# Chapter 8: Technical Analysis of Recommended Concept Plan

The technical analysis of the proposed improvements included in the Recommended Concept Plan is based on year 2030 conditions. Using the SANDAG Series 11 traffic model data summarized in Chapter 4 and SANDAG RTP transit ridership projections, traffic operations, transit operations, bicycle connectivity and pedestrian access improvement were evaluated. The goal of the Recommended Concept Plan is improve overall mobility within the study corridor and reduce congestion for traffic where possible. This chapter summarizes the results of this analysis.

## 8.1 INTERSECTION OPERATIONAL ANALYSIS

Improvements in the study corridor that focus on improving traffic flow include:

- Improvement A: Moore Street at Camino Del Rio Median Closure: The proposed improvement will restrict left turn access on all movements at the intersection thereby reducing the potential for accidents. Left turns and u-turns will be permitted at Camino Del Rio / Hancock (signalized intersection) to offset the impacts associated with closing the median.

- Improvement B: New Traffic Signal at Rosecrans / Hancock: The traffic signal at Hancock would improve the long-term operating conditions of this intersection as well as provide for a signalized pedestrian crossing. The northbound left turn volume in the p.m. peak is forecast to increase from 195 to 445, which is not feasible to be handled at an unsignalized intersection.

- Improvement C: Extension of Sports Arena Through Camino Del Rio-Rosecrans Intersection: Extending Sports Arena eastbound would provide direct access to Pacific Highway thereby reducing the reliance upon Midway and other routes.

- Improvement D: Rosecrans and Midway Intersection Improvements: Adding the second northbound left-turn lane and extending the southbound left-turn lanes will decrease the queue and increase capacity for traffic from Rosecrans to Midway. Adding the dedicated northbound right-turn lane will provide additional capacity and reduce delay on the northbound approach.

- Improvement F: Modified Signals at Dumas / Roosevelt and Zola / Womble: Modifying the intersections will provide improved access for traffic coming from the west side of Rosecrans from Dumas and Zola. The intersections will better serve both sides of Rosecrans and provide left-turn access that is currently prohibited.

- Improvement G: Intermittent Medians with Northbound Left-Turn Access (Area 2): Consolidating the number of access points will reduce the potential for accidents and reduce the interruptions to traffic flow along Rosecrans.

- Improvement L: Landscaped Medians and Northbound Left-Turn Pockets at Intersections (Area 3): Consolidating the number of access points will reduce the delay on the side street and reduce the interruption to traffic flow along Rosecrans.

- Improvement M: New Traffic Signal at Rosecrans / Emerson: A new traffic signal at Emerson would provide safer left-turn access from the side streets onto Rosecrans, which would likely encourage side-street traffic to divert away from nearby unsignalized intersections to the new signal at Emerson. The new traffic signal will also provide opportunities for significant reductions in vehicular delay during the peak hours for left-turning side-street traffic.

- Improvement P: Restripe Intersection of Rosecrans / Talbot: Providing the northbound left-turn lane with a shared through-right turn lane on Rosecrans will improve flow upon the approach of the intersection and will eliminate the existing weaving pattern caused by motorists going around those waiting to make the left-turn. Re-striping the southbound approach of the intersection will improve the alignment and flow of traffic to match the number approaching lanes with the number of receiving lanes, thus eliminating the need to quickly merge into the single receiving lane.

Some of the improvements included in the Recommended Concept Plan resulted in a change in travel patterns within the study area. The peak hour and ADT volumes with the Recommended Concept Plan are provided in Exhibit 8-1. Modifications to traffic patterns corresponding to the Moore Street Median Closure (Improvement A), improvements at Rosecrans/Sports Arena (Improvement C), modified signals at Dumas/Roosevelt and Zola/Womble (Improvement F), traffic signal at Emerson (Improvement M) and medians through Area ~~2~~ 3 (Improvement L) are illustrated in Exhibits 8-2 through 8-4.

Applying the intersection geometrics included in the Recommended Concept Plan to the modified traffic volumes, illustrated in Exhibit 8-1, the intersection operational analysis and VISSIM analysis were re-evaluated. Results of the intersection level of service analysis are summarized in Table 8-1. HCM analysis worksheets are provided in Appendix 8-A. As shown in Table 8-1, with the proposed improvements, most intersections in the study corridor will operate at LOS D or better through year 2030. The following intersections are forecast to operate at LOS E or F during the peak hours with the Recommended Concept Plan:

- Rosecrans St. / Lytton St.
- Rosecrans St. / Nimitz Blvd.
- Camino Del Rio / Moore St.

Widening would be needed to improve the intersections of Rosecrans Street / Lytton Street and Rosecrans Street / Nimitz Boulevard to an acceptable level of service; however, due to right-of-way constraints, these intersections are not recommended for improvements. The median closure at intersection of Camino Del Rio / Moore Street significantly improves peak hour delay by prohibiting the left-turn movements; however the right-turns exiting Moore Street would still experience a deficient level of service due to the very heavy traffic volumes forecast on Camino Del Rio during the peak hours.

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Exhibit 8-1:
Peak Hour and ADT Volumes for Recommended Concept Plan
(Area 1)

Exhibit 8-1:
Peak Hour and ADT Volumes for Recommended Concept Plan
(Area 2)

Exhibit 8-1:
Peak Hour and ADT Volumes for Recommended Concept Plan
(Area 3 & 4)

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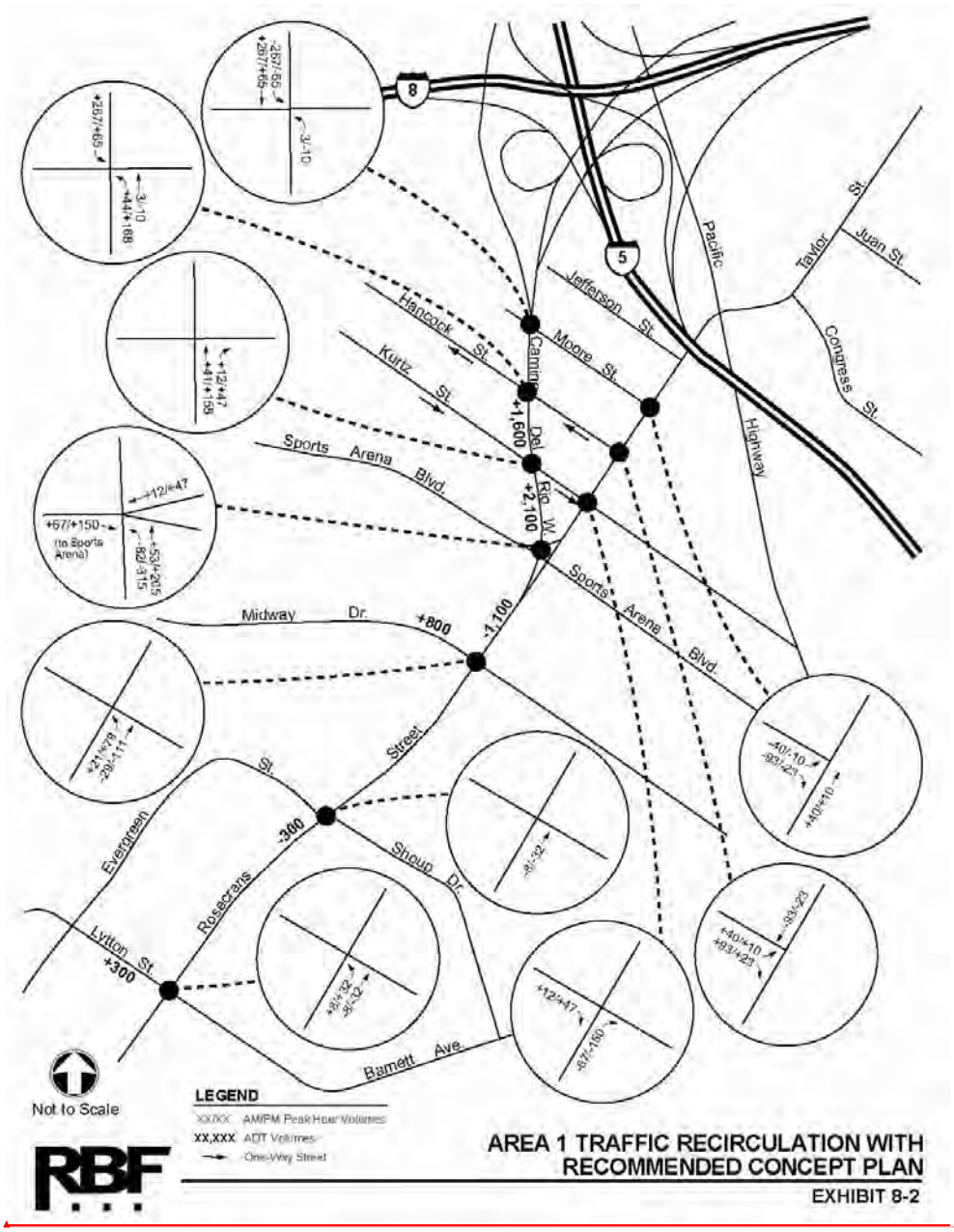

~~Exhibit 8-2:~~
~~Traffic Recirculation with Moore Street Median Closure~~
~~(Improvement A)~~

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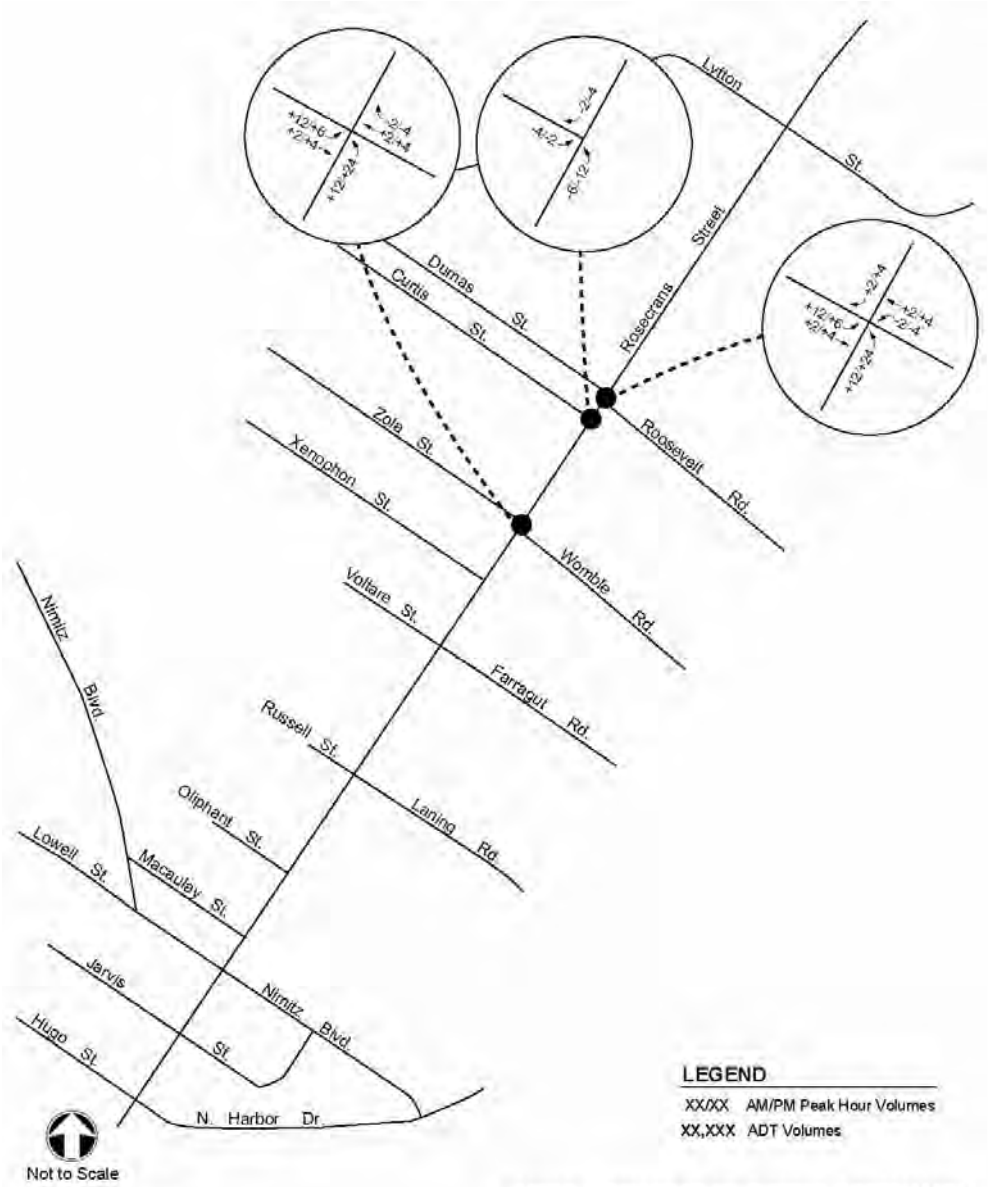
~~Exhibit 8-3:~~
~~Traffic Recirculation with Sports Arena Extension~~

(Improvement


Lytton St.
Rosecrans Street
Dumas St.
Curtis St.
Zola St.
Xenophon St.
Voltaire St.
Roosevelt Rd.
Womble Rd.
Farragut Rd.
Laning Rd.
Russell St.
Oliphant St.
Nimitz Blvd.
Lowell St.
Macauley St.
Jarvis St.
Hugo St.
N. Harbor Dr.
LEGEND
XX/XX AM/PM Peak Hour Volumes
XX,XXX ADT Volumes
Not to Scale
AREA 2 TRAFFIC RECIRCULATION WITH RECOMMENDED CONCEPT PLAN
EXHIBIT 8-3

C)

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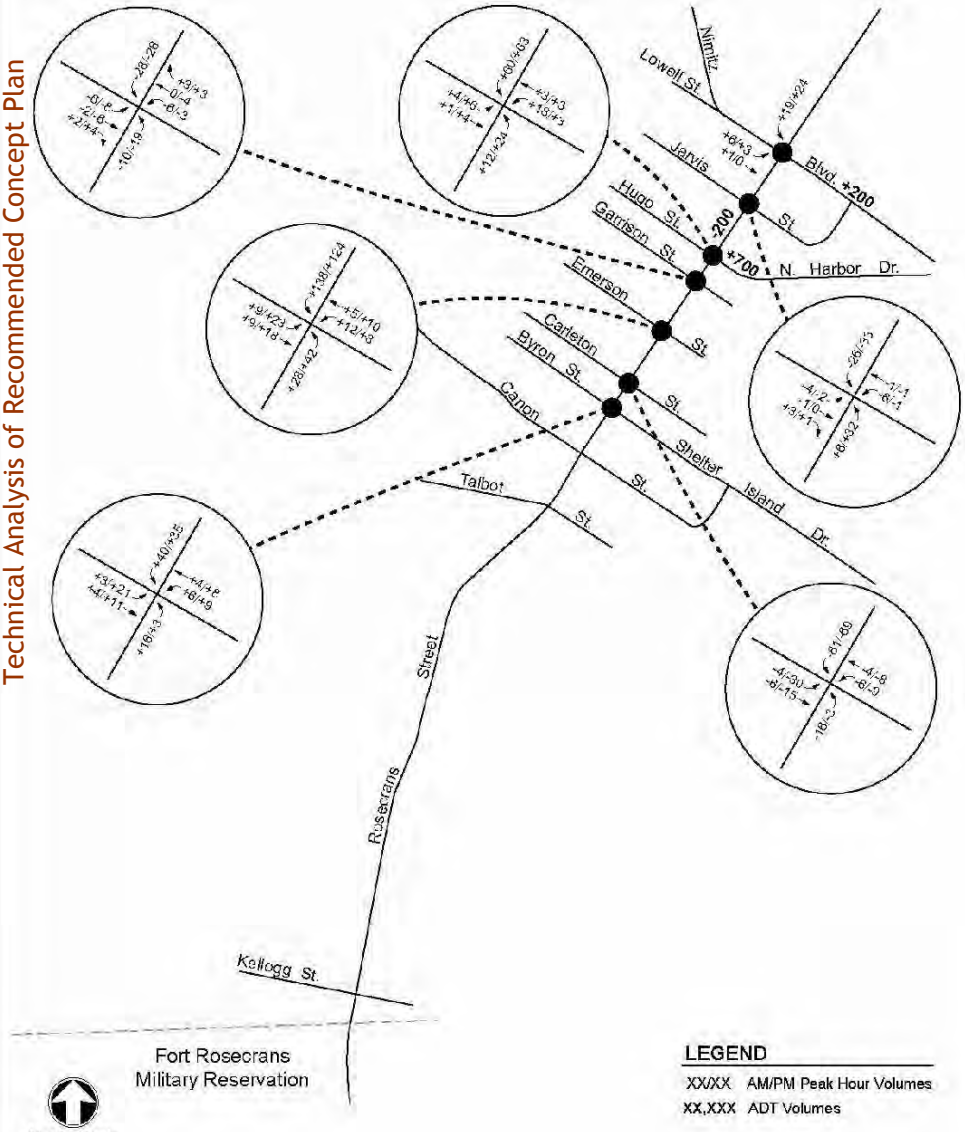
~~Exhibit 8-3:~~
~~Traffic Recirculation with Traffic Signal at Emerson Street and Medians in Area 3 (Improvement M)~~




**AREAS 3-4 TRAFFIC RECIRCULATION WITH RECOMMENDED CONCEPT PLAN**

**EXHIBIT 8-4**

**Table 8- 1**
**Intersection Operational Analysis Summary**

| Intersection | | Traffic Control (1) | Existing (2009) | | | | 2030 No Build | | | | 2030 With Recommended Plan | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 2) | Rosecrans-Taylor St. / Pacific Highway | S | 22.8 | C | 25.1 | C | 31.6 | C | **57.1** | **E** | 31.6 | C | 52.3 | D |
| 3) | Rosecrans St. / Jefferson St. | O | 10.9 | B | 12.1 | B | 12.5 | B | 15.7 | C | 12.4 | B | 15.3 | C |
| 4) | Rosecrans St. / Moore St. | O | 11.7 | B | 11.9 | B | 14.4 | B | 15.8 | C | 11.8 | B | 14.2 | B |
| 5) | Rosecrans St. / Hancock St. | (2) | 8.6 | A | 9.4 | A | 11.7 | B | 17.0 | C | 20.6 | C | 11.9 | B |
| 6) | Rosecrans St. / Kurtz St. | S | 15.3 | B | 25.4 | C | 20.4 | C | 52.3 | D | 25.3 | C | 38.1 | D |
| 7) | Rosecrans/Sports Arena/Camino D. Rio | S | 23.3 | C | 35.5 | D | 43.0 | D | **62.9** | **E** | 17.2 | B | 26.6 | C |
| 8) | Rosecrans St. / Midway Dr. | S | 37.0 | D | **60.0** | **E** | 41.5 | D | **68.2** | **E** | 30.7 | C | 44.0 | D |
| 9) | Rosecrans St. / N. Evergreen St. | S | 15.9 | B | 30.3 | C | 20.7 | C | 30.7 | C | 13.7 | B | 18.6 | B |
| 10) | Rosecrans St. / Lytton St. | S | 47.9 | D | 51.7 | D | **77.2** | **E** | **69.2** | **E** | **67.4** | **E** | **55.0** | **E** |
| 11) | Rosecrans St. / Roosevelt Rd. | S | 10.3 | B | 13.3 | B | 11.3 | B | 16.2 | B | 20.7 | C | 23.2 | C |
| 12) | Rosecrans St. / Curtis St. | O | 20.5 | C | 15.5 | C | 17.2 | C | 14.6 | B | 14.7 | B | 10.0 | A |
| 13) | Rosecrans St. / Womble Rd. | S | 18.8 | B | 17.9 | B | 20.6 | C | 20.3 | C | 16.0 | B | 30.6 | C |
| 14) | Rosecrans St. / Xenophon St. | O | 13.6 | B | 12.1 | B | 13.3 | B | 12.7 | B | 10.0 | B | 10.7 | B |
| 15) | Rosecrans St. / Farragut - Voltaire St. | S | 20.7 | C | 18.1 | B | 23.5 | C | 21.8 | C | 23.9 | C | 19.1 | B |
| 16) | Rosecrans St. / Russell - Laning Rd. | S | 17.0 | B | 23.2 | C | 18.1 | B | 25.9 | C | 16.5 | B | 18.5 | B |
| 17) | Rosecrans St. / Oliphant St. | O | 22.6 | C | 14.1 | B | 28.2 | D | 19.7 | C | 28.1 | D | 19.7 | C |
| 18) | Rosecrans St. / Macaulay St. | T - LTR | 12.0 | B | 13.0 | B | 13.2 | B | 14.2 | B | 13.2 | B | 14.2 | B |

**Note**: Deficient intersection operation indicated in **bold**.

(1) S = Signalized, A = All-Way Stop, T = Two-Way Stop, O = One-Way Stop, LTR = Left Turn Restriction

(2) There is currently no stop control since Hancock Street is one-way westbound, away from Rosecrans Street. This intersection is proposed to be signalized under 2030 conditions with the Recommended Concept Plan.

**Table 8- 1 (continued)**
**Intersection Operational Analysis Summary**

| Intersection | | Traffic Control (1) | Existing (2009) | | | | 2030 No Build | | | | 2030 With Recommended Plan | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | AM Peak | | PM Peak | | AM Peak | | PM Peak | | AM Peak | | PM Peak | |
| | | | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS | Delay | LOS |
| 19) | Rosecrans St. / Nimitz Blvd. | S | 40.8 | D | **59.3** | **E** | **113.5** | **F** | **184.3** | **F** | **116.3** | **F** | **190.0** | **F** |
| 20) | Rosecrans St. / Jarvis St. | T | 16.3 | C | 30.9 | D | 22.2 | C | 14.8 | B | 10.2 | B | 10.7 | B |
| 21) | Rosecrans St. / N. Harbor Dr.-Hugo St. | S | 15.0 | B | 18.0 | B | 29.7 | C | 34.9 | C | 30.4 | C | 35.3 | D |
| 22) | Rosecrans St. / Garrison St. | T | **79.6** | **F** | **133.6** | **F** | **185.4** | **F** | **305.7** | **F** | 11.1 | B | 9.8 | A |
| 23) | Rosecrans St. / Emerson St. | T | NA | NA | NA | NA | NA | NA | NA | NA | 12.0 | B | 15.0 | B |
| 24) | Rosecrans St. / Carleton St. | T | **146.6** | **F** | **252.0** | **F** | **322.4** | **F** | **>1000** | **F** | 10.1 | B | 11.2 | B |
| 25) | Rosecrans St. / Shelter Island - Byron | S | 13.3 | B | 16.7 | B | 10.3 | B | 15.4 | B | 11.3 | B | 23.5 | C |
| 26) | Rosecrans St. / Canon St. | S | 23.0 | C | 20.1 | C | 33.5 | C | 45.7 | D | 42.3 | D | 38.1 | D |
| 27) | Rosecrans St. / Talbot St. | S | 22.1 | C | 12.5 | B | 19.2 | B | 15.0 | B | 21.8 | C | 24.1 | C |
| 28) | Camino del Rio W. / Moore St. | T - LTR | 31.5 | D | 30.6 | D | **71.3** | **F** | **65.0** | **F** | **35.8** | **E** | 24.4 | C |
| 29) | Camino del Rio W. / Hancock St. | S | 10.9 | B | 13.2 | B | 29.2 | C | 31.4 | C | 29.7 | C | 35.2 | D |
| 30) | Camino del Rio W. / Kurtz St. | S | 8.5 | A | 13.8 | B | 11.6 | B | 20.3 | C | 12.1 | B | 17.2 | B |

**Note**: Deficient intersection operation indicated in **bold**. NA = Not Available.

(1) S = Signalized, A = All-Way Stop, T = Two-Way Stop, O = One-Way Stop, LTR = Left Turn Restriction

(2) There is currently no stop control since Hancock Street is one-way westbound, away from Rosecrans Street. This intersection is proposed to be signalized under 2030 conditions with the Recommended Concept Plan.

## 8.2 ROADWAY SEGMENT OPERATIONAL ANALYSIS

The project does not include widening or narrowing Rosecrans through any of the four study areas to increase the capacity of the roadway. There are spot widening at intersections to improve traffic flow, which in turn helps reduce queue lengths and roadway segment performance between signalized intersections.

The Recommended Concept Plan results in a change in traffic patterns in some of the study areas resulting a change in ADT along some of the roadway segments, daily traffic volume may vary due to changes in traffic patterns assumed with the recirculation of traffic, particularly in Areas 1 and 3. These traffic pattern shifts were discussed in the previous section and presented in Exhibit 8-1 through 8-4.

The results of the roadway segment analysis are summarized in Table 8-2. As shown, the following segments are forecast to operate at LOS E or F without and with the Recommended Concept Plan:

- Rosecrans St., from Sports Arena Blvd. to Midway Dr.
- Rosecrans St., from Midway Dr. to Lytton St.
- Rosecrans St., from Lytton St. to Roosevelt Rd.
- Rosecrans St., from Roosevelt Rd. to Laning Rd.
- Rosecrans St., from Laning Rd. to Nimitz Blvd.
- Rosecrans St., from Nimitz Blvd. to N. Harbor Dr.
- Rosecrans St., from N. Harbor Dr. to Canon St.
- Camino Del Rio, North of Hancock St.
- Camino Del Rio, from Hancock St. to Kurtz St.
- Camino Del Rio, from Kurtz St. to Sports Arena Blvd.
- Nimitz Blvd., Southeast of Rosecrans St.
- Canon St., Northwest of Rosecrans St.
- Talbot St., Northwest of Rosecrans St.

Improving these segments to acceptable LOS D or better would require widening to provide additional travel lanes. The Midway Community Plan includes improving Rosecrans Street from six lanes to eight lanes through portions of the corridor. Although this would resolve the deficient levels of service, such widening would have a negative impact on the existing land uses along the corridor. Due to right-of-way constraints and the extraordinary cost of widening the deficient roadway segments, adding capacity to improve daily level of service is not recommended.

Long term improvements to regional circulation and transportation demand strategies may be necessary through year 2030 to reduce the total volume of traffic in the study area. Transit improvements such as improved transit service and internal shuttle service may help to reduce the passenger vehicle traffic. Transportation demand management strategies for existing and future business areas should be considered to encourage carpooling, providing shuttle service from off-site parking lots and improving access to transit for employment centers.



Technical Analysis of Preferred Concept Plan

Caltrans has identified a number of long term improvements that will improve access to Lindberg Field, access to major transit facilities and freeway connection improvements. All these improvements will aid in reducing the passenger vehicle demand along the Rosecrans Corridor. However, the future of these improvements is uncertain as funding was unknown at the time this report was prepared. Therefore, the improvements suggested by Caltrans for the Horizon Year were not included in this analysis unless specifically in the Regional Transportation Plan.

In 2010, SANDAG will be revisiting the Regional Transportation Plan and identify projects through the year 2050. It is recommended that the City and Community work closely with SANDAG in this effort to identify these future deficiencies in the study area. Regional improvements to the I-5/I-8 interchange, connections to the freeway from Jefferson and connections to the I-8 from Kurtz will all provide congestion relief to Rosecran Street.

Without this traffic relief, the operations along the corridor will continue to operate at LOS E/F conditions. The North Bay/Midway Community Plan should look closely as these segments and discuss the need to maintain the plan for eight lanes on Rosecrans Street. Long term redevelopment plans should consider the long term benefits of mix-use development in the area to address the traffic related issues.

**Table 8-2**
**Year 2030 Roadway Segment Analysis Summary**

| Roadway | Segment | Class | Lanes | LOS E Capacity | Existing Conditions | | | 2030 No Build | | | 2030 With Recommended Plan | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ADT | V/C | LOS | ADT | V/C | LOS | ADT | V/C | LOS |
| Rosecrans Street | From Pacific Highway to Sports Arena Blvd. | Major | 4 | 40,000 | 15,503 | 0.39 | B | 28,300 | 0.71 | C | 28,000 | 0.70 | C |
| | From Sports Arena Blvd. to Midway Dr. | Major | 6 | 50,000 | **59,120** | **1.18** | **F** | **66,700** | **1.33** | **F** | **65,600** | **1.31** | **F** |
| | From Midway Dr. to Lytton St. | Major | 6 | 50,000 | **46,384** | **0.93** | **E** | **49,200** | **0.98** | **E** | **48,900** | **0.98** | **E** |
| | From Lytton St. to Roosevelt Rd. | Major | 5 | 45,000 | **42,513** | **0.94** | **E** | **49,500** | **1.10** | **F** | **49,500** | **1.10** | **F** |
| | From Roosevelt Rd. to Laning Rd. | Major | 5 | 45,000 | 37,950 | 0.84 | D | **46,100** | **1.02** | **F** | **46,100** | **1.02** | **F** |
| | From Laning Rd. to Nimitz Blvd. | Major | 4 | 40,000 | 34,259 | 0.86 | D | **43,100** | **1.08** | **F** | **43,100** | **1.08** | **F** |
| | From Nimitz Blvd. to N. Harbor Dr. | Major | 4 | 40,000 | **36,450** | **0.91** | **E** | **44,300** | **1.11** | **F** | **44,100** | **1.10** | **F** |
| | From N. Harbor Dr. to Canon St. | Major | 4 | 40,000 | 34,390 | 0.86 | D | **37,100** | **0.93** | **E** | **37,100** | **0.93** | **E** |
| | From Canon St. to Talbot St. | Major [1] | 2 | 27,000 | 17,850 | 0.66 | C | 18,600 | 0.69 | C | 18,600 | 0.69 | C |
| | From Talbot St. to Kellogg St. | Major [1] | 2 | 27,000 | 15,200 | 0.56 | B | 21,000 | 0.78 | D | 21,000 | 0.78 | D |
| Camino Del Rio | North of Hancock St. | Prime | 7 | 70,000 | 55,300 | 0.79 | C | **77,300** | **1.10** | **F** | **77,300** | **1.10** | **F** |
| | Hancock St. to Kurtz St. | Prime | 7 | 70,000 | 54,400 | 0.78 | C | **71,600** | **1.02** | **F** | **73,200** | **1.05** | **F** |
| | Kurtz St. to Sports Arena Blvd. | Prime | 7 | 70,000 | 50,700 | 0.72 | C | **67,600** | **0.97** | **E** | **69,700** | **1.00** | **E** |
| Pacific Highway | North of Rosecrans St. | Major [2] | 2 | 20,000 | 5,818 | 0.29 | A | 13,400 | 0.67 | C | 13,400 | 0.67 | C |
| | South of Rosecrans St. | Prime | 6 | 60,000 | 13,070 | 0.22 | A | 27,100 | 0.45 | B | 27,100 | 0.45 | B |
| Sports Arena Blvd. | Northwest of Rosecrans St. | Major | 5 | 45,000 | 26,780 | 0.60 | C | 35,200 | 0.78 | D | 35,200 | 0.78 | D |

**Note:** Deficient roadway segment operation indicated in **bold**.
[1] LOS E Capacity has been estimated based on results of the Highway Capacity Manual Urban Street Methodology.

**Table 8-2 (continued)**
**Year 2030 Roadway Segment Analysis Summary**

| Roadway | Segment | Class | Lanes | LOS E Capacity | Existing Conditions | | | 2030 No Build | | | 2030 With Recommended Plan | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | ADT | V/C | LOS | ADT | V/C | LOS | ADT | V/C | LOS |
| Midway Drive | Northwest of Rosecrans St. | Major | 4 | 40,000 | 27,130 | 0.68 | C | 32,300 | 0.81 | D | 33,100 | 0.83 | D |
| | Southeast of Rosecrans St. | Major | 4 | 40,000 | 29,440 | 0.74 | C | 32,200 | 0.81 | D | 32,200 | 0.81 | D |
| Lytton Street | Northwest of Rosecrans St. | Major [2] | 2 | 20,000 | 11,797 | 0.59 | C | 15,300 | 0.77 | D | 15,600 | 0.78 | D |
| | Southeast of Rosecrans St. | Major | 4 | 40,000 | 19,650 | 0.49 | B | 25,600 | 0.64 | C | 25,600 | 0.64 | C |
| Nimitz Boulevard | Northwest of Rosecrans St. | Major | 4 | 40,000 | 17,264 | 0.43 | B | 34,300 | 0.86 | D | 34,300 | 0.86 | D |
| | Southeast of Rosecrans St. | Major | 4 | 40,000 | 12,020 | 0.30 | A | **44,100** | **1.10** | **F** | **44,300** | **1.11** | **F** |
| North Harbor Drive | Rosecrans St. to Scott Rd. | Major | 4 | 40,000 | 6,321 | 0.16 | A | 14,000 | 0.35 | A | 14,700 | 0.37 | A |
| Canon Street | Northwest of Rosecrans St. | Collector | 2 | 15,000 | 12,870 | 0.86 | D | **22,000** | **1.47** | **F** | **22,000** | **1.47** | **F** |
| Talbot Street | Northwest of Rosecrans St. | Collector | 2 | 8,000 | 5,950 | 0.74 | D | **8,800** | **1.10** | **F** | **8,800** | **1.10** | **F** |

**Note:** Deficient roadway segment operation indicated in **bold**.

[1] LOS E Capacity has been estimated based on results of the Highway Capacity Manual Urban Street Methodology.

[2] Since a published standard capacity for a 2-Lane Major does not exist, capacity is assumed to be half of a 4-Lane Major.

## 8.3 TRAVEL TIME ASSESSMENT

Under existing conditions, travel time was evaluated based on a floating car assessment. Using the results of the floating car assessment, a detailed traffic model was used to evaluate the potential travel times through Area 1, where travel times under existing conditions were determined to be the highest. Area 1 extends along both Rosecrans Street and Camino Del Rio from Lytton Street to Taylor Street (along Rosecrans) and Moore Street (on Camino Del Rio).

The difference between actual travel time and modeled travel time was used to calibrate the results of the forecast Year 2030 travel times. Table 8-3 summarizes the travel time assessment for existing conditions and Year 2030 conditions without and with the Recommended Concept Plan. For 2030 conditions, the travel times were updated for both the No Build and the Recommended Concept Plan using the VISSIM simulation software program. Table 8-3 presents results of the travel time assessment conditions.

As shown, the improvements associated with the Recommended Concept Plan would result in a decrease in travel time along the corridor by as much as three minutes from Lytton Street to Taylor Street. This is primarily due to improved signal timing between intersections to reflect the year 2030 traffic volumes and the reduction in weaving between the intersections of Rosecrans/Sports Arena and Rosecrans/Kurtz. Between Lytton Street and I-8 freeway connectors, travel time is reduced by nearly four (4) minutes in the northbound direction. This is due to improved signal timing along the corridor and geometric improvements between Midway and Rosecrans. Overall, the improvements recommended are forecast to improve the travel times to near existing conditions travel times.

**Table 8-3**
**Summary of Area One Travel Time Analysis (VISSIM Simulated for All Conditions)**

| Travel Time | Direction of Travel | Existing Conditions | 2030 No Build | 2030 With Recommended Plan | Difference RCP-NB (seconds) |
|---|---|---|---|---|---|
| Rosecrans: Lytton to Taylor Street | NB | 5:45 | 9:32 | 5:56 | -3:36 |
| | SB | 6:28 | 8:26 | 5:34 | -2:52 |
| Rosecrans: Lytton to Camino del Rio/ I-8 | NB | 4:34 | 9:23 | 4:26 | -3:57 |
| | SB | 4:51 | 6:58 | 4:18 | -2:40 |

**Note:** NB = No Build; PP = Recommended Plan

## 8.4 QUEUE LENGTH ASSESSMENT

A queue length assessment was conducted for the left-turn movements at the study intersections along the Rosecrans Corridor under existing conditions and Year 2030 conditions without and with the Recommended Concept Plan. The queuing analysis was conducted using SYNCHRO software, which reports both 50th percentile and 95th percentile queue lengths. The 50th percentile queues, which represent the average queue lengths, are reported in this queuing assessment for the signalized intersections. The 95th percentile queue lengths were used for the unsignalized intersections since SYNCHRO does not provide 50th percentile queue lengths for unsignalized intersections.

This queue length assessment focuses primarily on the major street left-turn movements along the corridor (Rosecrans and Camino Del Rio). However, for signalized intersections operating at deficient levels of service under existing and/or Year 2030 conditions, queue lengths were assessed for the left-turn movements at every approach. Queue lengths for both the a.m. and p.m. peak hours are not assessed in this queuing analysis; instead, the more critical peak hour queue lengths are reported for the purposes of this analysis.

The 50th percentile and 95th percentile queue lengths for the study intersection left-turn movements are summarized in Table 8-4. It must be noted that the more critical peak hour queue lengths are reported rather than queue lengths for both the a.m. and p.m. peak hours. Detailed SYNCHRO queue length calculation worksheets are provided in Appendix 8-B.

Table 8-4 shows that under Year 2030 conditions with the Recommended Concept Plan, based on the 50th queue lengths for signalized intersections and 95th percentile queue lengths for unsignalized intersections, left-turn lane storage capacity is exceeded at the following nine intersections:

- Rosecrans Street-Taylor Street / Pacific Highway: northbound left turn lane. The northbound left turn pocket can be lengthened by 100 feet to accommodate part of the queue. However, a new traffic signal at Pacific Highway/Sports Arena that would allow left turn traffic would help reduce the demand on this left turn movement.

- Rosecrans Street / Midway Drive: eastbound left turn lane. The west leg of Midway Drive narrows immediate west of the existing left turn pocket. Both sides of Midway Drive have existing development which take direct access from Midway. Future redevelopment of property along Midway Drive should include widening to accommodate a minimum 200 foot left turn pockets at Midway and restrict Gaines Street to right turn in-right turn out.

- Rosecrans Street / Lytton Street: eastbound and westbound. The eastbound and westbound approach at Lytton Street have traffic volumes that exceed the existing storage capacity of the left turn pockets. On the eastbound approach, Lytton Street is flanked by residential properties. Although dual left turn pockets would be beneficial along this section, the dual left turn pockets would require widening and encroaching into the existing residential front or back yards and would also restrict access for

properties on the north side of Lytton Street. On the westbound approach, dual left turn lanes are currently provided (225 feet long each). Although the queue length exceed the turn pocket length, it is not feasible to further lengthen the turn pockets. Traffic volumes and signal timing should be monitored to minimize the lengths of the queue in order to optimize the use of the available left turn capacity.

- Rosecrans Street / Nimitz Boulevard: northbound, southbound, eastbound. This intersection is constrained on all approaches. Although the volume on the approach is reasonable for the left turn pocket storage, the total traffic volume through the intersection constrains the available green time to serve all the movements. Therefore, the queues exceed the available storage under all study conditions.

**Table 8-4**
**Summary of Peak Hour Queue Length Assessment**

| Intersection | Control | Left-Turn Movement | Existing Conditions | | | | 2030 No Build Conditions | | | | 2030 With Recommended Plan | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] |
| Rosecrans St. - Taylor St. / Pacific Hwy. | S | NB | PM | 1 | 90 | **113** | PM | 1 | 90 | **342** | PM | 1 | 90 | **302** |
| | | SB | | 1 | 220 | 29 | | 1 | 220 | 136 | | 1 | 220 | 108 |
| | | EB | | 1 | 100 | 40 | | 1 | 100 | **165** | | 1 | 140 | 126 |
| | | WB | | 2 | 155 | 45 | | 2 | 155 | **163** | | 2 | 155 | 129 |
| Rosecrans St. / Jefferson St. | O | NB | PM | 1 | 90 | 4 | PM | 1 | 90 | 6 | PM | 1 | 90 | 6 |
| Rosecrans St. / Moore St. | O | NB | PM | 1 | [2] | 7 | PM | 1 | [2] | 11 | PM | 1 | [2] | 11 |
| Rosecrans St. / Hancock St. | [3] | NB | PM | 1 | 90 | 23 | PM | 1 | 90 | 69 | PM | 2 | 100 | 98 |
| Rosecrans St. / Kurtz St. | S | SB | PM | 1 | 85 | 21 | PM | 1 | 85 | 59 | PM | 1 | 95 | 90 |
| Rosecrans St.- Camino Del Rio W. / Sports Arena Blvd. | S | NB | PM | 2 | 305 | 147 | PM | 2 | 305 | 186 | PM | - | - | - |
| | | EB | | 1.5 | 380 | 265 | | 1.5 | 380 | **428** | | 2 | 250 | 250 |
| | | WB | | 1.5 | 140 | **219** | | 1.5 | 140 | **368** | | 2 | 210 | 208 |
| Rosecrans St. / Midway Dr. | S | NB | PM | 1 | 280 | **303** | PM | 2 | 290 | 162 | PM | 2 | 420 | 192 |
| | | SB | | 2 | 240 | 219 | | 2 | 240 | **259** | | 2 | 365 | 247 |
| | | EB | | 2 | 90 | **158** | | 2 | 90 | **199** | | 2 | 90 | **197** |
| | | WB | | 1 | 180 | 127 | | 1 | 180 | 183 | | 1 | 180 | 182 |
| Rosecrans St. / N. Evergreen St. | S | NB | PM | 1 | 180 | 11 | PM | 1 | 180 | 13 | PM | 1 | 180 | 15 |
| | | SB | | 1 | 300 | 170 | | 1 | 300 | 212 | | 1 | 300 | 240 |

**Note:** Queue lengths exceeding storage capacity are indicated in **bold.**
[1] Queue lengths are expressed in feet. The 50th percentile queue lengths are reported for signalized intersections, and 95th percentile queue lengths are reported for unsignalized intersections.
[2] No dedicated left-turn lane is provided on Rosecrans; northbound left-turning vehicles use the center two-way left-turn median lane.
[3] There is currently no stop control since Hancock Street is one-way westbound, away from Rosecrans Street. This intersection is proposed to be signalized under 2030 conditions with the Recommended Concept Plan.

**Table 8-4 (continued)**
**Summary of Peak Hour Queue Length Assessment**

| Intersection | Control | Left-Turn Movement | Existing Conditions | | | | 2030 No Build Conditions | | | | 2030 With Recommended Plan | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] |
| Rosecrans St. / Lytton St. | S | NB | AM | 1 | 100 | 0 | AM | 1 | 100 | 9 | AM | 1 | 180 | 19 |
| | | SB | | 2 | 280 | 50 | | 2 | 280 | 70 | | 2 | 380 | 72 |
| | | EB | | 1 | 180 | **362** | | 1 | 180 | **526** | | 1 | 180 | **562** |
| | | WB | | 2 | 225 | **243** | | 2 | 225 | **286** | | 2 | 225 | **338** |
| Rosecrans St. / Roosevelt Rd. | S | NB | PM | 0 | 0 | 0 | PM | 0 | 0 | 0 | AM | 1 | 105 | 5 |
| | | SB | | 1 | 290 | 95 | | 1 | 290 | 114 | | 1 | 280 | 118 |
| Rosecrans St. / Curtis St. | O | NB | PM | 1 | 40 | 0 | PM | 1 | 40 | 0 | - | - | - | - |
| Rosecrans St. / Womble Rd. | S | NB [4] | AM | 1 | 90 | 0 | AM | 1 | 90 | 0 | AM | 1 | 70 | 11 |
| | | SB | | 1 | 235 | 125 | | 1 | 235 | 150 | | 1 | 180 | 150 |
| Rosecrans St. / Xenophon St. | O | NB | PM | 1 | 40 | 0 | PM | 1 | 40 | 0 | PM | 1 | 40 | 0 |
| Rosecrans St. / Farragut – Voltaire St. | S | NB | AM | 1 | 75 | 0 | AM | 1 | 75 | 0 | AM | 1 | 75 | 0 |
| | | SB | | 1 | 240 | 212 | | 1 | 240 | **251** | | 1 | 280 | 273 |
| Rosecrans St. / Russell - Laning Rd. | S | NB | AM | 1 | 85 | 0 | AM | 1 | 85 | 0 | AM | 1 | 85 | 0 |
| | | SB | | 1 | 335 | 272 | | 1 | 335 | 311 | | 1 | 335 | 251 |
| Rosecrans St. / Oliphant St. | O | NB | AM | 1 | 70 | 4 | AM | 1 | 70 | 6 | AM | 1 | 70 | 4 |

**Note:** Queue lengths exceeding storage capacity are indicated in **bold.**
[1] Queue lengths are expressed in feet. The 50th percentile queue lengths are reported for signalized intersections, and 95th percentile queue lengths are reported for unsignalized intersections.
[2] No dedicated left-turn lane is provided on Rosecrans; northbound left-turning vehicles use the center two-way left-turn median lane.
[3] There is currently no stop control since Hancock Street is one-way westbound, away from Rosecrans Street. This intersection is proposed to be signalized under 2030 conditions with the Recommended Concept Plan.
[4] U-turn only lane provided under Existing and 2030 No Build conditions. The Recommended Concept Plan includes converting this intersection into an off-set four-way intersection, and NB lane will be converted to a LT turn lane.

**Table 8-4 (continued)**
**Summary of Peak Hour Queue Length Assessment**

| Intersection | Control | Left-Turn Movement | Existing Conditions | | | | 2030 No Build Conditions | | | | 2030 With Recommended Plan | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] |
| Rosecrans St. / Nimitz Blvd. | S | NB | PM | 1 | 185 | **386** | PM | 1 | 185 | **675** | PM | 1 | 145 | **670** |
| | | SB | | 1 | 280 | 161 | | 1 | 280 | **485** | | 1 | 280 | **530** |
| | | EB | | 1 | 100 | **297** | | 1 | 100 | **645** | | 1 | 100 | **651** |
| | | WB | | 1 | 70 | 18 | | 1 | 70 | 32 | | 1 | 70 | 32 |
| Rosecrans St. / Jarvis St. | T | NB | PM | 1 | 75 | 0 | PM | 1 | 75 | 3 | PM | 1 | 140 | 7 |
| | | SB | | 1 | 40 | 4 | | 1 | 40 | 7 | | - | - | - |
| Rosecrans St. / N. Harbor Dr.- Hugo St. | S | NB | PM | 1 | 55 | 17 | PM | 1 | 55 | 37 | PM | 1 | 55 | 56 |
| | | SB | | 1 | 65 | 37 | | 1 | 65 | 68 | | 1 | 65 | 68 |
| Rosecrans St. / Garrison St. | T | NB | PM | 1 | 70 | 3 | PM | 1 | 70 | 2 | PM | - | - | - |
| | | SB | | 1 | 70 | 5 | | 1 | 70 | 5 | | 1 | 100 | 5 |
| Rosecrans St. / Emerson St. | T-NB S-PP [5] | NB | PM | 1 | 75 | 5 [6] | PM | 1 | 75 | 5 [6] | PM | 1 | 75 | 57 |
| | | SB | | 1 | 75 | 10 [6] | | 1 | 75 | 10 [6] | | 1 | 175 | 164 |
| Rosecrans St. / Carleton St. | T | SB | PM | 1 | 75 | 9 | PM | 1 | 75 | 11 | - | - | - | - |
| Rosecrans St. / Shelter Island Dr. – Byron St. | S | NB | AM | 1 | 150 | 0 | PM | 1 | 150 | 7 | PM | 1 | 130 | 7 |
| | | SB | | 1 | 185 | 105 | | 1 | 185 | 96 | | 1 | 185 | 178 |

**Note:** Queue lengths exceeding storage capacity are indicated in **bold.**

[1] Queue lengths are expressed in feet. The 50th percentile queue lengths are reported for signalized intersections, and 95th percentile queue lengths are reported for unsignalized intersections.

[2] No dedicated left-turn lane is provided on Rosecrans; northbound left-turning vehicles use the center two-way left-turn median lane.

[3] There is currently no stop control since Hancock Street is one-way westbound, away from Rosecrans Street. This intersection is proposed to be signalized under 2030 conditions with the Recommended Concept Plan.

[4] U-turn only lane provided under Existing and 2030 No Build conditions. The Recommended Concept Plan includes converting this intersection into an off-set four-way intersection, and NB lane will be converted to a LT turn lane.

[5] T-NB = Two way stop under existing and 2030 no build conditions; S-PP = Signalized under 2030 conditions with Recommended Plan.

[6] Queue length estimated based on findings at Rosecrans / Garrison and at Rosecrans / Carleton under Existing and 2030 No Build conditions.

**Table 8-4 (continued)**
**Summary of Peak Hour Queue Length Assessment**

| Intersection | Control | Left-Turn Movement | Existing Conditions | | | | 2030 No Build Conditions | | | | 2030 With Recommended Plan | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] | Peak Hour | Lanes | Storage (in Feet) | Queue Length [1] |
| Rosecrans St. / Canon St. | S | NBL-T [7] | PM | 1 | - | 195 | PM | 1 | - | 237 | PM | 1 | 60 | 6 |
| | | SB | | 1 | 50 | 38 | | 1 | 50 | 28 | | 1 | 115 | 21 |
| Rosecrans St. / Talbot St. | S | NBL-T [7] | AM | 1 | - | 43 | PM | 1 | - | 137 | PM | 1 | 115 | 12 |
| | | NBL-T [7] | | 1 | - | 188 | | 1 | - | 15 | | 1 | 125 | 6 |
| Camino del Rio W. / Moore St. | T-LTR [8] | NB | AM | 1 | 140 | 0 | AM | 1 | 140 | 0 | - | - | - | - |
| | | SB | | 1 | 175 | 66 | | 1 | 175 | **220** | | - | - | - |
| Camino del Rio W. / Hancock St. | S | NB | PM | 1 | 100 | 99 | PM | 1 | 100 | **123** | AM | 2 | 195 | 72 |
| | | SB | | - | - | - | | - | - | - | | 1 | 280 | **278** |
| Camino del Rio W. / Kurtz St. | S | SB | AM | 1 | 110 | **131** | AM | 1 | 110 | **199** | AM | 2 | 120 | 119 |

**Note:** Queue lengths exceeding storage capacity are indicated in **bold**

[1] Queue lengths are expressed in feet. The 50th percentile queue lengths are reported for signalized intersections, and 95th percentile queue lengths are reported for unsignalized intersections.

[2] No dedicated left-turn lane is provided on Rosecrans; northbound left-turning vehicles use the center two-way left-turn median lane.

[3] There is currently no stop control since Hancock Street is one-way westbound, away from Rosecrans Street. This intersection is proposed to be signalized under 2030 conditions with the Recommended Concept Plan.

[4] U-turn only lane provided under Existing and 2030 No Build conditions. The Recommended Concept Plan includes converting this intersection into an off-set four-way intersection, and NB lane will be converted to a LT turn lane.

[5] T-NB = Two way stop under Existing and 2030 No Build conditions; S-PP = Signalized under 2030 conditions with Recommended Plan.

[6] Queue length estimated based on findings at Rosecrans / Garrison and at Rosecrans / Carleton under Existing and 2030 No Build conditions.

[7] Shared left-turn / through lane. A dedicated left-turn lane will be provided under the Recommended Concept Plan.

[8] Left-turn restriction at EB and WB approaches only under Existing and 2030 No Build conditions. All approaches will have a left-turn restriction under Recommended Concept Plan.

## 8.5 TRAFFIC SIGNAL WARRANTS

A traffic signal warrant analysis was conducted for the intersections of Rosecrans Street / Hancock Street and Rosecrans Street / Emerson Street to justify the need for the proposed traffic signals at these two intersections. The traffic signal warrants were conducted in accordance with the guidelines published in the Manual on Uniform Traffic Control Devices (MUTCD – 2006 Edition). Chapter 4C of the MUTCD identifies various warrants that if met, provide the justification needed for the installation of a traffic signal. The individual traffic signal warrants that are being analyzed this study include:

- Warrant 2 - Four-Hour Vehicular Volume.
- Warrant 3 - Peak Hour.
- Warrant 4 - Pedestrian Volume.
- Warrant 7 - Crash Experience.
- Table 4C-101 from MUTCD (2006) – ADT Estimate Form

To determine if these intersections are justified for the installation of a traffic signal, it must meet at least of one of the signal warrants outlined in Chapter 4C of the 2006 California MUTCD (CA MUTCD). The traffic signal warrants were conducted for existing conditions and for Year 2030 conditions with the Recommended Concept Plan.

Rosecrans Street / Hancock Street

Rosecrans Street / Hancock Street is an unsignalized, "T" intersection that is uncontrolled since Hancock Street is one-way leading away from Rosecrans Street. To perform the signal warrants at this location, only the traffic volumes from the two conflicting turning movements were used, with the southbound approach used for the major street volumes and the northbound left-turn used for the minor street volumes.

The results for the traffic signal warrants are summarized in Table 8-5 below. The traffic signal warrant worksheets can be found in Appendix 8-C. As shown in Table 8-5, the following traffic signal warrants were satisfied at Rosecrans Street / Hancock Street under Year 2030 No Build conditions:

- Warrant 3 (Peak Hour)
- Table 4C-101 (ADT Estimate)

Rosecrans Street/Emerson Street

This intersection is currently unsignalized with STOP control on the side streets. The Recommended Concept Plan includes both signalizing this intersection as well as constructing raised medians through the corridor to constrain left turn access from the side streets onto Rosecrans Street both east and west of Emerson. It is anticipated that the traffic demand on Emerson will increase both due to the attractiveness of the traffic signal at this location, the co-location of the transit stop at the new signal and the restricted left turn access at the nearby side streets. With these traffic adjustments, the Peak Hour Signal Warrant (Warrant 3) is met under 2030 conditions.

**Table 8-5**
**Summary of Traffic Signal Warrant Analysis**

| Intersection | Warrant | | | | |
|---|---|---|---|---|---|
| | 2 | 3 | 4 | 7 | Table 4C-101 |
| **Existing Conditions** | | | | | |
| Rosecrans St. / Hancock St. | | | | | |
| Rosecrans St. / Emerson St. | | | | | |
| **Year 2030 No Build Conditions** | | | | | |
| Rosecrans St. / Hancock St. | | ✓ | | | ✓ |
| Rosecrans St. / Emerson St. | | ✓ | | | |

✓ = Warrant Satisfied

## 8.6 PEDESTRIAN ACCESSIBILITY ASSESSMENT

As summarized in Chapter 4 of this document, the following intersections are anticipated to have more than 100 pedestrian crossings during the peak a.m. or p.m. peak period:

- Rosecrans Street – Taylor Street / Pacific Coast Highway – 472 a.m., 418 p.m.
- Rosecrans Street / Hancock Street – 30 a.m., 211 p.m.
- Rosecrans Street / Kurtz Street – 105 a.m., 153 p.m.
- Rosecrans Street / Sports Arena-Camino del Rio – 138 a.m., 202 p.m.
- Rosecrans Street / Midway Street – 95 a.m., 223 p.m.
- Rosecrans Street / Womble Road – 121 a.m., 49 p.m.
- Rosecrans Street / Nimitz St. – 212 a.m., 255 p.m.
- Rosecrans Street / Carleton Street – 116 a.m., 79 p.m.

Based on 2009 pedestrian data, approximately 1,525 pedestrian crossings occur during the a.m. peak period (7:00 to 9:00 a.m.) and 2,105 occur during the p.m. peak period. By the year 2030, pedestrian activity is forecast to increase to 2,311 pedestrian crossings in the a.m. peak and 2,808 in the p.m. peak periods. The increase in pedestrian activity warrants further evaluation to ensure that pedestrian capacity on sidewalks is being met.

To meet the forecast demand for pedestrians by the year 2030, a number of pedestrian related improvements were identified for the study corridor under the Recommended Concept Plan:

- Improvement B: New sidewalks on Rosecrans Street (Pacific Highway to Sports Arena): New sidewalks would provide for a continuous ADA compliant pedestrian route between the Transit Center and activity centers in the Midway community. The associated curb extensions or curb reconstructions would improve the visibility of pedestrians and buffer existing on-street parking.

- Improvements I, N: Side-Street Curb Extensions to Reduce Crossing Distance (Areas 2-3): Providing curb extensions will improve the visibility of pedestrians, reduce the crossing distance and reduce exposure time for pedestrians crossing the street.

- Improvement M: New Traffic Signal at Rosecrans / Emerson: Providing a new traffic signal with crosswalks will encourage safer pedestrian crossings and help minimize speeding through the area.

- Improvement Q: Complete Sidewalks on West Side of Street (Area 4): Providing sidewalks on at least one side of the road will provide pedestrians with a continuous path through this neighborhood. Providing sidewalks on the west side will give pedestrians a safer place to walk instead of walking in the bike lanes next to vehicular traffic.

- Improvement R: Curb Extensions at Owen and Bessemer (Area 4): Bessemer and Owen are two intersections along the corridor that provide pedestrian access to walking paths along San Diego Bay to the east of Rosecrans Street. During the summer or during events in Point Loma parking along Roserans and in the adjacent neighborhoods is at a premium. During these times, the parked vehicles also make it difficult for motorists to see pedestrians waiting to cross the street. The purpose of the curb extension is to reduce the traffic speeds and improve pedestrian visibility.

Approximately 30,800 linear feet of sidewalks are currently provided along the entire study corridor, which includes both Rosecrans Street and Camino Del Rio. The Recommended Concept Plan proposes to provide an additional 2,100 linear feet of new sidewalks in locations with currently discontinuous sidewalks, which does not include the sidewalks that will need to be reconstructed or replaced. The Recommended Concept Plan will increase the total linear feet of sidewalks along the corridor to approximately 32,900 feet. Other pedestrian improvements proposed with the Recommended Concept Plan include 71 new curb ramps and 39 new crosswalks along the corridor.

## 8.7 BICYCLE CONNECTIVITY ASSESSMENT

As summarized in Chapter 4 of this document, the following intersections are anticipated to have more than 100 bicycles observed through the intersection during the peak a.m. or p.m. peak period:

- Rosecrans Street – Taylor Street / Pacific Coast Highway – 76 a.m., 149 p.m.
- Rosecrans Street / Kurtz Street – 45 a.m., 106 p.m.

Based on 2009 bicycle data, approximately 476 were observed during the a.m. peak period (7:00 to 9:00 a.m.) and 687 occur during the p.m. peak period along the Rosecrans Corridor. By the year 2030, bicycle activity is forecast to increase to 788 bicycle trips along the corridor in the a.m. peak and 1,091 in the p.m. peak periods.

It should be noted that the highest bicycle activity along the corridor occurs in Area 1 along Rosecrans Street between the Old Town Transit Center and Sports Arena Boulevard. Through this section, there are currently no bicycle lanes and many of the sidewalks are discontinuous.

When reviewing the forecast bicycle volume for the study area, the east –west bicycle traffic (crossing Rosecrans Street) exceeds the north-south bicycle traffic (traveling along Rosecrans Street). Therefore improvements for bicycles should consider both the addition of bicycle lanes and bicycle loops (within the intersections for detection at signalized intersection) but also connections to regional bicycle facilities from the corridor such as the San Diego River Trail and future CycleTrack facilities.

To meet the goals of the community plan and the City of San Diego Bicycle Plan, the following bicycle related improvements were identified for the study corridor under the Recommended Concept Plan:

- Improvement B: New Bicycle Lanes on Rosecrans Street (Pacific Highway to Sports Arena): New bike lanes on Rosecrans Street from Pacific Highway to Sports Arena will provide bicycle connectivity between the Old Town and Midway business districts.

- Improvement E: Bicycle Lanes on Rosecrans and Removal of Parking (Area 1): Bike lanes would provide for a continuous bicycle route between the Old Town Transit Center and the residential communities and commercial areas in Point Loma.

- Improvement H: Wider Bicycle Lanes from Lytton to Roosevelt (Area 2): Widening the bike lanes will provide additional room for bicyclists traveling along Rosecrans and provide an additional buffer from vehicular traffic. Providing wider bike facilities may encourage additional use of the bike lanes. Currently, bicyclists may be seen riding in the opposite direction of traffic or on the sidewalk due to unwillingness of riding the in existing bike lanes.

The study corridor currently includes approximately 21,000 feet of Class Two bicycle lanes. The Recommended Concept Plan proposes to provide an additional 20,000 feet of Class Two bike lanes, which increases the total length of bike lanes along the study corridor to approximately 41,000 feet.

## 8.8 TRANSIT ANALYSIS

To improve the future transit needs of the community, the following transit related improvements were identified for the study corridor under the Recommended Concept Plan:

- Improvement B: Improved Bicycle Lanes and Sidewalks on Rosecans (Old Town to Sports Arena): This improvement includes construction of sidewalks and bicycle lanes, both of which improve access to the Transit Center from the land uses in the North Bay portion of the study area. The improvement also includes extending the length of the existing Transit Queue Jump lane at Rosecrans Street /Pacific Highway. This improvement will allow the buses to bypass the existing through lane queue. This may reduce the travel time for the bus by as much as __ seconds.

- Improvement D: Rosecrans and Midway Transit Queue Jump Lane: The northbound and southbound right-turn lanes included in the Recommended Concept Plan are proposed to allow transit queue jumping in the long-term future, which would help to improve transit efficiency and travel time between transit stops. Due to the heavy traffic conditions on Rosecrans Street, a southbound queue jump lane would reduce transit delay by as much as __ seconds by year 2030 with the Preferred Concept Plan.

- Improvements J, O, V: Consolidation and Relocation of Transit Stops: Consolidating transit stops may improve transit efficiency by removing underutilized stops. Relocating transit stops to signalized intersections may encourage pedestrians to use crosswalks and reduce the frequency of illegal crossings.

There are 42 transit stops currently provided along the Rosecrans corridor. The transit improvements listed above include the removal of eight existing transit stops. In addition, seven transit stops are proposed to be relocated to near signalized intersections and other locations with safer pedestrian access, and one new transit stop is proposed to be added to the study corridor. The Recommended Concept Plan proposes a total of 35 transit stops to be provided on the Rosecrans corridor.

## 8.9 SUMMARY

The findings of the intersection operational analysis found that most intersections will operate at LOS D or better under Year 2030 conditions with the Recommended Concept Plan. Additional intersection capacity would be needed at Rosecrans Street / Lytton Street and Rosecrans Street / Nimitz Boulevard to improve operations to LOS D or better during the peak hours. Improvements are not recommended at these two intersections due to right-of-way constraints where widening would be needed to provide additional approach lanes.

The roadway segment operations analysis results show that 13 roadway segments are forecast to operate at LOS E or worse under Year 2030 conditions with the Recommended Concept Plan. Due to right-of-way constraints and the extraordinary cost of widening the deficient roadway segments, adding capacity to improve daily level of service is not recommended. Instead, improvements have been recommended at several key intersections that would improve

traffic flow along the corridor. In addition, the proposed raised medians along much of the Rosecrans corridor will reduce the number of conflicting traffic maneuvers at the unsignalized intersections, thus improving traffic flow along these segments.

The findings of the travel time assessment show that travel times will decrease between two and four minutes from Year 2030 No Build conditions to Year 2030 conditions with the Recommended Concept Plan. This improvement is due primarily to improved signal timing as well as geometric improvements that increase capacity in Area 1.

The queue length assessment findings show that queue lengths are forecast to exceed left-turn storage capacity at nine intersections during the peak hours under Year 2030 conditions with the Recommended Concept Plan. Providing the needed left-turn storage capacity may not be possible at some locations due to limitations such as short intersection spacing and right-of-way constraints where widening is needed. A closer evaluation of left-turn storage needs should be considered to maximize available capacity for locations where queue lengths are forecast to exceed the proposed storage capacity.

The results of the traffic signal warrant analysis show that two warrants are satisfied at Rosecrans Street / Hancock Street under Year 2030 No Build conditions, which justifies the need for a traffic signal as proposed with the Recommended Concept Plan. Although no warrants were satisfied at Rosecrans Street / Emerson Street, the installation of a traffic signal would result in the diversion of some of the left-turning traffic from other unsignalized intersections to the signal at Emerson. A traffic signal at Rosecrans Street / Emerson Street would consolidate much of the left-turning activity to one intersection, thus reducing conflicting traffic maneuvers at the other nearby unsignalized intersections. The proposed signal at Rosecrans / Emerson will also provide safe pedestrian access and reduce the instances of "jaywalking" across heavy traffic along Rosecrans Street.

The findings of the pedestrian accessibility assessment show that by 2030, eight intersections along the corridor will experience 100 or more pedestrian crossings during the a.m. or p.m. peak period. Pedestrian activity from 2009 to 2030 is forecast to increase by over 50% during the a.m. peak period and over 30% during the p.m. peak period. The Recommended Concept Plan includes the construction of 2,100 linear feet of sidewalks where pedestrian connectivity is currently discontinuous. Other pedestrian improvements proposed with the Recommended Concept Plan include 71 new curb ramps and 39 new crosswalks along the corridor.

The results of the bicycle connectivity assessment show that the highest bicycle activity occurs in Area 1 along Rosecrans Street between the Old Town Transit Center and Sports Arena Boulevard, where no bicycle lanes are currently provided. Bicycle activity from 2009 to 2030 is forecast to increase by approximately 65% during the a.m. peak period and about 60% during the p.m. peak period.

The Recommended Concept Plan proposes to provide continuous Class Two bicycle lanes along the Rosecrans corridor from the Old Town Transit Center to the southern terminus of Rosecrans Street at the Fort Rosecrans military facility, which will meet the goals of the City of San Diego Bicycle Master Plan. Approximately 20,000 feet of Class Two bike lanes will be added to the corridor with the Recommended Concept Plan.

The transit analysis findings show that the number of transit trip ends per day is expected to increase by 116% from 2009 to 2030 along the Rosecrans corridor. As traffic operations are expected to worsen by Year 2030 along much of the corridor, transit operations will be hampered by slower run times and longer wait times for buses. Transit queue jump lanes are proposed at Rosecrans / Midway and at Rosecrans / Pacific Highway to improve future transit performance. Additional transit priority lanes may need to be considered at other locations such as Rosecrans / Lytton and Rosecrans / Nimitz to accommodate the forecast increase in transit ridership.

The Recommended Concept Plan also include the removal of under-utilized transit stops and relocation of several transit stops to preferable locations, such as near signalized intersections that provide protected pedestrian access. The consolidation and relocation of transit stops will serve to improve transit performance and increase pedestrian safety near the transit stops.