

G. TRANSPORTATION AND CIRCULATION

This section describes the existing traffic and circulation system, including pedestrian and transit conditions, in the vicinity of the project site and provides an analysis of the potential impacts of the Draft Specific Plan. This transportation impact assessment has been conducted in a manner consistent with the requirements and methodologies of the City of Benicia, Solano County, and applicable provisions of CEQA. The traffic analysis describes the operational characteristics of the existing study area circulation system, determines the circulation system needs based on future traffic demand, and summarizes the potential circulation impacts associated with development of the proposed project. Appendix B contains the technical background information related to traffic.

1. Setting

This section describes the existing transportation system in the vicinity of the Plan Area, including the regional and local roadway networks, bicycle facilities, pedestrian facilities, and transit service. Existing roadway operations are described and an explanation of the methods used for the traffic analysis is provided.

a. Existing Roadway Network

(1) **Regional Access.** A brief description of the regional roadway network serving the project site is provided below:

- **Interstate I-680 (I-680)** is a north-south four-lane freeway facility on the eastern edge of Benicia, providing access to Interstate 80 (I-80) and Sacramento to the north and Walnut Creek and the San Francisco East Bay to the south. I-680 widens to six lanes as it crosses the Benicia-Martinez Bridge. Annual average daily traffic on I-680 between Industrial Way and Bayshore Road was 60,000 vehicles during Caltrans' most recent monitoring counts in 2005.¹
- **Interstate I-780 (I-780)** is an east-west four-lane freeway facility connecting I-680 in Benicia to I-80 in Vallejo. Annual average daily traffic on I-780 between the Benicia-Martinez Bridge and East 2nd Street was 52,000 vehicles during Caltrans' most recent monitoring counts in 2005.²

(2) **Local Access.** A brief description of the local and arterial streets serving the project site is provided below:

- **East 5th Street** is a minor arterial roadway that extends north and east from Downtown Benicia to Hillcrest Road. This roadway has two travel lanes and a center turn lane between Military East and I-780, and just two travel lanes in each direction elsewhere. Between Military East and I-780, the posted speed limit along East 5th Street is 35 miles per hour (mph). North of I-780 and south of Military East, the posted speed limit is 30 mph. No parking is allowed on either side of the roadway between Military East and I-780.
- **East 2nd Street** is a major arterial roadway that extends north and east from Downtown Benicia to Lake Herman Road. In the vicinity of the Plan Area, this roadway has two travel lanes and a center turn lane, with a posted speed limit of 35 miles per hour (mph) south of I-780. No parking is allowed on either side of the roadway north of Military East.

¹ Caltrans, Year 2005 Traffic Volumes on the State Highway System.

² Ibid.

- **Military East** extends from Jefferson Street in the east to First Street in the west, where Military East becomes Military West. East of East 2nd Street, Military East is a two-lane, east-west roadway. Between East 2nd Street and West 2nd Street, Military is a four-lane facility with turn lanes and bicycle lanes.
- **East H Street** extends from 1st Street to 150 feet east of East 7th Street, where it ends at the gated access to Bayshore Road. East H Street is a two-lane, east-west roadway.
- **Industrial Way** is a two-lane arterial roadway that connects I-680 to East 2nd Street. The posted speed limit on Industrial Way is 40 mph. Near its southern end, between Oregon Street and Noyes Way, Industrial Way is a three-lane street, with two lanes in the southbound direction and one lane in the northbound direction. The roadway width is not sufficient to accommodate on-street parking.
- **Park Road** is a two-lane, north-south arterial roadway that parallels I-680 to the west, veering northwest before intersecting with East 2nd Street. Park Road serves as the connection between the split interchange ramps at Industrial Way (southbound off-ramp, northbound on-ramp) and Bayshore Road (southbound on-ramp, northbound off-ramp). Between Bayshore Road and Industrial Way, Park Road is posted at 35 mph and has a two-way left-turn lane. North of Industrial Way, Park Road is a two-lane road that is posted at 40 mph, and signs indicate that parking is prohibited between the hours of 7:00 PM and 6:00 AM. South of Bayshore Road, Park Road is a two-lane road that is posted at 40 mph with no room for on-street parking.
- **Bayshore Road** in the vicinity of I-680 is a two-lane arterial roadway with a posted speed limit of 35 mph. No parking is allowed at any time along Bayshore Road.
- **Grant Street** is a local road that extends from Adams Street in the east to Jefferson Street in the west, where Grant Street becomes Military East. Grant Street is a two-lane, east-west roadway.
- **Adams Street** is a two-lane east-west arterial roadway that extends from the Adams Street / Military East / Grant Street intersection to Bayshore Road. The portion of Adams Street between Washington Street and Bayshore Road is privately owned.
- **Jefferson Street** is a local two-lane, two-way roadway that extends from Military East in the west to the Clocktower parking lot in the east. The portion of the street between Park Road and the Clocktower is privately owned and narrower than other segments of the street, which, affects two-way travel.
- **Polk Street** is a local road that extends from Lincoln Street in the south to Grant Street in the north. Polk Street is a two-lane, north-south roadway.
- **Oak Road** is a privately owned local road that extends from Bayshore Road in the east to Park Road in the west. Oak Road is a two-lane, east-west roadway.
- **Washington Street** is a privately owned local road that extends from Adams Street in the west to the Clocktower parking lot in the east. Washington Street is a two-lane, east-west roadway.

b. Study Intersections. The following 16 existing intersections were selected for analysis because they are most likely to be affected by traffic associated with implementation of the Draft Specific Plan. The locations of the study intersections are shown in Figure IV.G-1, and the intersection configuration and control systems of these intersections are shown in Figure IV.G-2.

1. East 5th Street / I-780 Westbound Ramps (One-Way Stop);
2. East 5th Street / I-780 Eastbound Ramps (One-Way Stop);
3. East 5th Street / Military East (Signal);
4. East 5th Street / East H Street (Four-Way Stop);
5. East 2nd Street / Military East (Signal);
6. Industrial Way / I-680 Northbound Ramps (One-Way Stop);
7. Industrial Way / I-680 Southbound Ramps (One-Way Stop);
8. Park Road / Industrial Way (Four-Way Stop);
9. Bayshore Road / I-680 Northbound Ramps (One-Way Stop);
10. Bayshore Road / I-680 Southbound Ramps (Westbound Left Yield);
11. Park Road / Bayshore Road (Four-Way Stop);
12. Adams Street / Military East / Grant Street (One-Way Stop);
13. Park Road / Adams Street (Two-Way Stop);
14. Park Road / Polk Street / Grant Street / (Several-Way Stop);
15. Bayshore Road / Adams Street (One-Way Stop); and
16. Bayshore Road / Oak Road (One-Way Stop).

It should be noted that with the buildout of the Benicia Lower Arsenal Specific Plan, the Adams Street / Military East / Grant Street intersection would be converted into a roundabout. Grant Street would be connected by a new street to Jackson Street and Tyler Street. This Tyler Street / Jackson Street / New Street intersection would also be made into a roundabout. With the addition of the New Street that would connect Grant Street to Jackson and Tyler streets and the improvements to Tyler Street, the Bayshore Road / Tyler Street intersection would experience increased traffic levels.

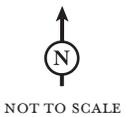
c. Existing Conditions Traffic Volumes. Weekday traffic counts for the morning (7:00-9:00 AM) and afternoon (4:00-6:00 PM) peak hours were collected on Wednesday, March 21, 2007 and on Tuesday, April 3, 2007. The combination of cumulative and project-generated traffic is expected to be highest during these periods. Figure IV.G-3 shows morning and afternoon peak hour volumes at the 16 study intersections.

d. Level of Service Methodology. The operation of a local roadway network is commonly measured and described using a grading system called Level of Service (LOS). The LOS grading system qualitatively characterizes traffic conditions associated with varying levels of vehicle traffic, ranging from LOS A (indicating free-flow traffic conditions with little or no delay experienced by motorists) to LOS F (indicating congested conditions where traffic flows exceed design capacity and result in long queues and delays). This LOS grading system applies to both signalized and unsignalized intersections. LOS A, B, and C are generally considered satisfactory service levels, while the influence of congestion becomes more noticeable (though still considered acceptable) at LOS D. LOS E and F are generally considered to be unacceptable. The City of Benicia's General Plan Policy 2.20.1 identifies LOS D as the worst acceptable LOS on all roads, street segments, and intersections within the City's jurisdiction.



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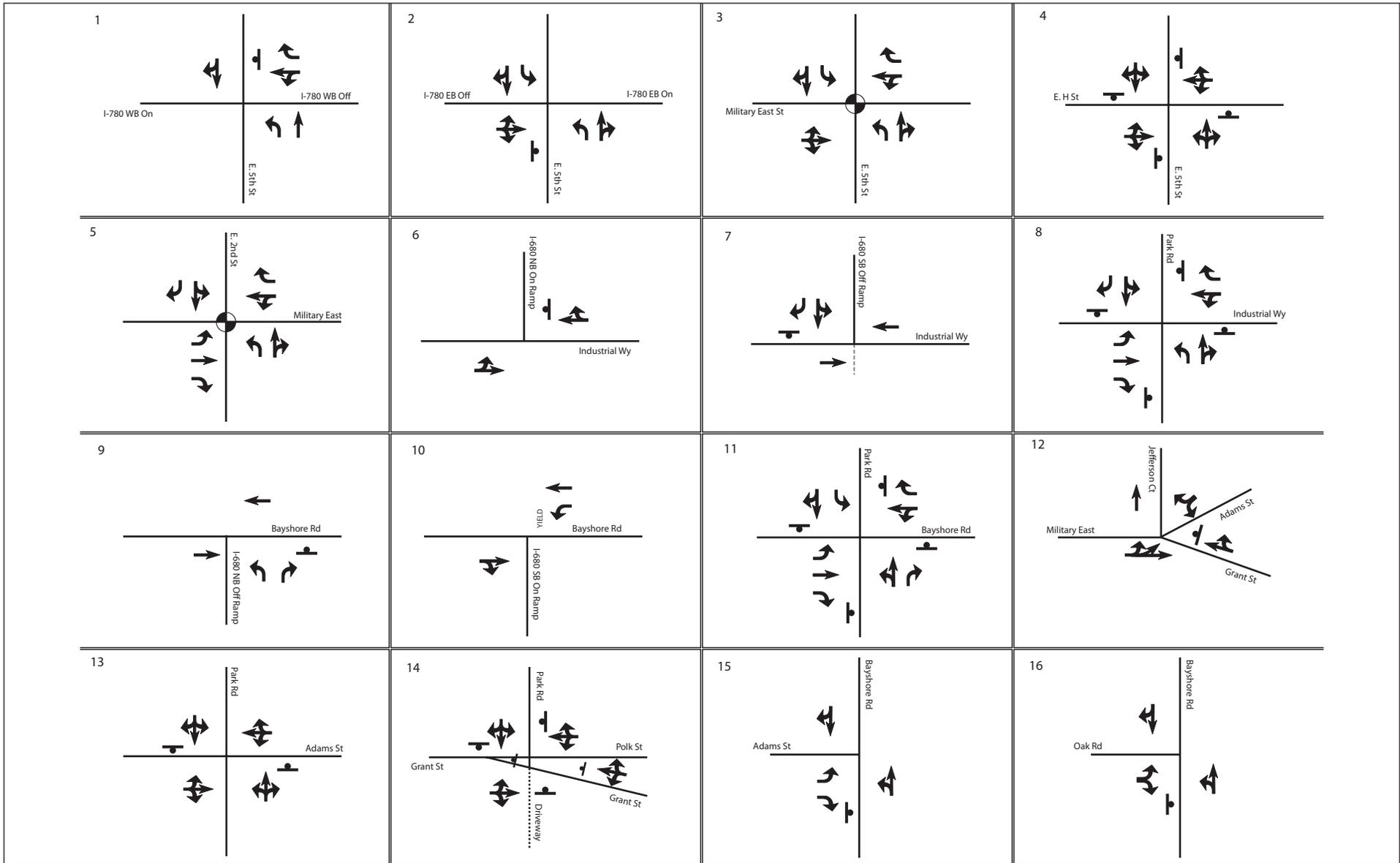
FIGURE IV.G-1



LEGEND

- PROJECT SITE
- STUDY INTERSECTIONS

Lower Arsenal Mixed Use Specific Plan EIR
 Study Intersections and
 Project Location



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LEGEND

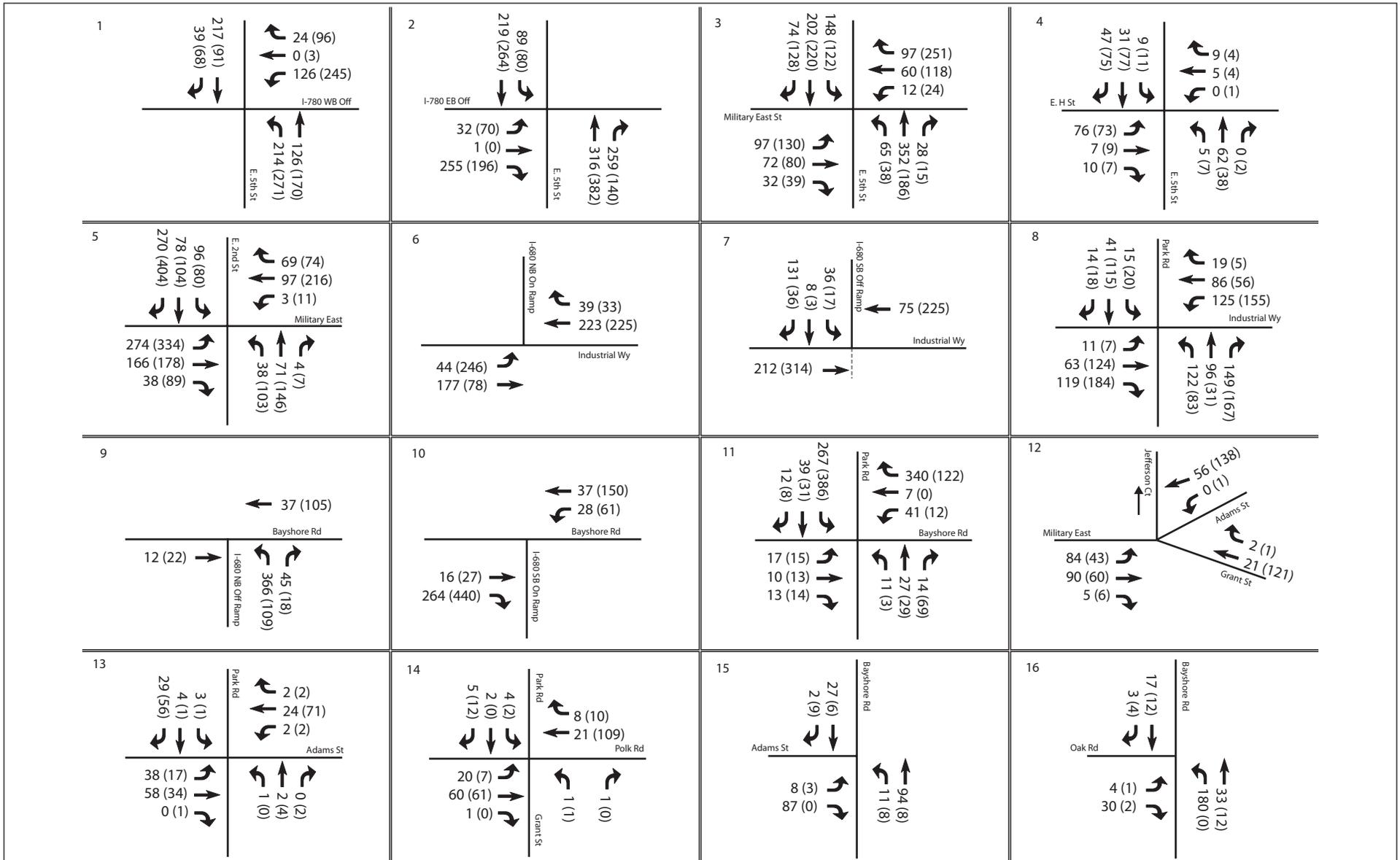
-  TRAFFIC SIGNAL
-  STOP SIGN

FIGURE IV.G-2

Lower Arsenal Mixed Use Specific Plan EIR
 Existing Lane Geometry and
 Traffic Control

SOURCE: DMJM HARRIS/AECOM, 2007

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SOURCE: DMJM HARRIS/AECOM, 2007

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FIGURE IV.G-3

Lower Arsenal Mixed Use Specific Plan EIR
Existing Intersection Traffic Volumes
AM (PM) Peak Hour

(1) **Signalized Intersections.** At the signalized study intersections, traffic conditions were evaluated using the *2000 Highway Capacity Manual* operations methodology. The operation analysis uses various intersection characteristics (e.g., traffic volumes, lane geometry, and signal phasing/timing) to estimate the average control delay experienced by motorists traveling through an intersection. Table IV.G-1 summarizes the relationship between delay and LOS for signalized intersections.

(2) **Unsignalized Intersections.** For unsignalized study intersections, traffic conditions were evaluated using the *2000 Highway Capacity Manual* (HCM) operations methodology. Unsignalized intersections include all-way stop-controlled intersections, two-way stop-controlled intersections, and roundabout intersections, which function as all-way-yield, right-turn-only intersections. With the HCM methodology, the LOS is related to the total delay per vehicle for the intersection as a whole (for all-way stop-controlled intersections and roundabouts), and for each stop-controlled movement or approach only (for two-way stop-controlled intersections). Total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line. This time includes the time required for a vehicle to travel from the last-in-queue position to the first-in-queue position. Table IV.G-1 also summarizes the relationship between delay and LOS for unsignalized intersections.

(3) **Freeway Segments.** Table IV.G-2 presents a description of freeway level of service based on volume-to-capacity ratio, as outlined in the *2000 Highway Capacity Manual*.

e. **Existing Conditions Intersection Levels of Service.** The study intersections were analyzed using the latest version of the Traffix software package, based on the methodologies outlined in the *2000 Highway Capacity Manual*. The existing AM and PM peak hour intersection service levels for the 16 study intersections are shown in Table IV.G-3.

As shown in Table IV.G-3, the worst minor approach to the East 5th Street / I-780 Westbound Ramps intersection currently operates at LOS F in the PM peak hour. All other study intersections operate at LOS D or better during either peak hour. The level of service calculation sheets for all study intersections are provided in Appendix B.

f. **Existing Conditions CMP Roadway Levels of Service.** The Solano Transportation Authority (STA) is the designated Congestion Management Agency for Solano County. This agency develops the County-wide Congestion Management Program (CMP) and updates it every 2 years. The latest revision was completed in 2005. The CMP identifies a system of State highways and regionally significant principal arterials (known as the CMP system) and specifies the LOS standards for those roadways. This system is monitored regularly by the local jurisdictions where the facilities are located, and the LOS results are included in the biennial report produced by the Solano Transportation Authority. The minimum standard throughout the Solano County system is LOS E, except at those locations where the initial LOS measurement at the inception of the program was LOS F. The Draft Specific Plan is expected to add traffic to two such CMP facilities; I-680 and I-780. The current operating levels of these CMP facilities are summarized in Table IV.G-4.

Table IV.G-1: Intersection Level of Service Definitions

Level of Service	Description of Traffic Conditions	Average Delay Per Vehicle (Seconds)
Signalized Intersections		
A	Insignificant Delays: No approach phase is fully utilized and no vehicle waits longer than one red indication.	≤10.0
B	Minimal Delays: An occasional approach phase is fully utilized. Drivers begin to feel restricted.	>10.0 and ≤20.0
C	Acceptable Delays: Major approach phase may become fully utilized. Most drivers feel somewhat restricted.	>20.0 and ≤35.0
D	Tolerable Delays: Drivers may wait through more than one red indication. Queues may develop but dissipate rapidly, without excessive delays.	>35.0 and ≤55.0
E	Significant Delays: Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues form upstream.	>55.0 and ≤80.0
F	Excessive Delays: Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections.	>80.0
Unsignalized Intersections		
A	No delay for stop-controlled approaches.	≤10.0
B	Operations with minor delay.	>10.0 and ≤15.0
C	Operations with moderate delays.	>15.0 and ≤25.0
D	Operations with some delays.	>25.0 and ≤35.0
E	Operations with high delays, and long queues.	>35.0 and ≤50.0
F	Operation with extreme congestion, with very high delays and long queues unacceptable to most drivers.	>50.0

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

Table IV.G-2: Freeway Level of Service Definitions

Level of Service	Description of Traffic Conditions	Nominal Range of Volume to Capacity Ratio
Freeway Segments		
A	Low volumes; primarily free-flow operations. Density is low, and vehicles can freely maneuver within the traffic stream. Drivers can maintain their desired speeds with little or no delay.	0.00 - 0.60
B	Stable flow with potential for some restriction of operating speeds due to traffic conditions. Maneuvering is only slightly restricted. The stopped delays are not bothersome, and drivers are not subject to appreciable tension.	0.61 - 0.70
C	Stable operations; however, the ability to maneuver is more restricted by the increase in traffic volumes. Relatively satisfactory operating speeds prevail, but adverse signal coordination or longer queues cause delays.	0.71 - 0.80
D	Approaching unstable traffic flow, where small increases in volume could cause substantial delays. Most drivers are restricted in their ability to maneuver and in their selection of travel speeds. Comfort and convenience are low but tolerable.	0.81 - 0.90
E	Operations characterized by significant approach delays and average travel speeds of one-half to one-third the free-flow speed. Flow is unstable and potential for stoppages of brief duration. High signal density, extensive queuing, or progression/timing are the typical causes of the delays.	0.91 - 1.00
F	Forced-flow operations with high approach delays at critical signalized intersections. Speeds are reduced substantially, and stoppages may occur for short or long periods of time because of downstream congestion.	1.010+

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

Table IV.G-3: Existing AM and PM Peak Hour Intersection Levels of Service

No.	Intersection	Traffic Control ^a	Peak Hour	Existing	
				LOS	Delay
1	East 5th Street / I-780 Westbound Ramps	One-Way Stop (WB)	AM	D	26.1
			PM	F	>50.0
2	East 5th Street / I-780 Eastbound Ramps	One-Way Stop (EB)	AM	C	15.7
			PM	C	21.7
3	East 5th Street / Military East	Signal	AM	A	9.8
			PM	B	11.1
4	East 5th Street / East H Street	Four-Way Stop	AM	A	7.7
			PM	A	7.9
5	East 2nd Street / Military East	Signal	AM	B	18.5
			PM	C	27.4
6	Industrial Way / I-680 Northbound Ramps	One-Way Stop (WB)	AM	B	11.3
			PM	B	14.0
7	Industrial Way / I-680 Southbound Ramps	One-Way Stop (SB)	AM	A	9.7
			PM	B	11.0
8	Park Road / Industrial Way	Four-Way Stop	AM	B	11.7
			PM	B	12.3
9	Bayshore Road / I-680 Northbound Ramps	One-Way Stop (NB)	AM	B	11.2
			PM	A	9.7
10	Bayshore Road / I-680 Southbound Ramps	Westbound Left Yield	AM	A	7.9
			PM	A	8.6
11	Park Road / Bayshore Road	Four-Way Stop	AM	B	13.1
			PM	B	14.6
12	Adams Street / Military East / Grant Street	One-Way Stop (WB)	AM	B	10.9
			PM	B	12.0
13	Park Road / Adams Street	Two-Way Stop (NB)	AM	B	10.1
			PM	A	9.5
14	Park Road / Polk Street / Grant Street	Four-Way Stop	AM	A	7.3
			PM	A	7.5
15	Bayshore Road / Adams Street	One-Way Stop (EB)	AM	A	8.8
			PM	A	8.7
16	Bayshore Road / Oak Road	One-Way Stop (EB)	AM	A	9.0
			PM	A	8.5

^a At one- and two-way stop controlled intersections, the worst minor approach is shown in parenthesis.

Note: **Bolding** indicates unsatisfactory level of service.

Level of Service and delays are reported for this worst approach.

Source: DMJM Harris, 2007

Table IV.G-4: Existing Freeway Level of Service by Segment

Freeway Segment	Direction	Peak Hour	Number of Lanes	Volume	Volume to Capacity Ratio	LOS
I-680: North of Industrial Way	Northbound	AM	2	1,311	0.30	A
		PM	2	3,017	0.69	C
	Southbound	AM	2	3,939	0.90	D
		PM	2	1,981	0.45	B
I-680: Between Industrial Way and Bayshore Road	Northbound	AM	2	1,157	0.26	A
		PM	2	2,662	0.61	C
	Southbound	AM	2	3,475	0.79	D
		PM	2	1,748	0.40	B
I-680: South of Bayshore Road	Northbound	AM	2	1,330	0.30	A
		PM	2	3,062	0.70	C
	Southbound	AM	2	3,997	0.91	E
		PM	2	2,010	0.46	B
I-780: East of East 5th Street	Eastbound	AM	2	2,579	0.59	C
		PM	2	2,533	0.58	C
	Westbound	AM	2	1,653	0.38	B
		PM	2	1,544	0.35	B
I-780: West of East 5th Street	Eastbound	AM	2	2,579	0.59	C
		PM	2	2,533	0.58	C
	Westbound	AM	2	1,653	0.38	B
		PM	2	1,544	0.35	B

Note: Based on information taken from the 2000 *Highway Capacity Manual* (Chapter 21 – Multilane Highways), the analysis assumes freeway capacity of 2,200 vehicles/lane/hour for two-lane segments (lanes per direction), 2,300 vehicles/lane/hour for 3-lane segments and above.

Source: 2000 *Highway Capacity Manual*; DMJM Harris, 2007

As shown in Table IV.G-4, the CMP routes operate at or better than the STA standard of LOS E during both peak hours under Existing Conditions.

g. Bicycle and Pedestrian Facilities. In the study area, a designated Class III Bikeway (signed route where bicycles share roadways with vehicular traffic; no separate right-of-way is provided) is provided along East 2nd Street between Seaview Drive and Military East. Much of the pedestrian infrastructure within the Benicia Lower Arsenal is degraded and incomplete. Military East, which has sidewalks, provides a direct pedestrian connection to downtown Benicia.

h. Public Transit. Local public transit in Benicia is provided by the City, which operates eight bus routes as part of the Benicia Breeze system: Routes 15, 17, 19, 21, 22, 23, 40, and 75. Routes 15 and 21 connect neighborhoods in the northwest Benicia with Downtown. Routes 17 and 22 connect neighborhoods in the northern portion Benicia with Downtown Benicia. Route 19 connects the Benicia industrial area with Downtown. Route 23 provides commuter service between Benicia and the Martinez Amtrak Station. Route 40 connects Fairfield, Vacaville, and Benicia with the Pleasant Hill and Walnut Creek BART Stations. Route 75 connects the Benicia-Vallejo Ferry Terminal with the Pleasant Hill BART Station. It should be noted that Routes 19 and 22 directly serve the project area via Military East and Park Road.

i. Parking Facilities. On-street parking is permitted throughout the Benicia Lower Arsenal area. On-street parking typically does not occur on Industrial Way, Bayshore Road, Park Road, and the

other local roadways, because sufficient off-street parking is provided, and shoulder widths are typically too narrow to accommodate parked vehicles.

j. Regulatory Setting. The regulatory setting of the proposed project as it relates to traffic and transportation is discussed below.

(1) Solano County. As previously noted, the Solano Transportation Authority (STA) serves as the Congestion Management Agency for Solano County. One of the CMA's responsibilities is to analyze the impacts of local land use decisions on the regional transportation system (the CMP system). The STA will comment on any environmental impact report prepared for proposed land use development projects, and will require that an analysis of CMP system facilities be performed with the STA travel demand model. If a proposed project is projected to cause a segment of the CMP system to deteriorate below the adopted LOS standard, a deficiency plan must be prepared to provide mitigation for that impact. As noted above, the CMA's adopted LOS standard is E for roadways and freeways in the CMP system.

(2) City of Benicia General Plan. Applicable transportation and circulation policies from the Benicia General Plan are presented below.

Circulation

- *Circulation Policy 2.14.1:* Give priority to pedestrian safety, access and transit over automobile speed and volume.
- *Circulation Policy 2.14.2:* Discourage street widening and the removal of on-street parking to ease traffic flow.
- *Circulation Policy 2.15.2:* Encourage the development of pedestrian paths in hill areas as a way to link neighborhoods to schools, parks, employment centers and convenience commercial destinations.
- *Circulation Policy 2.20.1:* Maintain at least LOS D on all city roads, street segments and intersections.
- *Circulation Policy 2.20.2:* Seek alternatives to road widening.
- *Circulation Policy 2.23.1:* Provide adequate on-street and off-street parking.
- *Circulation Policy 2.23.2:* Reduce the visibility of parking lots.
- *Circulation Policy 2.24.1:* Continue to ensure public access to private roads in the industrial and Port areas.
- *Circulation Policy 2.26.2:* Encourage the preservation of I-780 as four lanes, but support spot widening at selected locations (e.g. the approach to the Benicia-Martinez Bridge o/off merge lanes) to address future capacity problems while still maintaining a four-lane mainline freeway.

The LOS D standard established in Policy 2.20.1 has been incorporated into the thresholds of significance used in this analysis to determine whether the project would result in significant transportation-related impacts. The project's consistency with this threshold would constitute consistency with the General Plan. Other select policies also link with the thresholds and serve to determine impacts and consistency with the General Plan, but in more qualitative ways.

2. Cumulative (Year 2030) Traffic Conditions

This section evaluates traffic operations at the study intersections in the Cumulative (Year 2030) Conditions without implementation of the Draft Specific Plan. Measures to improve the study

intersections are provided where growth impacts are identified that would result in an unacceptable LOS in accordance with STA CMP and City of Benicia standards.

a. Future Year Projections. Cumulative Conditions traffic volumes were forecasted using the most recent version of the Solano / Napa County travel demand model developed by the STA for the counties of Solano and Napa. The Solano / Napa County travel demand model, which is maintained by the STA, was used as a tool to forecast future traffic conditions in Benicia. A model run was performed for the year 2030, capturing the traffic growth expected in Benicia due to land use changes, shifts in travel behavior, planned transportation improvements and other considerations.

Some of the highway improvements included in the 2030 model network are significant for the purposes of this analysis. These include a second Benicia-Martinez bridge span, resulting in five lanes of traffic capacity in each direction, and the expansion of Park Road between Bayshore Road and Industrial Way from two to four lanes. These improvements are assumed to be in place in the 2030 Solano / Napa County model.

The model was used to develop background growth in traffic volumes to the year 2030 Cumulative (No Project) Conditions. The background traffic volumes are described in the section below.

b. Cumulative Conditions Traffic Volumes. The traffic volumes under Cumulative Conditions were calculated by applying the appropriate growth rates obtained from the Solano/ Napa County travel demand model to the Existing Conditions traffic volumes. Included in the Solano / Napa County travel demand model are all approved projects that can reasonably be expected to be in place by the year 2030, including the Benicia Business Park project. For the purposes of this study, any traffic growth associated with the Draft Specific Plan has been removed from the analysis in order to properly assess project-specific impacts. The resulting Cumulative Conditions AM and PM peak hour volumes at the 16 study intersections are shown in Figure IV.G-4. With the exception of the second Benicia-Martinez bridge span and the expansion of Park Road noted above, the roadway lane configurations and intersection control assumed for Cumulative Conditions are the same as those for the Existing Conditions.

c. Planned Roadway Improvements. Intersection and roadway improvements are outlined in the Benicia General Plan (June 1999) and the Solano Congestion Management Plan (October 2005). The following improvements are included in the Benicia General Plan:

1. Second Benicia – Martinez Bridge span;
2. Public road connecting through the Lower Arsenal and Port areas to include Bayshore Road, Adams Street, and Oak Street;
3. Bayshore Road connection between Park Road and Industrial Way;
4. East-west connector roadway between East 2nd Street and Park Road; and
5. Extension of Industrial Way north to Lake Herman Road.

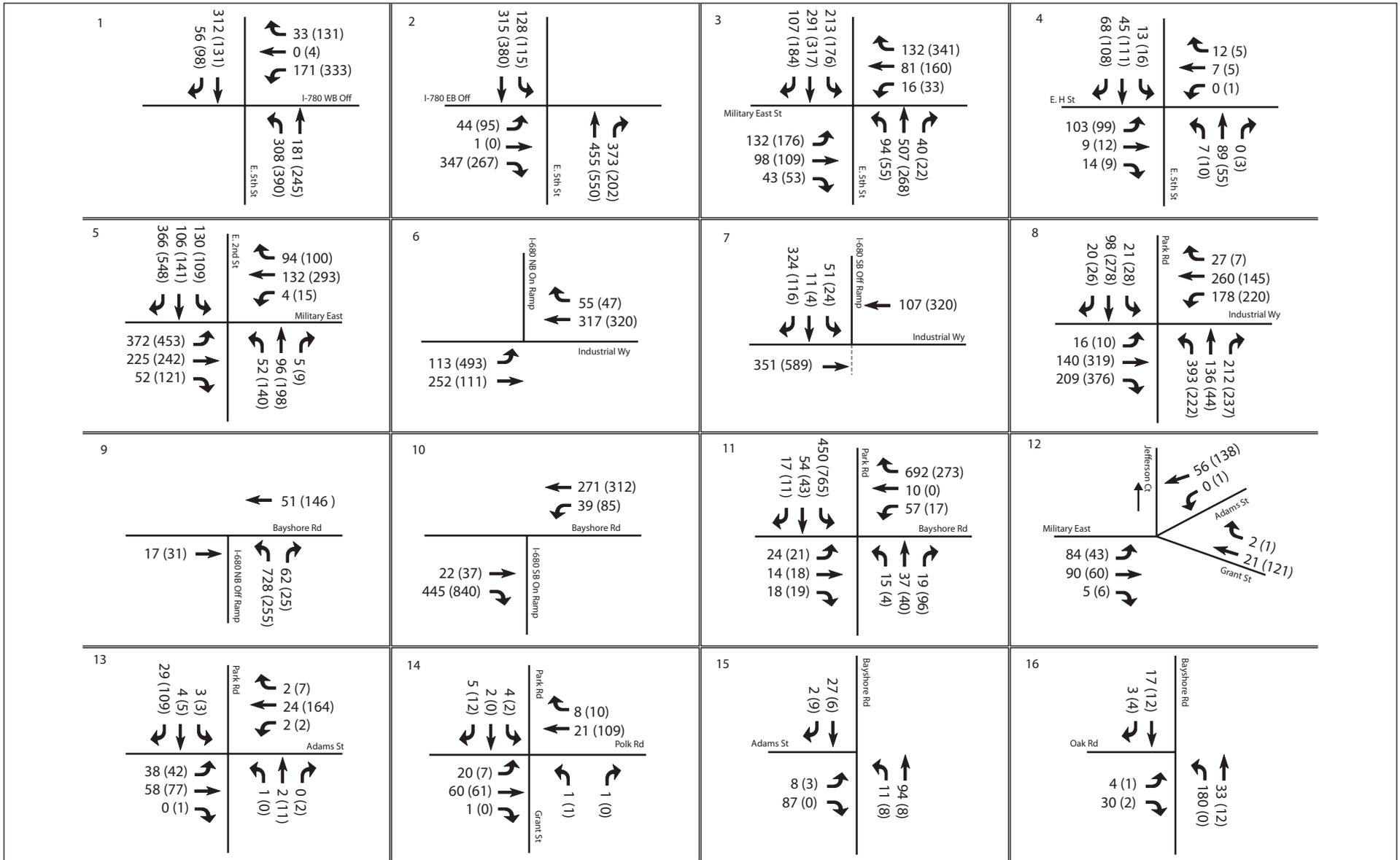


FIGURE IV.G-4

LSA



NOT TO SCALE

SOURCE: DMJM HARRIS/AECOM, 2007

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Lower Arsenal Mixed Use Specific Plan EIR
 Cumulative Traffic Volumes
 AM (PM) Peak Hour

The following improvements are identified in the 2005 CMP Capital Improvement Program:

1. I-80 / I-680 / I-780 Corridor mid and long-term improvements;
2. I-80 / I-680 / SR-12 Interchange improvements; and
3. Local interchange and arterial improvements.

It should be noted that although each of these projects has been approved, only a reasonable set of projects likely to be implemented by 2030 are included in the Solano / Napa County travel demand model. The projects listed in the planned improvements section include the second Benicia – Martinez Bridge span, the public road connecting through the Lower Arsenal and Port areas, and the I-80/I-680/SR-12 interchange improvements. The STA, which functions as the CMA for Solano County, maintains the travel demand model for Solano County and has determined that these comprise a reasonable set of fundable projects for the cumulative horizon.

d. Planned Parking Facility Improvements. Neither the Benicia General Plan (June 1999) nor the Solano Congestion Management Plan (October 2005) identify any planned improvements to area parking facilities.

e. Planned Bicycle and Pedestrian Facility Improvements. Future bicycle improvements are outlined in the Benicia General Plan. Near the Plan Area, the General Plan calls for the development of a Class II Bikeway along both Military West and Military East, extending from West 7th Street to Park Road.

In addition, the General Plan calls for Class III Bikeways at the following locations near the Plan Area:

1. Along East H Street between East 5th Street and West 3rd Street;
2. Along East 5th Street extending from Military East to East E Street;
3. Along Park Road between Jefferson Street and Industrial Way; and
4. Along the Bay Trail between Jefferson Street and Bayshore Road.

Future bicycle improvements near the Plan Area are also outlined in the Solano Countywide Bicycle Plan. These enhancement projects include:

1. Project #11: Benicia to Martinez – would provide a Class II Bikeway along Military East (from Park Road to 1st Street), 1st Street (from Military West to West I Street), and West I Street (from 1st Street to West 9th Street);
2. Project #12: Benicia to Cordelia – would provide a Class II Bikeway along East 2nd Street (from Military East to Lopes Road); and
3. Project #28: Cross State Bike Route (Tahoe to Bay Area) – would provide a Class II Bikeway along East 2nd Street (from Military East to Lopes Road) and Military East (from East 2nd Street to the Benicia-Martinez Bridge).

Future pedestrian improvements are outlined in the Solano Countywide Pedestrian Plan. These enhancement projects include:

4. Park Road Bike Lanes and Sidewalks Project – would improve the connection from the new multi-use path on the Benicia-Martinez Bridge;
5. First Street Streetscape and Parking Enhancements Project – would be part of an ongoing effort to improve pedestrian amenities in the Downtown area;
6. Benicia High School Access Improvement Project – would install a traffic signal on Military West at West 11th Street; and
7. State Park Road Bicycle and Pedestrian Bridge – would provide a safer over-crossing of I-780 at the west end of the City.

f. Planned Transit Facility Improvements. Future transit improvements are outlined in the Benicia Short Range Transit Plan. These improvements include:

1. Restructure existing Route 1 to reduce onboard travel time and provide a more direct service to Vallejo and the Pleasant Hill BART Station; route would be renumbered as Route 100;
2. Replace general public Dial-a-Ride service in Benicia with a more structured local flexroute service;
3. Replace Benicia Dial-a-Ride service with an ADA Complimentary Paratransit Service restricted to persons with disabilities and the elderly who have difficulty accessing fixed or flexroute services;
4. Develop a computer-assisted paratransit scheduling/dispatch capability;
5. Adopt a revised paratransit scheduling and dispatch procedures; and
6. Establish a supplemental Taxi Service Contract for ADA Complementary Paratransit Service.

g. Cumulative Conditions Intersection Level of Service. As noted above, the study intersections were analyzed using the latest version of the Traffix software package, based on the methodologies outlined in the *2000 Highway Capacity Manual*. With the exception of the second Benicia-Martinez bridge span and the expansion of Park Road cumulative intersection LOS calculations assumed Existing Conditions intersection geometries and control. The Cumulative Conditions AM and PM peak hour intersection service levels for the 16 study intersections are shown in Table IV.G-5.

As shown in Table IV.G-5, the worst minor approach to the East 5th Street / I-780 Westbound Ramps, East 5th Street / I-780 Eastbound Ramps, Park Road / Industrial Way, and Park Road / Bayshore Road intersections are projected to operate at unacceptable LOS E or F during both peak hours under Cumulative Conditions.

h. Cumulative Conditions Freeway Segment Level of Service. The CMP facilities within Benicia, and their current operating levels in the PM peak hour, are summarized in Table IV.G-6.

As shown in Table IV.G-6, all of the CMP routes are projected to operate at LOS E or better during the PM peak hour under Cumulative Conditions.

Table IV.G-5: Cumulative (Year 2030) Conditions Intersection Levels of Service

No.	Intersection	Traffic Control ^a	Peak Hour	Cumulative Conditions	
				LOS	Delay
1	East 5th Street / I-780 Westbound Ramps	One-Way Stop (WB)	AM	F	>50.0
			PM	F	>50.0
2	East 5th Street / I-780 Eastbound Ramps	One-Way Stop (EB)	AM	F	>50.0
			PM	F	>50.0
3	East 5th Street / Military East	Signal	AM	B	11.3
			PM	B	12.8
4	East 5th Street / East H Street	Four-Way Stop	AM	A	8.1
			PM	A	8.6
5	East 2nd Street / Military East	Signal	AM	C	20.7
			PM	D	53.3
6	Industrial Way / I-680 Northbound Ramps	One-Way Stop (WB)	AM	B	14.2
			PM	D	28.7
7	Industrial Way / I-680 Southbound Ramps	One-Way Stop (SB)	AM	B	11.0
			PM	B	12.3
8	Park Road / Industrial Way	Four-Way Stop	AM	E	37.3
			PM	E	39.9
9	Bayshore Road / I-680 Northbound Ramps	One-Way Stop (NB)	AM	C	19.6
			PM	B	11.1
10	Bayshore Road / I-680 Southbound Ramps	Westbound Left Yield	AM	A	8.4
			PM	B	10.2
11	Park Road / Bayshore Road	Four-Way Stop	AM	F	>50.0
			PM	F	>50.0
12	Adams Street / Military East / Grant Street	One-Way Stop (WB)	AM	B	10.8
			PM	B	11.9
13	Park Road / Adams Street	Two-Way Stop (NB)	AM	B	10.1
			PM	A	9.5
14	Park Road / Polk Street / Grant Street	Four-Way Stop	AM	A	7.3
			PM	A	7.5
15	Bayshore Road / Adams Street	One-Way Stop (EB)	AM	A	8.8
			PM	A	8.7
16	Bayshore Road / Oak Road	One-Way Stop (EB)	AM	A	9.0
			PM	A	8.5

^a At one- and two-way stop controlled intersections, the worst minor approach is shown in parenthesis.

Note: **Bolding** indicates unsatisfactory level of service.

Level of Service and delays are reported for this worst approach.

Source: DMJM Harris, 2007

Table IV.G-6: Future Freeway Level of Service by Segment

Freeway Segment	Direction	Peak Hour	Number of Lanes	Volume	Volume to Capacity Ratio	LOS
I-680: North of Industrial Way	Northbound	AM	3	2,751	0.40	B
		PM	3	4,748	0.69	C
	Southbound	AM	3	6,762	0.98	E
		PM	3	4,154	0.60	C
I-680: Between Industrial Way and Bayshore Road	Northbound	AM	3	2,283	0.33	B
		PM	3	3,639	0.53	C
	Southbound	AM	3	5,888	0.85	D
		PM	3	3,719	0.54	C
I-680: South of Bayshore Road	Northbound	AM	3	2,511	0.36	B
		PM	3	3,765	0.55	C
	Southbound	AM	3	6,792	0.98	E
		PM	3	4,648	0.67	C
I-780: East of East 5th Street	Eastbound	AM	2	4,260	0.97	E
		PM	2	4,184	0.95	E
	Westbound	AM	2	3,406	0.77	D
		PM	2	3,181	0.72	D
I-780: West of East 5th Street	Eastbound	AM	2	4,260	0.97	E
		PM	2	4,184	0.95	E
	Westbound	AM	2	3,406	0.77	D
		PM	2	3,181	0.72	D

Note: Based on information taken from the *2000 Highway Capacity Manual* (Chapter 21 – Multilane Highways), the analysis assumes freeway capacity of 2,200 vehicles/lane/hour for two-lane segments (lanes per direction), 2,300 vehicles/lane/hour for three-lane segments and above.

Source: 2000 Highway Capacity Manual; DMJM Harris, 2007

3. Impacts and Mitigation Measures

This section evaluates transportation related impacts of the proposed project. It focuses on traffic operations and potential traffic impacts at study intersections in the vicinity of the project site under both the Existing Conditions and Cumulative Conditions background traffic volumes. Mitigation measures to improve the study intersections are provided where project impacts are identified that would result in unacceptable levels of service. This section concludes by addressing potential impacts to transit and pedestrian and bike facilities. Construction period impacts are also addressed.

a. Project Description. As described in Chapter III, the Draft Specific Plan would result in 741,865 square feet of total development, including 526,815 square feet of redeveloped uses and 215,050 square feet of new uses. The proposed project includes public, business, retail, industrial, residential, and infrastructure development spread out over four zones: Jefferson Ridge, Adams Street, Grant Street, and South of Grant Street. For reference, Table III-1 (which shows land uses that would result from Draft Specific Plan implementation) is reproduced below as Table IV.G-7.

Table IV.G-7: Project Description

Land Use Type	Project Area				Total (Per Land Use Type)
	Jefferson Ridge	Adams Street	Grant Street	South of Grant	
Recreation, Educational, Public Assembly	103,759 SF	8,004 SF	4,916 SF	52,899 SF	169,578 SF
Business, Financial, Professional Services	73,784 SF	70,035 SF	2,622 SF	41,762 SF	188,203 SF
General Services	34,586 SF	18,009 SF	4,916 SF	19,489 SF	77,000 SF
Retail	18,446 SF	26,013 SF	7,538 SF	33,410 SF	85,407 SF
Industry, Manufacturing, Processing	0 SF	64,032 SF	2,622 SF	97,445 SF	164,099 SF
Residential	0 SF	8,004 SF	10,160 SF	33,410 SF	51,574 SF
Transportation, Communica- tion, Infrastructure	0 SF	6,003 SF	0 SF	0 SF	6,003 SF
Total (Per Project Area)	230,575 SF	200,100 SF	32,775 SF	278,415 SF	741,865 SF

Note: SF = Square Feet

Source: Lower Arsenal Mixed Use Specific Plan, Opticos Design Inc. et al, 2006.

As discussed, of the 741,865 square feet of development in the Specific Plan Area, 526,815 square feet would be existing uses. To ensure that change associated with these existing uses is adequately analyzed, a 20 percent intensification factor is applied to account for new trips these uses might generate. Therefore, existing uses would increase by an effective 105,363 square feet (20 percent of the 526,815 square feet) due to intensification of redeveloped uses; these intensified uses would generate new trips to and from the project site. Coupled with the additional 215,050 square feet of planned new uses, 320,413 square feet of the proposed project outlined in the project description would be expected to generate new trips.

In addition to the new and redeveloped land uses, several roadway, bicycle, and pedestrian facility improvements would be included as part of the proposed project. A brief description of the proposed roadway changes is provided below:

- **Military East** would be reconfigured to include two 11-foot wide travel lanes, bicycle lanes, on-street parking along the south side of the street, and reconstructed sidewalks (where necessary). The design speed of Military East would be 35 miles per hour.
- **Park Road** would be reconfigured to include two 11-foot wide travel lanes, bicycle lanes, and reconstructed sidewalks (where necessary). The design speed of Park Road would be 35 miles per hour.
- **Jefferson Street** would be reconfigured to include two 10-foot wide travel lanes, on-street parking along the south side of the street, and reconstructed sidewalks (where necessary). The design speed of Jefferson Street would be 25 miles per hour.
- **Adams Street** would be reconfigured to include two 11-foot wide travel lanes, on-street parking along the south side of the street, and reconstructed sidewalks (where necessary). The design speed of Adams Street would be 25 miles per hour.

- **Grant Street** would be reconfigured to include two 10-foot wide travel lanes, on-street parking along the south side of the street, and reconstructed sidewalks (where necessary). The design speed of Grant Street would be 25 miles per hour.
- **Neighborhood Street 1 (Madison)** would be built to include two 10-foot wide travel lanes, on-street parking along the south side of the street, and new sidewalks. The design speed of Neighborhood Street 1 (Madison) would be 25 miles per hour.
- **Neighborhood Street 2** would be built to include two 10-foot wide travel lanes, on-street parking on both sides of the street, and new sidewalks. The design speed of Neighborhood Street 2 would be 25 miles per hour.
- **Neighborhood Avenue** would be built to include two 12-foot wide travel lanes, on-street parking on both sides of the street, new sidewalks, and a 30-foot wide central greenway. The design speed of Neighborhood Avenue would be 25 miles per hour.
- **Railroad Street** would have an informal character and will be paved from building face to building face. The design speed of Railroad Street would be 25 miles per hour.
- **Roundabouts** would be implemented at the Adams Street / Military East / Grant Street and the Tyler Street / Jackson Street / New Street (Grant Street Extension) intersections. To ensure vehicle safety, roundabouts would meet the “Urban Compact” or “Urban Single Lane” design parameters as defined by the U.S. Department of Transportation, and would be designed to accommodate trucks and industrial vehicles.

Along with sidewalk reconstruction at various locations throughout the Arsenal site, off-street pedestrian connections are proposed. A brief description of the proposed pedestrian paths is provided below:

- From the Adams Street / Park Road intersection northeast through Jefferson Ridge open space to Jefferson Street south of the Commanding Officer’s Quarters, providing access to the Clocktower along Jefferson Street.
- From Adams Street south to Grant Street on axis with the Duplex Officers’ Quarters and Storehouse.
- From the Grant Street / Polk Street intersection south to the Blacksmith’s Shop.

The following stairs would be improved as part of the project:

- Jefferson Street to Adams Street, west of Park Street.
- Military East southeast to Jackson Street.
- From the Park Road / Grant Street intersection west to Jackson Street.
- Grant Street south and west to Jackson Street, west of the Polk Street underpass.
- Grant Street southwest to Jackson Street, east of Arts Benicia.
- Polk Street underpass (two sets of stairs).

It should be noted that without provisions for the disabled, these stairway connections may not be in compliance with Americans with Disabilities Act (ADA) regulations. Also, stairway connections located on private property may require an acquisition of public easements or property.

The circulation goals, policies, and actions in the Draft Specific Plan would apply to the transportation system in and around the project site. Circulation Goal 3 is: "Establish an integrated system of scenic trails, paths, and circulation routes to connect key destinations within the Arsenal Historic District and throughout the City." Refer to the Draft Specific Plan for a complete list of policies and actions that apply to vehicle, pedestrian, bike, and transit circulation.

b. Project Trip Generation. Trip generation estimates are based on rates from the *Trip Generation Manual*, 7th Edition (Institute of Transportation Engineers, 2004). The 7th Edition is the latest in the series providing the most up-to-date database of land use-based trip rates. Both a weighted average rate and a regression equation with which to calculate trip generation for each land use are provided. Generally, in cases where ITE has surveyed at least 20 sites for a particular land use, where the proposed project is within the range of sizes of the surveyed sites, and where the coefficient of determination³ is greater or equal to 0.75, the regression equation is used to determine that land use's trip generation. In cases where ITE studied fewer than 20 sites and where the coefficient of determination is lesser than 0.75, the weighted average is used to determine the land use's trip generation.

Table IV.G-8 shows the ITE land use assumed for each land use outlined in the project description (Table IV.G-7). Tables IV.G-9 through Table IV.G-13 summarize the proposed project's trip generation for the 320,413 square feet of uses (new uses and intensified existing uses) which are expected to generate new trips.

It should be noted that due to the mixed-use nature of the project, a percentage of trips generated can be expected to be internally linked. According to the information provided in Chapter 7 of the ITE Trip Generation Handbook (Mixed-Use Development), 4.5 percent of retail trips, 3.5 percent of office and industrial trips, and 40 percent of residential trips are expected to be internally linked trips. Also, based on 2000 Census Journey to Work data, 4 percent of the proposed project's trip generation can be expected to be transit trips. However, to provide a conservative analysis of traffic impacts (i.e., to insure that potential impacts are not underestimated), no reductions have been taken to account for transit use.

As shown, new and redeveloped uses associated with implementation of the Draft Specific Plan is expected to generate approximately 5,474 new daily trips, including 342 trips in the AM peak hour (248 inbound and 94 outbound), and 485 trips in the PM peak hour (159 inbound and 326 outbound).

³ The coefficient of determination (R^2) is an estimate of the accuracy of the fit of the regression equation.

Table IV.G-8: ITE Land Uses

Land Use from Project Description	Corresponding ITE Land Use (Code)
Recreation, Educational, Public Assembly	Recreational Community Center (495)
Business, Financial, Professional Services	General Office Building (710)
General Services	Specialty Retail Center (814)
Retail	Shopping Center (820)
Industry, Manufacturing, Processing	General Light Industrial (110)
Residential	Residential Condominium/Townhouse (230)
Transportation, Communication, Infrastructure	Infrastructure (NA)

Source: ITE, *Trip Generation Manual*, 7th Edition, 2004.

Table IV.G-9: Project Trip Generation – Jefferson Ridge

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Recreational Community Center (495)	40,410	SF	925	40	26	66	19	47	66
General Office Building (710)	28,736	SF	316	40	5	45	7	36	43
Specialty Retail Center (814)	13,470	SF	597	6	4	10	16	21	37
Shopping Center (820)	7,184	SF	308	4	3	7	13	14	27
General Light Industrial (110)	0	SF	0	0	0	0	0	0	0
Residential Condominium/Townhouse (230)	0	SF DU	0	0	0	0	0	0	0
Infrastructure	0	SF	0	0	0	0	0	0	0
<i>Retail Internal Trips (4.5%)</i>	----	----	(41)	(0)	(0)	(0)	(1)	(2)	(3)
<i>Office/Industrial Internal Trips (3.5%)</i>	----	----	(11)	(1)	(0)	(1)	(0)	(1)	(1)
<i>Residential Internal Trips (40%)</i>	----	----	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Subtotal	89,799	SF	2,094	89	38	127	55	114	169

Notes: ADT = Average Daily Traffic; SF = Square Feet; DU = Dwelling Units.

Source: DMJM Harris, 2007

Table IV.G-10: Project Trip Generation – Adams Street

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Recreational Community Center (495)	3,117	SF	71	3	2	5	1	4	5
General Office Building (710)	27,276	SF	300	37	5	42	7	34	41
Specialty Retail Center (814)	7,014	SF	311	3	2	5	8	11	19
Shopping Center (820)	10,131	SF	435	6	4	10	18	20	38
General Light Industrial (110)	24,938	SF	174	20	3	23	3	21	24
Residential Condominium/Townhouse (230)	8,004 4	SF DU	42	1	3	4	3	1	4
Infrastructure	2,338	SF	0	0	0	0	0	0	0
<i>Retail Internal Trips (4.5%)</i>	----	----	(34)	(0)	(0)	(0)	(1)	(1)	(2)
<i>Office/Industrial Internal Trips (3.5%)</i>	----	----	(17)	(2)	(0)	(2)	(0)	(2)	(2)
<i>Residential Internal Trips (40%)</i>	----	----	(17)	(0)	(1)	(1)	(1)	(1)	(2)
Subtotal	82,817	SF	1,265	68	18	86	39	86	125

Notes: ADT = Average Daily Traffic; SF = Square Feet; DU = Dwelling Units.

Source: DMJM Harris, 2007

Table IV.G-11: Project Trip Generation – Grant Street

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Recreational Community Center (495)	1,915	SF	44	2	1	3	1	2	3
General Office Building (710)	1,021	SF	11	2	0	2	0	2	2
Specialty Retail Center (814)	1,915	SF	85	1	0	1	2	3	5
Shopping Center (820)	2,936	SF	126	2	1	3	5	6	11
General Light Industrial (110)	1,021	SF	7	1	0	1	0	1	1
Residential Condominium/Townhouse (230)	10,160 4	SF DU	42	1	3	4	3	1	4
Infrastructure	0	SF	0	0	0	0	0	0	0
<i>Retail Internal Trips (4.5%)</i>	----	----	(9)	(0)	(0)	(0)	(0)	(0)	(0)
<i>Office/Industrial Internal Trips (3.5%)</i>	----	----	(1)	(0)	(0)	(0)	(0)	(0)	(0)
<i>Residential Internal Trips (40%)</i>	----	----	(17)	(0)	(1)	(1)	(1)	(1)	(2)
Subtotal	18,967	SF	288	8	5	13	10	14	24

Notes: ADT = Average Daily Traffic; SF = Square Feet; DU = Dwelling Units.

Source: DMJM Harris, 2007

Table IV.G-12: Project Trip Generation – South of Grant

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Recreational Community Center (495)	20,602	SF	471	21	13	34	10	24	34
General Office Building (710)	16,265	SF	179	22	3	25	4	20	24
Specialty Retail Center (814)	7,590	SF	336	4	2	6	9	12	21
Shopping Center (820)	13,012	SF	559	8	5	13	24	25	49
General Light Industrial (110)	37,951	SF	265	31	4	35	4	33	37
Residential Condominium/Townhouse (230)	33,410 14	SF DU	121	2	9	11	8	4	12
Infrastructure	0	SF	0	0	0	0	0	0	0
<i>Retail Internal Trips (4.5%)</i>	----	----	(40)	(1)	(0)	(1)	(1)	(2)	(3)
<i>Office/Industrial Internal Trips (3.5%)</i>	----	----	(16)	(2)	(0)	(2)	(0)	(2)	(2)
<i>Residential Internal Trips (40%)</i>	----	----	(48)	(1)	(4)	(5)	(3)	(2)	(5)
Subtotal	128,829	SF	1,827	83	33	116	55	112	167

Notes: ADT = Average Daily Traffic; SF = Square Feet; DU = Dwelling Units.

Source: DMJM Harris, 2007

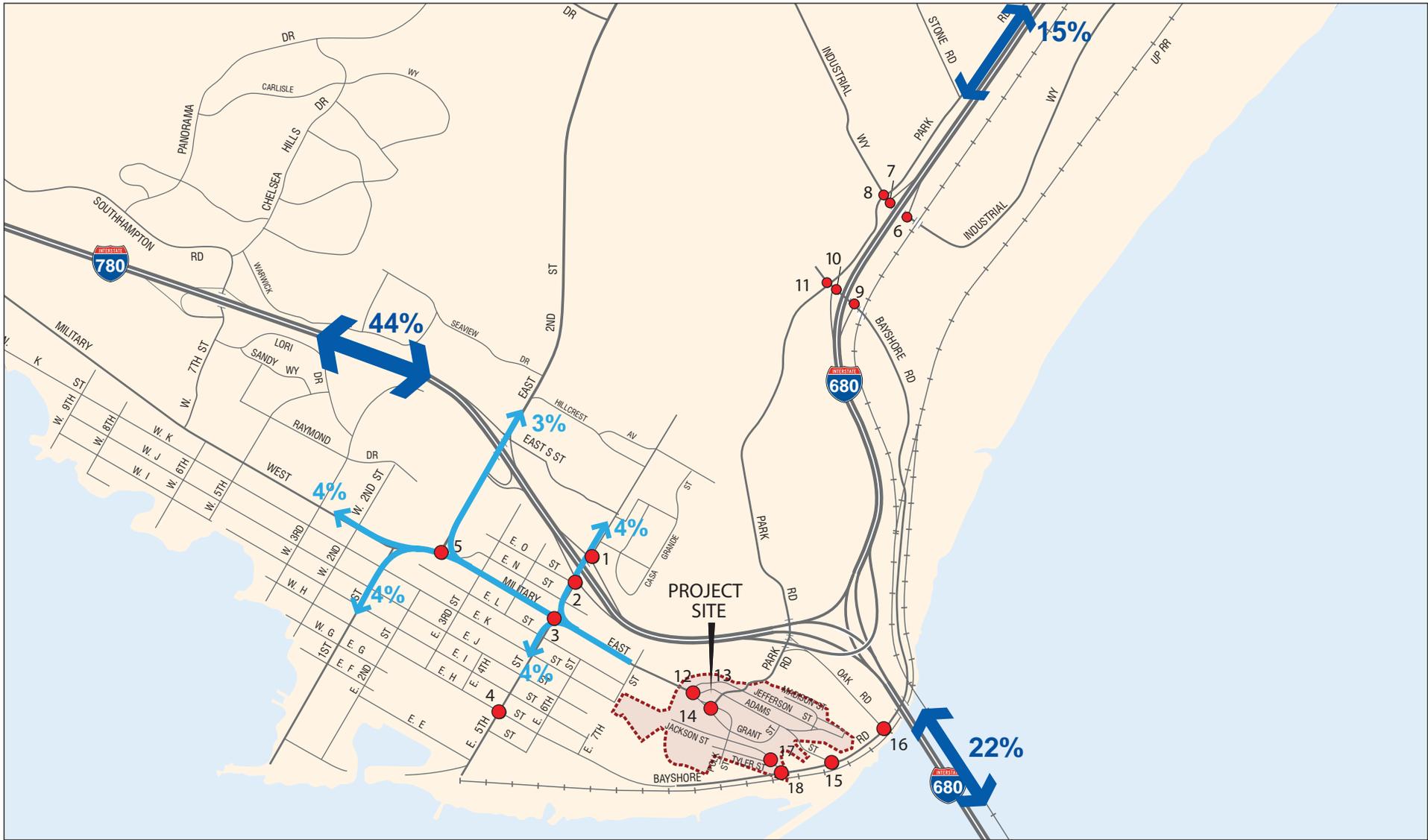
Table IV.G-13: Project Trip Generation – Total

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Jefferson Ridge	89,799	SF	2,094	89	38	127	55	114	169
Adams Street	82,817	SF	1,265	68	18	86	39	86	125
Grant Street	18,967	SF	288	8	5	13	10	14	24
South of Grant	128,829	SF	1,827	83	33	116	55	112	167
Total	320,413	SF	5,474	248	94	342	159	326	485

Notes: ADT = Average Daily Traffic; SF = Square Feet; DU = Dwelling Units.

Source: DMJM Harris, 2007

c. Project Trip Distribution and Assignment. Once the number of trips generated by the proposed Project is calculated, they must be distributed to and from the Project site, and then specifically assigned to roadways in the vicinity of the Project site. The distribution of Project traffic was determined based on a select link analysis using the latest available Solano / Napa County Travel Demand Model. The Project trip distribution patterns are presented in Figure IV.G-5. The Project trips were assigned to the roadways by applying the trip distribution percentages to the Project trip generation. The assignment of Project trips is illustrated in Figure IV.G-6.



LSA

FIGURE IV.G-5



LEGEND

- PROJECT SITE
- STUDY INTERSECTIONS

Lower Arsenal Mixed Use Specific Plan EIR
Project Trip Distribution

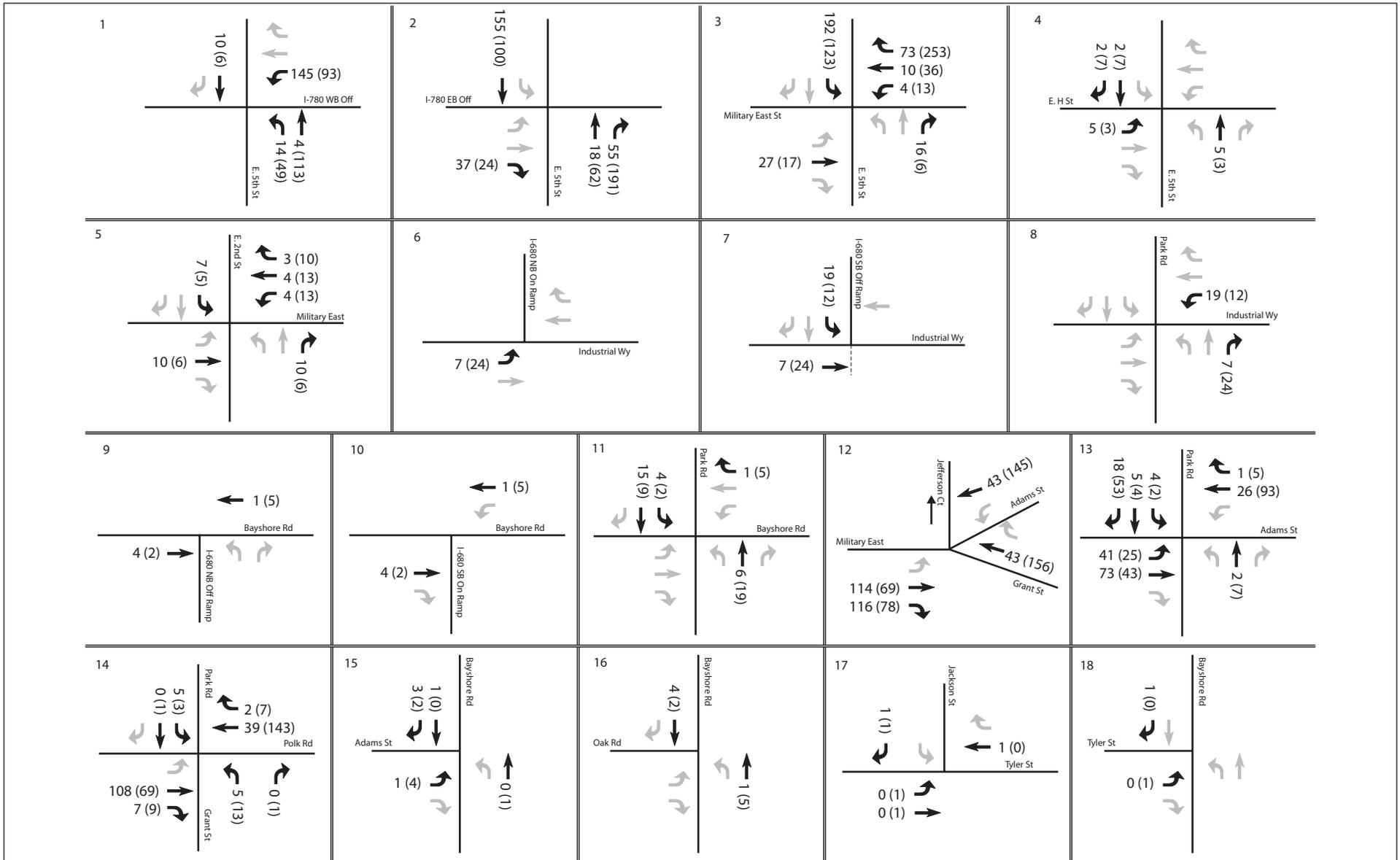


FIGURE IV.G-6

LSA



NOT TO SCALE

SOURCE: DMJM HARRIS/AECOM, 2007

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Lower Arsenal Mixed Use Specific Plan EIR
 Project Traffic Volumes
 AM (PM) Peak Hour

d. Existing Plus Project Conditions Traffic Volumes. The traffic generated by the proposed project was subsequently added to the Existing Conditions traffic volumes to derive the Existing Plus Project Conditions traffic volumes. The Existing Plus Project Conditions AM and PM peak hour turning movement volumes at the 16 study intersections are shown on Figure IV.G-7.

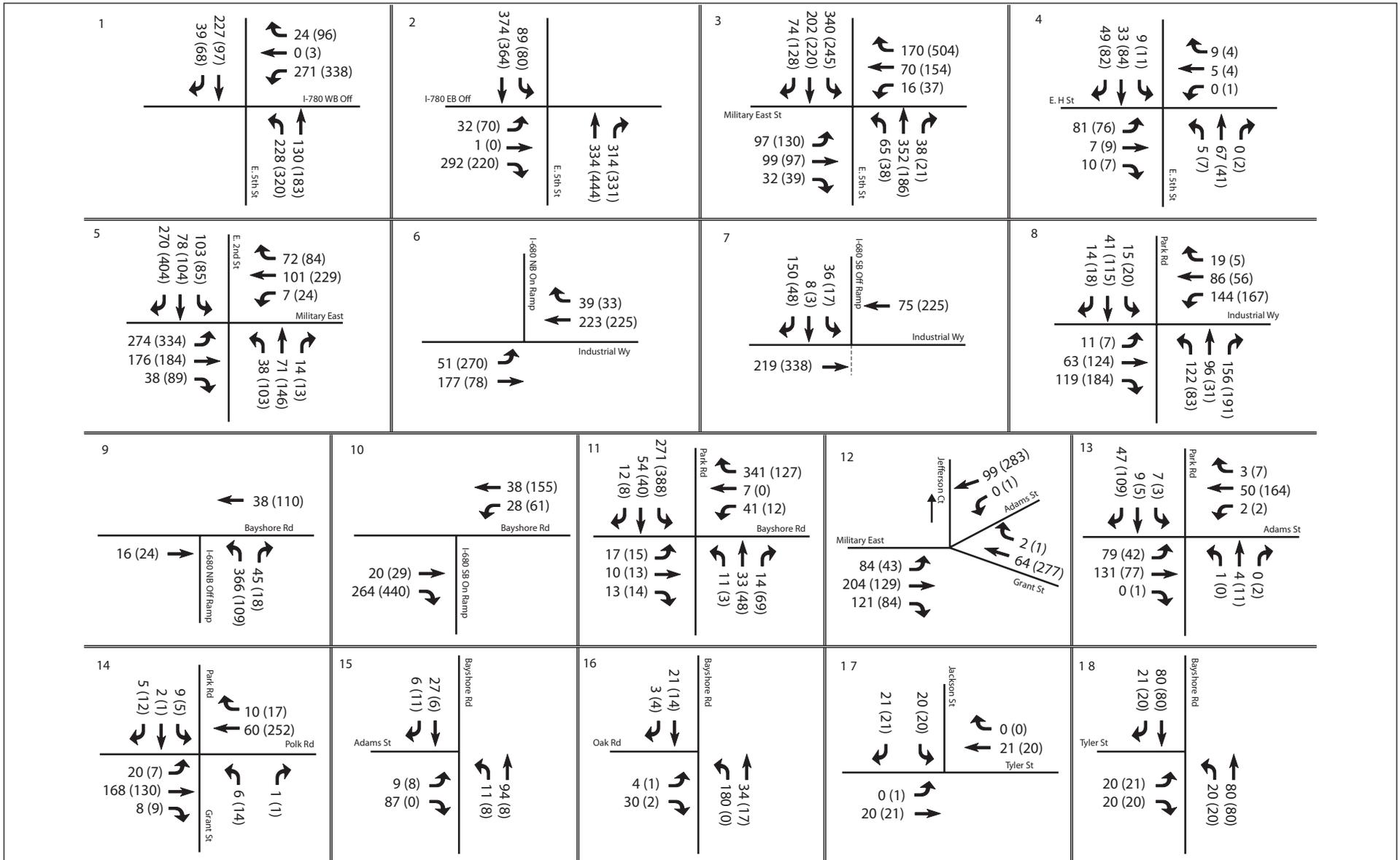
e. Thresholds of Significance. For the purposes of this EIR, the proposed project would result in significant transportation impacts if it would:

- Create direct transportation or circulation impacts associated with inconsistencies with General Plan policies;
- Cause a signalized intersection to fall below LOS D; cause the need for a signal at an unsignalized intersection; or cause queuing which exceeds the lane capacity at any intersection;
- Contribute to future cumulative demand that exceeds on-site project roadway capacity;
- Contribute 1 percent or more of the total future volume to an external roadway or freeway with inadequate capacity to meet future cumulative demand;
- Result in projected parking demand that would exceed the proposed parking supply on a regular and frequent basis;
- Result in potential conflicts for pedestrians or bicyclists, or fail to provide adequate bicycle and pedestrian access; or
- Increase transit demand above the levels provided by local transit operators or agencies.

f. Existing plus Project Conditions Intersection Level of Service. The Existing Plus Project Conditions AM and PM peak hour intersection service levels for the 16 study intersections are shown in Table IV.G-14.

As shown in Table IV.G-14, with the addition of project-related trips, the East 5th Street / I-780 Eastbound Ramps (PM peak hour) and East 5th Street / I-780 Westbound Ramps (AM peak hour) intersections are expected to deteriorate from acceptable levels of service to LOS E and F, respectively. During the PM peak hour, the East 5th Street / I-780 Westbound Ramps intersection would operate at LOS F with or without the addition of project-related trips.

g. Existing Plus Project Conditions Intersection Impacts and Mitigations Measures. Table IV.G-15 identifies the intersections that would operate at unacceptable LOS under Existing Plus Project Conditions. Where there are significant impact to intersections, mitigation measures are identified to reduce these impacts to a less-than-significant level. The resulting intersection LOS after the mitigation measures for the listed intersections are implemented is presented in Table IV.G-16.



LSA



NOT TO SCALE

SOURCE: DMJM HARRIS/AECOM, 2007

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FIGURE IV.G-7

Lower Arsenal Mixed Use Specific Plan EIR
Existing Plus Project Traffic Volumes
AM (PM) Peak Hour

Table IV.G-14: Existing Plus Project Conditions Levels of Service

No.	Intersection	Traffic Control ^a	Peak Hour	Existing		Existing plus Project	
				LOS	Delay	LOS	Delay
1	East 5th Street / I-780 Westbound Ramps	One-Way Stop (WB)	AM	D	26.1	F	>50.0
			PM	F	>50.0	F	>50.0
2	East 5th Street / I-780 Eastbound Ramps	One-Way Stop (EB)	AM	C	15.7	D	26.0
			PM	C	21.7	E	44.6
3	East 5th Street / Military East	Signal	AM	A	9.8	B	11.0
			PM	B	11.1	B	12.9
4	East 5th Street / East H Street	Four-Way Stop	AM	A	7.7	A	7.7
			PM	A	7.9	A	8.0
5	East 2nd Street / Military East	Signal	AM	B	18.5	B	18.8
			PM	C	27.4	C	28.9
6	Industrial Way / I-680 Northbound Ramps	One-Way Stop (WB)	AM	B	11.3	B	11.4
			PM	B	14.0	B	14.5
7	Industrial Way / I-680 Southbound Ramps	One-Way Stop (SB)	AM	A	9.7	A	9.7
			PM	B	11.0	B	10.9
8	Park Road / Industrial Way	Four-Way Stop	AM	B	11.7	B	12.1
			PM	B	12.3	B	12.9
9	Bayshore Road / I-680 Northbound Ramps	One-Way Stop (NB)	AM	B	11.2	B	11.2
			PM	A	9.7	A	9.7
10	Bayshore Road / I-680 Southbound Ramps	Westbound Left Yield	AM	A	7.9	A	7.9
			PM	A	8.6	A	8.6
11	Park Road / Bayshore Road	Four-Way Stop	AM	B	13.1	B	13.3
			PM	B	14.6	B	14.7
12	Adams Street / Military East / Grant Street ^b	One-Way Stop (WB)	AM	B	10.9	A	4.4
			PM	B	12.0	A	4.6
13	Park Road / Adams Street	Two-Way Stop (NB)	AM	B	10.1	B	12.1
			PM	A	9.5	B	11.4
14	Park Road / Polk Street / Grant Street	Four-Way Stop	AM	A	7.3	A	8.0
			PM	A	7.5	A	8.8
15	Bayshore Road / Adams Street	One-Way Stop (EB)	AM	A	8.8	A	8.8
			PM	A	8.7	A	8.7
16	Bayshore Road / Oak Road	One-Way Stop (EB)	AM	A	9.0	A	9.0
			PM	A	8.5	A	8.5
17	Jackson Street / Tyler Street	Roundabout	AM	----	----	A	3.1
			PM	----	----	A	3.1
18	Bayshore Road / Tyler Street	Two-Way Stop (EB)	AM	----	----	A	9.4
			PM	----	----	A	9.4

^a At one- and two-way stop controlled intersections, the worst minor approach is shown in parenthesis. Level of Service and delays are reported for this worst approach.

^b With the buildout of the proposed project, this intersection will be reconfigured into a roundabout.

Note: **Bolding** indicates unsatisfactory level of service.

Source: DMJM Harris, 2007

Table IV.G-15: Existing Plus Project Conditions Intersection Impacts and Mitigation Measures

Existing plus Project Conditions Impacts	Level of Significance	Existing plus Projects Conditions Mitigation Measures	Significance After Mitigation
Impact TRANS-1: Unacceptable LOS at the intersection of East 5th Street / I-780 Westbound Ramps . The effect of project traffic would result in the intersection operating at LOS F with a delay of over 50.0 seconds for both the AM and PM peak hours.	Significant	Mitigation Measure TRANS-1: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the AM and PM peak hours. This intersection operates at unacceptable conditions and meets signal warrants prior to the addition of project-related traffic. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with delays of 11.7 and 12.5 seconds for the AM and PM peak hours, respectively.	Less Than Significant
Impact TRANS-2: Unacceptable LOS at the intersection of East 5th Street / I-780 Eastbound Ramps . The effect of project traffic would result in the intersection operating at LOS E with a delay of 44.6 seconds during the PM peak hour.	Significant	Mitigation Measure TRANS-2: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the PM peak hour. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with 14.5 seconds of delay during the PM peak hour.	Less Than Significant

Source: DMJM Harris, 2007.

Table IV.G-16: Existing Plus Project Conditions Mitigated Intersection Levels of Service

No.	Intersection	Traffic Control	Peak Hour	Prior to Mitigation Existing Plus Project Conditions		Mitigated ** Existing Plus Project Conditions	
				LOS	Delay	LOS	Delay
1	East 5th Street / I-780 Westbound Ramps	One-Way Stop	AM	F	>50.0	B	11.7
			PM	F	>50.0	B	12.5
2	East 5th Street / I-780 Eastbound Ramps	One-Way Stop	AM	D	26.0	B	13.4
			PM	E	44.6	B	14.5

Notes: **Bolding** indicates unsatisfactory level of service.
Mitigation measures at both intersections include signalization.

Source: DMJM Harris, 2007.

Table IV.G-16 reiterates service levels prior to mitigation and then reports on the LOS and traffic delay once mitigation measures have been implemented.

h. Existing Plus Project Conditions Freeway Segment Level of Service. The current operating levels of CMP facilities within Benicia and anticipated operating levels with traffic generated by the Draft Specific Plan are summarized in Table IV.G-17.

Table IV.G-17: Existing Plus Project Conditions Freeway Level of Service by Segment

Freeway Segment	Direction	Peak Hour	Existing			Existing Plus Project		
			Volume	V/C Ratio	LOS	Volume	V/C Ratio	LOS
I-680: North of Industrial Way	Northbound	AM	1,311	0.30	A	1,332	0.30	A
		PM	3,017	0.69	C	3,088	0.70	C
	Southbound	AM	3,939	0.90	D	3,994	0.91	E
		PM	1,981	0.45	B	2,016	0.46	B
I-680: Between Industrial Way and Bayshore Road	Northbound	AM	1,157	0.26	A	1,171	0.27	A
		PM	2,662	0.61	C	2,709	0.62	C
	Southbound	AM	3,475	0.79	D	3,511	0.80	D
		PM	1,748	0.40	B	1,771	0.40	B
I-680: South of Bayshore Road	Northbound	AM	1,330	0.30	A	1,344	0.31	B
		PM	3,062	0.70	C	3,109	0.71	D
	Southbound	AM	3,997	0.91	E	4,033	0.92	E
		PM	2,010	0.46	B	2,033	0.46	B
I-780: East of East 5th Street	Eastbound	AM	2,579	0.59	C	2,634	0.60	C
		PM	2,533	0.58	C	2,724	0.62	C
	Westbound	AM	1,653	0.38	B	1,798	0.41	B
		PM	1,544	0.35	B	1,637	0.37	B
I-780: West of East 5th Street	Eastbound	AM	2,579	0.59	C	2,616	0.59	C
		PM	2,533	0.58	C	2,557	0.58	C
	Westbound	AM	1,653	0.38	B	1,667	0.38	B
		PM	1,544	0.35	B	1,593	0.36	B

Note: Based on information taken from the *2000 Highway Capacity Manual* (Chapter 21 – Multilane Highways), the analysis assumes freeway capacity of 2,200 vehicles/lane/hour for two-lane segments (lanes per direction), 2,300 vehicles/lane/hour for three-lane segments and above.

Source: 2000 Highway Capacity Manual; DMJM Harris, 2007

As shown in Table IV.G-17, all of the CMP routes are projected to operate at LOS E or better during both peak hours under Existing Plus Project Conditions. Therefore, the Draft Specific Plan would not create a significant impact to CMP routes under Existing Plus Project Conditions.

i. Cumulative Plus Project Conditions Traffic Volumes. The traffic generated by the proposed project was added to the Cumulative Conditions traffic volumes to derive the Cumulative Plus Project Conditions traffic volumes. Figure IV.G-8 presents turning movement volumes for the Cumulative Plus Project Conditions in the AM and PM peak hours at the 16 study intersections. The roadway lane configurations and intersection control assumed for Cumulative Plus Project Conditions are the same as those for the Existing Plus Project Conditions.

j. Cumulative Plus Project Conditions Intersection Level of Service. The Cumulative Plus Project Conditions AM and PM peak hour intersection level of service results for the 16 study intersections are shown in Table IV.G-18. As shown, the addition of project-related trips to the roadway network would be expected to worsen conditions or contribute to unacceptable operating conditions at the following intersections in the Cumulative Plus Project Condition. The expected LOS in this condition is listed after each affected intersection.

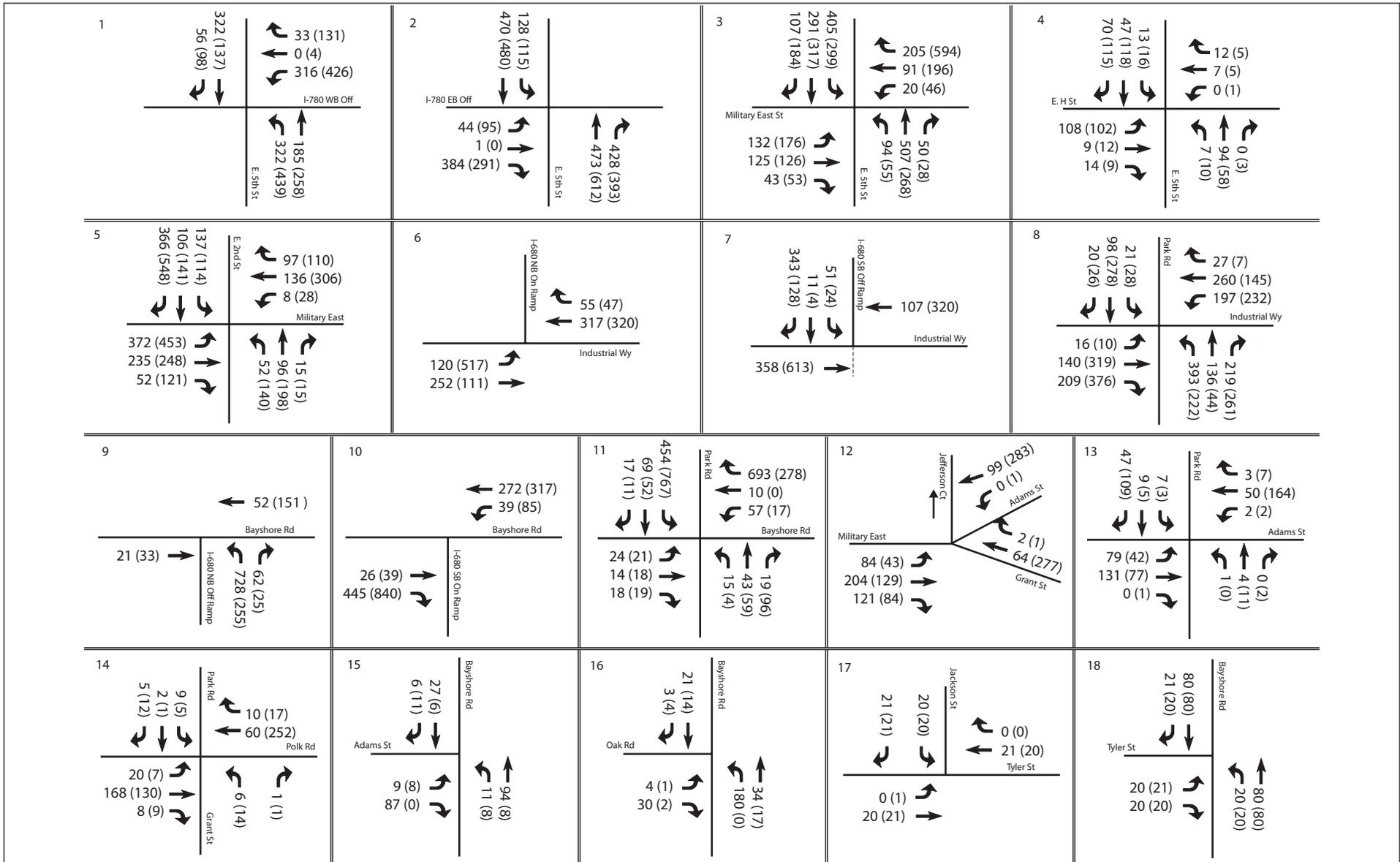


FIGURE IV.G-8

LSA



NOT TO SCALE

SOURCE: DMJM HARRIS/AECOM, 2007

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Lower Arsenal Mixed Use Specific Plan EIR
 Cumulative Plus Project Traffic Volumes
 AM (PM) Peak Hour

Table IV.G-18: Cumulative Plus Project Conditions AM and PM Peak Hour Intersection Levels of Service

No.	Intersection	Traffic Control ^a	Peak Hour	Cumulative		Cumulative Plus Project	
				LOS	Delay	LOS	Delay
1	East 5th Street / I-780 Westbound Ramps	One-Way Stop (WB)	AM	F	>50.0	F	>50.0
			PM	F	>50.0	F	>50.0
2	East 5th Street / I-780 Eastbound Ramps	One-Way Stop (EB)	AM	F	>50.0	F	>50.0
			PM	F	>50.0	F	>50.0
3	East 5th Street / Military East	Signal	AM	B	11.3	C	27.4
			PM	B	12.8	B	18.2
4	East 5th Street / East H Street	Four-Way Stop	AM	A	8.1	A	8.2
			PM	A	8.6	A	8.7
5	East 2nd Street / Military East	Signal	AM	C	20.7	C	21.1
			PM	D	53.3	E	57.0
6	Industrial Way / I-680 Northbound Ramps	One-Way Stop (WB)	AM	B	14.2	B	14.3
			PM	D	28.7	D	31.1
7	Industrial Way / I-680 Southbound Ramps	One-Way Stop (SB)	AM	B	11.0	B	11.1
			PM	B	12.3	B	12.4
8	Park Road / Industrial Way	Four-Way Stop	AM	E	37.3	E	41.3
			PM	E	39.9	E	43.6
9	Bayshore Road / I-680 Northbound Ramps	One-Way Stop (NB)	AM	C	19.6	C	19.9
			PM	B	11.1	B	11.2
10	Bayshore Road / I-680 Southbound Ramps	Westbound Left Yield	AM	A	8.4	A	8.4
			PM	B	10.2	B	10.2
11	Park Road / Bayshore Road	Four-Way Stop	AM	F	>50.0	F	>50.0
			PM	F	>50.0	F	>50.0
12	Adams Street / Military East / Grant Street ^b	One-Way Stop (WB)	AM	B	10.8	A	4.4
			PM	B	11.9	A	4.6
13	Park Road / Adams Street	Two-Way Stop (NB)	AM	B	10.1	B	12.1
			PM	A	9.5	B	11.4
14	Park Road / Polk Street / Grant Street	Four-Way Stop	AM	A	7.3	A	8.0
			PM	A	7.5	A	8.8
15	Bayshore Road / Adams Street	One-Way Stop (EB)	AM	A	8.8	A	8.8
			PM	A	8.7	A	8.7
16	Bayshore Road / Oak Road	One-Way Stop (EB)	AM	A	9.0	A	9.0
			PM	A	8.5	A	8.5
17	Jackson Street / Tyler Street	Roundabout	AM	----	----	A	3.1
			PM	----	----	A	3.1
18	Bayshore Road / Tyler Street	Two-Way Stop (EB)	AM	----	----	A	9.4
			PM	----	----	A	9.4

^a At one- and two-way stop controlled intersections, the worst minor approach is shown in parenthesis. Level of Service and delays are reported for this worst approach.

^b With the buildout of the proposed project, this intersection will be reconfigured into a roundabout.

Note: **Bolding** indicates unsatisfactory level of service.

Source: DMJM Harris, 2007

- East 5th Street / I-780 Westbound Ramps: LOS F in both the AM and PM peak hours;
- East 5th Street / I-780 Eastbound Ramps: LOS F in both the AM and PM peak hours;
- East 2nd Street / Military East: LOS E in the PM peak hour;
- Park Road / Industrial Way: LOS E in both the AM and PM peak hours; and
- Park Road / Bayshore Road: LOS F in both the AM and PM peak hours.

It should be noted that the impacts at the Park Road / Industrial Way and Park Road / Bayshore Road intersections have also been identified in the Benicia Business Park EIR. As such, the mitigation measures proposed at these intersections for Cumulative traffic levels in the Lower Arsenal Mixed Use Specific Plan EIR are the same as those proposed in the Benicia Business Park EIR.

k. Cumulative Plus Project Conditions Intersection Impacts and Mitigation Measures. The following is a description of the intersections that would operate at unacceptable LOS under Cumulative Plus Project Conditions. Mitigation measures that would reduce the project's impacts to less-than-significant levels are also described.

Table IV.G-19 details project-related contributions in the Cumulative Plus Project Condition, and recommends mitigation measures to reduce these impacts and achieve acceptable operating conditions. Table IV.G-20 details the LOS of affected intersections after mitigation.

l. Cumulative Plus Project Conditions Freeway Segment Level of Service. The CMP facilities within Benicia, and their current operating levels in the PM peak hour, are summarized in Table IV.G-21.

As shown in Table IV.G-21, all of the CMP routes are projected to operate at LOS E or better during both peak hours under Cumulative Plus Project Conditions.

m. Cumulative Plus Project Conditions Arsenal Roadway Segment Level of Service. The operating conditions of the roadway network within the Plan Area were evaluated to ensure that the lane geometry proposed in the Specific Plan would be sufficient to serve forecast traffic levels. The roadway operating conditions under Cumulative Plus Project Conditions are summarized in Table IV.G-22.

As shown in Table IV.G-22, all of the roadway segments within the Plan Area are projected to operate at LOS C or better during both peak hours under Cumulative Plus Project Conditions.

n. Transit Facility Impacts. Based on 2000 Census Journey to Work data, 4 percent of the proposed project's trip generation would be expected to be transit trips. Therefore, the project would generate 14 new transit trips in the AM peak hour, and 19 in the PM peak hours. This level of additional transit ridership would not create an adverse impact to transit facilities.

Table IV.G-19: Cumulative Plus Project Conditions Intersection Impacts and Mitigation Measures

Cumulative Plus Project Conditions Impacts	Level of Significance	Cumulative Plus Project Conditions Mitigation Measures	Significance After Mitigation
<p><u>Impact TRANS-3</u>: Unacceptable LOS at the intersection of East 5th Street / I-780 Westbound Ramps. The effect of project traffic would result in the intersection operating at LOS F with a delay of over 50.0 seconds for both the AM and PM peak hours.</p>	<p>Significant</p>	<p><u>Mitigation Measure TRANS-3</u>: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the AM and PM peak hours. This intersection operates at unacceptable conditions and meets signal warrants prior to the addition of project-related traffic. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with delays of 12.1 and 16.6 seconds for the AM and PM peak hours, respectively.</p>	<p>Less Than Significant</p>
<p><u>Impact TRANS-4</u>: Unacceptable LOS at the intersection of East 5th Street / I-780 Eastbound Ramps. The effect of project traffic would result in the intersection operating at LOS F with a delay of over 50.0 seconds for both the AM and PM peak hours.</p>	<p>Significant</p>	<p><u>Mitigation Measure TRANS-4</u>: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the AM and PM peak hours. Reconfigure the northbound approach to provide one left-turn lane, one through lane, and one right-turn lane. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with delays of 15.5 and 14.9 seconds for the AM and PM peak hours, respectively.</p>	<p>Less Than Significant</p>
<p><u>Impact TRANS-5</u>: Unacceptable LOS at the intersection of East 2nd Street / Military East. The effect of project traffic would result in the intersection operating at LOS E with a delay of 57.1 seconds during the PM peak hour.</p>	<p>Significant</p>	<p><u>Mitigation Measure TRANS-5</u>: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Overlap the southbound right turn with the eastbound left turn phase, and re-time the signal. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS D with 42.5 seconds of delay during the PM peak hour.</p>	<p>Less Than Significant</p>
<p><u>Impact TRANS-6</u>: Unacceptable LOS at the intersection of Park Road / Industrial Way. The effect of project traffic would result in the intersection operating at LOS E with delays of 41.3 and 43.6 seconds during the AM and PM peak hours, respectively.</p>	<p>Significant</p>	<p><u>Mitigation Measure TRANS-6</u>: The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets the Peak Hour Volume Signal Warrant for the AM and PM peak hours. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS B with delays of 14.5 and 13.8 seconds for the AM and PM peak hours, respectively.</p>	<p>Less Than Significant</p>

Table IV.G-19 *Continued*

Cumulative Plus Project Conditions Impacts	Level of Significance	Cumulative Plus Project Conditions Mitigation Measures	Significance After Mitigation
<u>Impact TRANS-7</u> : Unacceptable LOS at the intersection of <u>Park Road / Bayshore Road</u> . The effect of project traffic would result in the intersection operating at LOS F with delays of over 50.0 seconds during both the AM and PM peak hours.	Significant	<u>Mitigation Measure TRANS-7</u> : The project sponsor of an individual development project shall contribute a pro-rata share to the following improvement: Signalize intersection as it meets Signal Warrant 11, Peak Hour Volumes for the AM peak hour. Implementation of the identified improvement would result in this intersection operating at an acceptable LOS C and LOS B with delays of 24.5 and 18.9 seconds for the AM and PM peak hours, respectively.	Less Than Significant

Source: DMJM Harris, 2007.

Table IV.G-20: Cumulative Plus Project Conditions Mitigated Intersection Levels of Service

No.	Intersection	Traffic Control	Peak Hour	Prior to Mitigation Existing Plus Project Conditions		Mitigated ** Existing Plus Project Conditions	
				LOS	Delay	LOS	Delay
1	East 5th Street / I-780 Westbound Ramps ^a	One-Way Stop	AM	F	>50.0	B	12.1
			PM	F	>50.0	B	16.6
2	East 5th Street / I-780 Eastbound Ramps ^a	One-Way Stop	AM	F	>50.0	B	15.5
			PM	F	>50.0	B	14.9
5	East 2nd Street / Military East	Signal	AM	C	21.1	B	17.8
			PM	E	57.0	D	42.5
8	Park Road / Industrial Way ^a	Four-Way Stop	AM	E	41.3	B	14.5
			PM	E	43.6	B	13.8
11	Park Road / Bayshore Road	Four-Way Stop	AM	F	>50.0	B	14.5
			PM	F	>50.0	C	17.6

^a Mitigation measure includes signalization.

Notes: **Bolding** indicates unsatisfactory level of service.

Source: DMJM Harris, 2007.

Table IV.G-21: Cumulative Plus Project Conditions Freeway Level of Service by Segment

Freeway Segment	Direction	Peak Hour	Cumulative			Cumulative Plus Project		
			Volume	V/C Ratio	LOS	Volume	V/C Ratio	LOS
I-680: North of Industrial Way	Northbound	AM	2,751	0.40	B	2,772	0.40	B
		PM	4,748	0.69	C	4,819	0.70	C
	Southbound	AM	6,762	0.98	E	6,817	0.99	E
		PM	4,154	0.60	C	4,189	0.61	C
I-680: Between Industrial Way and Bayshore Road	Northbound	AM	2,283	0.33	B	2,297	0.33	B
		PM	3,639	0.53	C	3,686	0.53	C
	Southbound	AM	5,888	0.85	D	5,924	0.86	D
		PM	3,719	0.54	C	3,742	0.54	C
I-680: South of Bayshore Road	Northbound	AM	2,511	0.36	B	2,525	0.37	B
		PM	3,765	0.55	C	3,812	0.55	C
	Southbound	AM	6,792	0.98	E	6,828	0.99	E
		PM	4,648	0.67	C	4,671	0.68	C
I-780: East of East 5th Street	Eastbound	AM	4,260	0.97	E	4,315	0.98	E
		PM	4,184	0.95	E	4,375	0.99	E
	Westbound	AM	3,406	0.77	D	3,551	0.81	D
		PM	3,181	0.72	D	3,274	0.74	D
I-780: West of East 5th Street	Eastbound	AM	4,260	0.97	E	4,297	0.98	E
		PM	4,184	0.95	E	4,208	0.96	E
	Westbound	AM	3,406	0.77	D	3,420	0.78	D
		PM	3,181	0.72	D	3,230	0.73	D

Source: 2000 Highway Capacity Manual; DMJM Harris, 2007

Note: Based on information taken from the 2000 Highway Capacity Manual (Chapter 21 – Multilane Highways), the analysis assumes freeway capacity of 2,200 vehicles/lane/hour for two-lane segments (lanes per direction), 2,300 vehicles/lane/hour for three-lane segments and above.

Table IV.G-22: Cumulative plus Project Conditions Arsenal Roadway Level of Service by Segment

Freeway Segment	Direction	Peak Hour	Cumulative Plus Project		
			Volume	V/C Ratio	LOS
Military East (west of Jefferson Street)	Eastbound	AM	379	0.42	B
		PM	288	0.32	B
	Westbound	AM	193	0.21	A
		PM	529	0.59	C
Park Road	Northbound	AM	48	0.05	A
		PM	42	0.05	A
	Southbound	AM	51	0.06	A
		PM	67	0.07	A
Adams Street	Eastbound	AM	179	0.20	A
		PM	82	0.09	A
	Westbound	AM	55	0.06	A
		PM	173	0.19	A
Polk Street	Northbound	AM	82	0.09	A
		PM	145	0.16	A
	Southbound	AM	95	0.11	A
		PM	176	0.20	A
Grant Street	Eastbound	AM	124	0.14	A
		PM	107	0.12	A
	Westbound	AM	62	0.07	A
		PM	144	0.16	A

Table IV.G-22 *Continued*

Freeway Segment	Direction	Peak Hour	Cumulative Plus Project		
			Volume	V/C Ratio	LOS
Bayshore Road	Northbound	AM	103	0.11	A
		PM	17	0.02	A
	Southbound	AM	33	0.04	A
		PM	17	0.02	A
Tyler Street	Eastbound	AM	40	0.04	A
		PM	42	0.05	A
	Westbound	AM	42	0.05	A
		PM	41	0.05	A
Jefferson Street	Eastbound	AM	77	0.09	A
		PM	58	0.06	A
	Westbound	AM	39	0.04	A
		PM	92	0.10	A

Source: 2000 Highway Capacity Manual; DMJM Harris, 2007

Note: Based on information taken from the *2000 Highway Capacity Manual*, the analysis assumes roadway lane capacity of 900 vehicles/lane/hour.

o. Pedestrian and Bicycle Facility Impacts. Several pedestrian and bicycle facility improvements are proposed as part of the Draft Specific Plan. All degraded or incomplete sections of pedestrian facilities would be entirely rebuilt. Bicycle facilities would be provided along Military East and Park Road in the project site. These improvements would comply with City policies promoting alternative transportation, and could serve to reduce the amount of vehicle traffic generated by the project.

p. Design and Parking Impacts. All changes to the circulation system that would be implemented as part of the Draft Specific Plan would be built to modern engineering and standards. However, the proposed stairway connections may not be built to ADA standards. Nevertheless, the Draft Specific Plan would not result in the development of design features dangerous to pedestrians, bicyclists, or motorists.

Military East, Park Road, and Adams Street would each be built to 11-foot lane width standards. Jefferson Street, Grant Street, Neighborhood Street 1, and Neighborhood Street 2 would each be built to 10-foot lane width standards, with design speeds reduced to 25 miles per hour. Neighborhood Avenue would be built to 12-foot lane width standards. Military East and Park Road would each include bicycle lanes built to 5-foot wide standards. All roadways which include on-street parking would be built to 8-foot wide on-street parking standards. These roadway widths are adequate to ensure the safety of drivers, bicyclists, and pedestrians. Sidewalks and off-street pedestrian connections throughout the Plan Area would be built to modern engineering and ADA standards.

The Draft Specific Plan requires parking to be addressed via district-wide solutions, using shared parking arrangements, special event management, and shuttle programs (in addition to promoting transportation alternatives like walking and bicycling to reduce demand for parking spaces). As part of the Draft Specific Plan, a Transportation Management Association may be created to formulate and administer the district-wide parking solutions. However, in the short-term, parking in the Plan Area would likely be guided by the City's existing Traffic, Bicycle, and Pedestrian Safety Committee. Some on-street parking would be removed to allow for implementation of the circulation changes envisioned in the Draft Specific Plan. However, with implementation of the parking management guidelines and alternative transportation actions outlined in the Draft

Specific Plan, it is expected that adequate parking would be provided within the Plan Area. No physical impacts related to inadequate parking supply (e.g., air quality impacts or significant traffic congestion) would occur.

q. Construction Period Impacts. During the construction period, temporary transportation impacts would result from truck movements as well as construction worker vehicles traveling to and from the project site. The construction-related traffic would result in a temporary reduction in the capacities of project area streets because of the slower movements and larger turning radii of construction trucks compared to passenger vehicles. Truck traffic that occurs during the peak commute hours (7:00 to 9:00 AM and 4:00 to 6:00 PM) could result in reduced levels of service and higher delays at local intersections than during off-peak hours. Additionally, parking of construction workers' vehicles would temporarily increase parking occupancy levels in the area.

In addition, high volumes of heavily laden trucks are expected to have an adverse impact on the condition of streets and highways. Heavy trucks create a disproportionate impact to roadway structural sections, particularly at intersections where acceleration/deceleration is concentrated.

The mitigation measures required to reduce construction-related impacts to a less-than-significant level are presented below in Table IV.G-23.

Table IV.G-23: Construction Period Impacts

Impacts	Level of Significance	Mitigation Measures	Significance After Mitigation
<p><u>Impact TRANS-8:</u> Temporary transportation impacts would result from truck movements and construction worker vehicles traveling to and from the project site.</p>	<p>Significant</p>	<p><u>Mitigation Measure TRANS-8:</u> Prior to the issuance of each building permit, the project sponsor of an individual development project and construction contractor shall meet with the Benicia Public Works Department and other appropriate City of Benicia agencies to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of the project. The project sponsor shall develop a construction management plan for review and approval by the City Public Works Department. The plan shall include at least the following items and requirements:</p> <ul style="list-style-type: none"> • A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, provisions for truck queuing, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes. • Identification of any transit stop relocations. • Provisions for parking management and spaces for all construction workers to ensure that construction workers do not park in on-street spaces. • Identification of parking space removal and any relocation of parking for employees, and public parking during construction. • Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur. • Provisions for accommodation of pedestrian flow. • No construction traffic shall be allowed on East 5th 	<p>Less Than Significant</p>

Table IV.G-23 *Continued*

Impacts	Level of Significance	Mitigation Measures	Significance After Mitigation
		<p>Street south of Military East.</p> <ul style="list-style-type: none"> • Location of construction staging areas for materials, equipment, and vehicles. • Identification of haul routes for movement of construction vehicles that would minimize impacts on vehicular and pedestrian traffic, circulation and safety; and provisions for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the project sponsor. • A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager. 	
<p><u>Impact TRANS-9:</u> High volumes of heavily laden trucks have an incremental impact on the condition of streets and highways.</p>	<p>Significant</p>	<p><u>Mitigation Measure TRANS-9:</u> The project sponsor of an individual development project shall prepare an overall construction traffic management plan to limit the effects of trucks and other construction traffic on surface conditions of area roads and intersections. This plan shall be prepared in coordination with the City of Benicia, and shall include the following provisions:</p> <ul style="list-style-type: none"> • Prior to implementation of the proposed project, the project sponsor shall survey the condition of truck access route roadways and prepare an existing conditions report to document roadway baseline conditions. • During the construction of the project, or periodically throughout the project's construction period, the project sponsor shall make periodic improvements to area roadways to maintain minimum standards, including clean-up of construction debris (e.g., sand and gravel) and spot repaving of potholes or other severe pavement section damage. • Upon completion of all or most project construction activities, the project sponsor shall identify any impacts to roadway conditions. The project sponsor will install improvements and/or pay an impact fee to mitigate any damages to the existing street pavements on Military East, Park Road, and/or East 5th Street to/from the project site caused by heavy construction traffic accessing the project site. 	<p>Less Than Significant</p>

Source: DMJM Harris, 2007.

