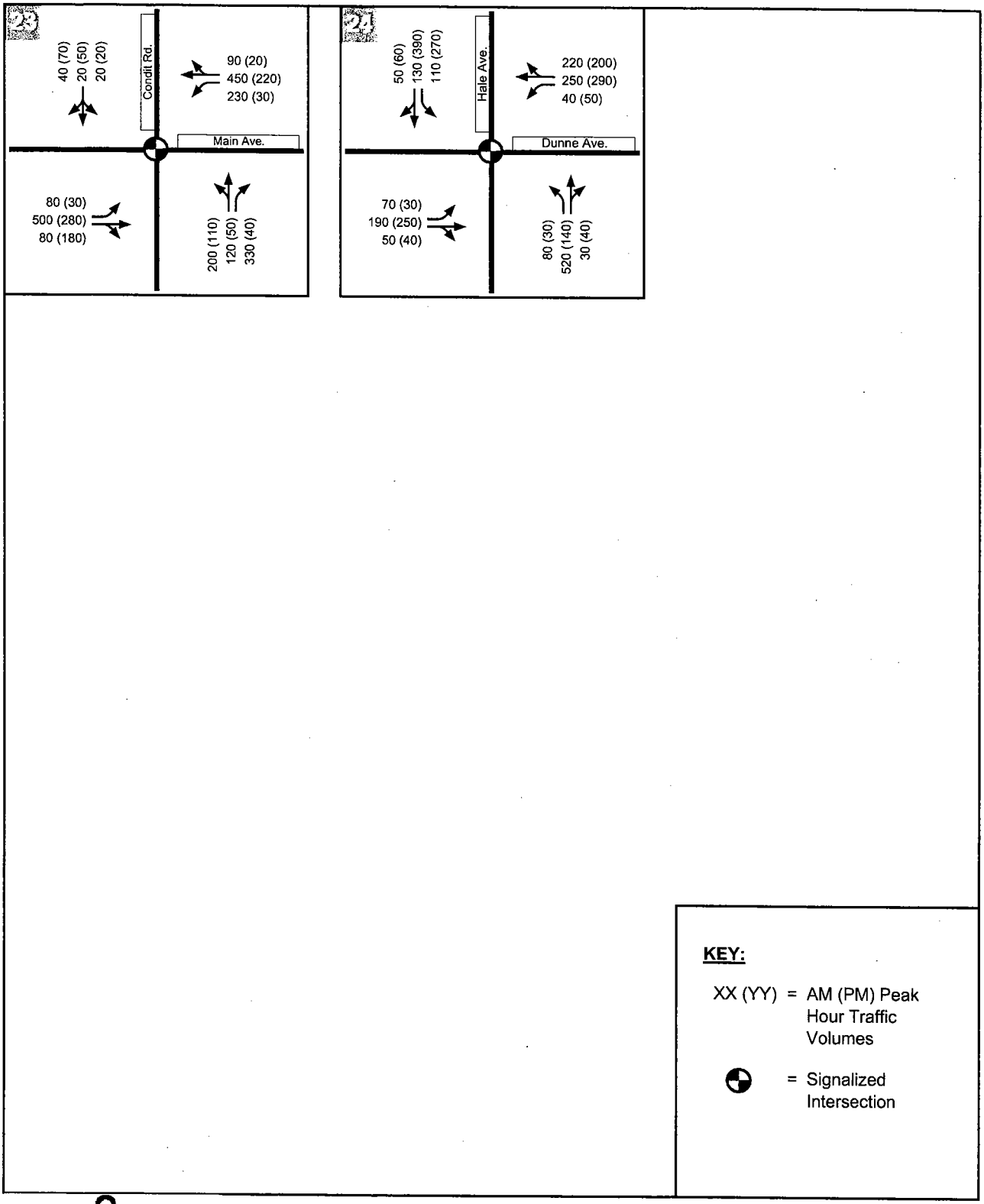
TRANSPORTATION CONSULTANTS

2030 CUMULATIVE GP AMENDMENT INTERSECTION LANE GEO -METRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

May 2009
SJ08-1039

FIGURE 11B



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2030 CUMULATIVE GP AMENDMENT INTERSECTION LANE GEO -METRY, INTERSECTION CONTROLS, AND PEAK-HOUR VOLUMES

May 2009
SJ08-1039

FIGURE 11C

YEAR 2030 CUMULATIVE INTERSECTION LEVELS OF SERVICE

Intersection LOS was calculated for 2030 Cumulative GPA Conditions. The results including the change in critical delay and V/C between 2030 Cumulative GPA and Existing Conditions are presented in Table 20. The corresponding LOS calculation sheets are included in Appendix C.

Under 2030 Cumulative GPA Conditions, the following signalized intersections would operate at LOS D or worse during one or both peak hours.

- Monterey Road/Main Avenue (LOS F, AM and PM peak hours)
- Monterey Road/Dunne Avenue (LOS D, PM peak hour)
- Butterfield Boulevard/Dunne Avenue (LOS D, PM peak hour)
- Butterfield Boulevard/Main Avenue (LOS D, AM and PM peak hours)

The following five unsignalized study intersections are projected to continue to operate at LOS E or F during one or both peak hours:

- Monterey Road/Central Avenue (LOS F, AM and PM peak hours)
- Monterey Road/Fourth Street (LOS F, AM and PM peak hours)
- Monterey Road/Fifth Street (LOS F, AM and PM peak hours)
- Del Monte Avenue/Dunne Avenue (LOS E, AM peak hour and LOS F, PM peak hour)

The remaining study intersections would operate at acceptable levels of service during both peak hours.

TABLE 20
EXISTING AND YEAR 2030 CUMULATIVE GENERAL PLAN AMENDMENT
INTERSECTION LEVELS OF SERVICE

Intersection	Traffic Control (Existing Conditions / Year 2030 Cumulative GPA Conditions)	Peak Hour	Existing		Year 2030 Cumulative General Plan Amendment						
			Delay[1]	LOS[2]	Delay[1]	LOS[2]	Δ in Crit V/C[3]	Δ in Crit Delay[4]	Signal Warrants Met?[5]	Does Not Meet Current LOS Std.[6]	Does Not Meet Proposed LOS Std[7]
1. Cochrane Rd and Monterey Rd	Signal	AM	27.6	C	34.1	C-	0.386	5.5	N/A		
		PM	29.1	C	34.5	C-	0.387	9.1	N/A		
2. Cochrane Rd and Butterfield Blvd	Signal	AM	16.7	B	36.2	D+	0.341	21.2	N/A		
		PM	13.0	B	37.3	D+	0.475	31.3	N/A		
3. Central Ave and Monterey Rd	Side-Street Stop	AM	16.0	C	>150	F	N/A	N/A	No	√	√
		PM	23.2	C	>150	F	N/A	N/A	No		
4. Monterey Rd and Keystone Ave	Side-Street Stop	AM	10.7	B	15.0	C	N/A	N/A	N/A		
		PM	10.5	B	15.8	C	N/A	N/A	N/A		
5. Main Ave and Monterey Rd[6]	Signal	AM	43.4	D	**139.0**	**F**	**0.706**	**138.5**	N/A	√	
		PM	42.4	D	**80.6**	**F**	**0.430**	**51.5**	N/A		
6. Main Ave and Del Monte St	Side-Street Stop	AM	13.5	B	19.4	C	N/A	N/A	N/A		
		PM	19.1	C	25.2	D	N/A	N/A	N/A		
7. Main Ave and Hale Ave	All-Way Stop/Signal	AM	11.0	B	33.5	C-	0.766	31.5	N/A		
		PM	13.2	B	32.5	C-	0.692	34.1	N/A		
8. Main Ave and Depot St	Side Street Stop/Signal	AM	15.9	C	20.9	C+	0.603	21.5	N/A		
		PM	25.6	D	18.8	B-	0.672	26.6	N/A		
9. 1st St and Monterey Rd	Side-Street Stop	AM	10.2	B	15.1	C	N/A	N/A	N/A		
		PM	10.9	B	17.8	C	N/A	N/A	N/A		
10. 2nd St and Monterey Rd	Signal	AM	10.7	B+	13.9	B	0.360	5.4	N/A		
		PM	12.5	B	15.4	B	0.379	4.9	N/A		
11. 3rd St and Monterey Rd	Side-Street Stop	AM	10.5	B	15.3	C	N/A	N/A	N/A		
		PM	11.1	B	19.3	C	N/A	N/A	N/A		
12. 4th St and Monterey Rd	Side-Street Stop	AM	14.2	B	52.7	F	N/A	N/A	No	√	
		PM	18.9	C	>150	F	N/A	N/A	No		
13. 5th St and Monterey Rd	Side-Street Stop	AM	17.9	C	79.4	F	N/A	N/A	No	√	
		PM	17.0	C	94.0	F	N/A	N/A	No		
14. Dunne Ave and Monterey Rd	Signal	AM	28.6	C	34.7	C-	0.339	8.3	N/A	√	
		PM	36.6	D+	**48.2**	**D**	**0.353**	**19.1**	N/A		

TABLE 20
EXISTING AND YEAR 2030 CUMULATIVE GENERAL PLAN AMENDMENT
INTERSECTION LEVELS OF SERVICE

15. Dunne Ave and Del Monte St	Side-Street Stop	AM PM	12.0 15.0	B B	37.4 **73.8**	E **F**	N/A **N/A**	N/A **N/A**	No Yes	√	
16. Dunne Ave and Church St	Signal	AM PM	18.8 19.5	B- B-	22.6 22.9	C+ C+	0.124 0.185	4.3 5.3	N/A N/A		
17. Dunne Ave and Butterfield Blvd	Signal	AM PM	30.7 39.4	C D	32.9 39.5	C- D	0.100 0.141	0.9 0.7	N/A N/A	√	
18. Dunne Ave and SB US 101 Ramps	Signal	AM PM	20.7 18.7	C+ B-	20.8 23.2	C+ C	0.136 0.041	1.7 5.1	N/A N/A		
19. Dunne Ave and NB US 101 Ramps	Signal	AM PM	14.4 12.7	B B	13.7 15.4	B B	0.037 0.007	-0.6 2.7	N/A N/A		
20. Dunne Ave and Condit Rd	Signal	AM PM	32.7 28.3	C- C	32.3 32.3	C- C-	0.032 0.007	0.3 5.1	N/A N/A		
21. Tennant Ave and Monterey Rd	Signal	AM PM	25.6 32.8	C C-	34.1 31.7	C- C	0.065 0.055	10.3 0.7	N/A N/A		
22. Main Ave and Butterfield Blvd	Signal	AM PM	34.4 37.7	C- D+	**39.3** **39.1**	**D** **D**	**0.197** **0.264**	**2.4** **3.0**	N/A N/A	√	
23. Condit Road and Main Ave	Signal	AM PM	10.8 9.9	B+ A	11.3 9.1	B+ A	0.119 0.161	0.6 -1.5	N/A N/A		
24. Dunne Ave and Hale Ave	Future Intersection / Signal	AM PM	Future Intersection		28.0 26.0	C C	0.692 0.593	29.9 25.0	N/A N/A		

Notes:
1. Whole intersection weighted average control delay expressed in seconds per vehicle calculated using methods described in the *2000 HCM*, with adjusted saturation flow rates to reflect Santa Clara County Conditions for signalized intersections. Total control delay for the worst movement is presented for side-street stop-controlled intersections.
2. LOS = Level of service. LOS calculations conducted using the TRAFFIX LOS analysis software package.
3. Change in the critical volume-to-capacity ratio (V/C) between Existing and Year 2030 Current GP (Alternate Network) Conditions.
4. Change in Critical movement delay between Existing and Year 2030 Current GP Plus Project (Alternate Network) Conditions.
5. Peak hour signal warrant analysis completed for unacceptable unsignalized intersection operations.
6. Does not meet Current General Plan (GP) LOS Standard – Year 2030 Current GP Plus Project GP (Alternate Network) Conditions does not meet the LOS D+ standard at local signalized intersections (three intersections are allowed to operate at LOS D) and LOS E at freeway ramp intersections under the 2001 General Plan Circulation Element.
7. Does not meet Proposed General Plan (GP) LOS Standard – Year 2030 Current GP Plus Project GP (Alternate Network) Conditions does not meet the proposed General Plan Circulation Element LOS D standard at local intersections and LOS E and F at specified downtown, freeway access and regional intersections.
8. No feasible improvements are available to provide LOS D+ or better operations due to building and right-of-way constraints.

Significant impacts identified based on *2001 General Plan Circulation Element* LOS policy in **bold text**.
Source: Fehr & Peers, May 2009.

YEAR 2030 CUMULATIVE SIGNAL WARRANT ANALYSIS

The peak-hour signal warrant from the *Manual on Uniform Traffic Control Devices* (MUTCD) was evaluated for the unsignalized intersections that operate unacceptably under Year 2030 Cumulative GPA Conditions to determine if a traffic signal is warranted. The result of the peak-hour warrant analysis indicates that none of the intersections satisfy the peak hour warrant analysis with the exception of Dunne Avenue and Del Monte Avenue (see **Appendix D**).

This analysis is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. It estimates future development-generated traffic compared against a sub-set of the standard traffic signal warrants recommended in the Federal Highway Administration *Manual on Uniform Traffic Control Devices* and associated California MUTCD guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated by an experienced engineer based on field-measured rather than forecast traffic data and a thorough study of traffic and roadway conditions. Furthermore, the decision to install a signal should not be based solely upon the warrants, since the installation of signals can lead to certain types of collisions. The City of Morgan Hill should undertake regular monitoring of actual traffic conditions and accident data, and timely re-evaluation of the full set of warrants to prioritize and program intersections for signalization.

YEAR 2030 CUMULATIVE IMPACTS INTERSECTION IMPACTS AND MITIGATION

The impacts of the proposed General Plan Circulation Element were evaluated by comparing intersection operations with the Year 2030 Cumulative GPA Conditions to Existing Conditions. Using the *2001 General Plan Circulation Element* LOS policies and the significance criteria described in Chapter 4 this scenario would have a significant cumulative traffic impact at four (4) intersections. The following physical intersection improvements are recommended to mitigate the significant impacts:

- *Main Avenue and Monterey Road (AM and PM peak hour)* – Operations at this location are projected to be LOS F with >120 seconds of average delay and 80.6 seconds of delay during the AM and PM peak hours, respectively. Due to the proximity of existing buildings, widening of Main Street is considered infeasible and would not allow for the mitigation of this impact. The following improvements would mitigate the impact and improve the intersection operations to LOS D (39.1 seconds of average delay) during the AM peak hour and LOS C- (34.0 seconds of average delay) during the PM peak hour:

    - Install protected east/west phasing with modifications to the eastbound approach (i.e., a left-turn lane and a shared-through right) and widening the westbound approach (i.e., separate left, through, and right lane with an overlap phase).

    - The southbound approach would need to be widened to include two southbound left-turn lanes, a through lane, and a shared through-right lane and the northbound approach would include a northbound left-turn lane, a through lane, and a shared through-right lane. The northbound and southbound approach would conflict with the potential narrowing of Monterey Road from four to two lanes between Main Avenue and either 5th Street or Dunne Avenue.

  However, widening of Main Avenue is considered infeasible due to the proximity of existing buildings. Therefore, the project impact at this location is considered ***significant and unavoidable***.

- *Main Avenue and Butterfield Boulevard (AM and PM peak hour)* – Operations at this location are projected to be LOS D (39.3 seconds of average delay) and D (39.1 seconds of average delay) during the AM and PM peak hours, respectively. This intersection requires a second northbound

left-turn to operate acceptably (LOS D+ or better) under 2030 Cumulative GPA Conditions. However, this improvement may require right-of-way from the northwest and southeast corners of the intersection, and physical constraints exist along the east side of Butterfield Boulevard due to the open canal. Overall, the implementation of a second northbound left-turn lane is considered physically feasible and would mitigate this impact to a less than significant level.

- *Dunne Avenue and Del Monte Street (PM peak hour)* – Operations at this location are projected to be LOS E with 37.4 seconds of average approach delay and LOS F with 73.8 seconds of average approach delay during the AM and PM peak hours, respectively. The peak-hour traffic volumes at this intersection would meet the peak-hour signal warrant and installation of a traffic signal would mitigate the impact at this intersection and provide LOS C (20.6 seconds of average delay) and LOS C+ (20.8 seconds of average delay) operations during the AM and PM peak hour.

- *Dunne Avenue and Monterey Road (PM peak hour)* – Operations at this location are projected to be LOS D (48.2 seconds of average delay) during the PM peak hour. This intersection requires an eastbound right-turn overlap phase, and a southbound approach with a left-turn, through lane and shared through-right lane to operate acceptably (LOS D+ or better). This configuration would be consistent with narrowing Monterey Road from four to two-lanes between Dunne Avenue and 5th Street, which is the alternative narrowing location of Monterey Road streetscape project. However, should the City of Morgan Hill implement the narrowing of Monterey Road at Dunne Avenue to achieve the Monterey Road streetscape objectives (rather than between Dunne Avenue and 5th Street) this impact would remain **significant and unavoidable**.

Appendix E contains the corresponding mitigation calculation sheets.

The unsignalized Monterey Road/Central Avenue, Monterey Road/Fourth Street, and Monterey Road/Fifth Street intersections are expected to operate at unacceptable levels during the AM and/or PM peak hours. However, these intersections would not meet the Peak Hour Warrant for traffic signal installation during either peak hour.[7] Based on the impact criteria described above, the proposed project would have a **less-than-significant** impact on these study unsignalized intersections. Therefore, no mitigation measures are required; however, the City of Morgan Hill should continue to monitor these locations and conduct an engineering study to evaluate the need for signals and/or turn movement restrictions as appropriate to maintain acceptable intersection operations.

PROPOSED TIERED LEVEL OF SERVICE POLICY GENERAL PLAN AMENDMENT

As described in Chapter 4, the City of Morgan Hill is proposing to change the Citywide peak hour LOS policy from LOS D+ to LOS D with exemption from the policy in the Downtown area (i.e., allowing LOS E and F), as well as select locations where LOS E would be considered acceptable.

[7] The use of peak-hour signal warrants is intended to examine the general correlation between the planned level of future development and the need to install new traffic signals. The traffic analysis presented in the document estimates future development-generated traffic compared against a sub-set (peak-hour warrant) of the standard traffic signal warrants recommended in the Manual of Uniform Traffic Control Devices (MUTCD), Federal Highway Administration 2000 and associated State guidelines. This analysis should not serve as the only basis for deciding whether and when to install a signal. To reach such a decision, the full set of warrants should be investigated based on field-measured traffic data and a thorough study of traffic and roadway conditions by an experienced engineer. Furthermore, the decision to install a signal should not be based solely on the warrants because the installation of signals can lead to certain types of collisions. The responsible state or local agency should undertake regular monitoring of actual traffic conditions and accident data and conduct a timely re-evaluation of the full set of warrants in order to prioritize and program intersections for signalization.

The impacts of the project under the Year 2030 Cumulative General Plan Amendment Conditions scenario using the proposed level of service policy are identified and compared to the previous policy. The following intersections are projected to have a significant impact under the Year 2030 Cumulative General Plan Amendment Conditions scenario with the existing LOS policy:

- Main Avenue/Monterey Road (LOS F, AM and PM peak hours)
- Main Avenue/Butterfield Boulevard (LOS D, AM and PM peak hour)
- Dunne Avenue/Del Monte Street (LOS F, PM peak hour)
- Dunne Avenue/Monterey Road (LOS D, PM peak hour)

The proposed policy would establish an LOS F standard at the Monterey Road/Main Avenue, Dunne Avenue/Del Monte Street, and Monterey Road/Dunne Avenue intersections. These intersections would be considered to operate at an acceptable LOS during both peak hours under the proposed policy. The level of service under the proposed policy would establish an LOS E standard at the Main Avenue Butterfield Boulevard intersections.

The significant impacts identified above under the Year 2030 Cumulative General Plan Amendment Conditions at the above intersections would not be considered a significant impact using the proposed level of service policy.

Copies of the Transportation Impact Analysis Appendices A through E are contained on the Draft Specific Plan CD in Appendix B of this Draft Master EIR.