

*Prepared for the  
Sacramento Regional County Sanitation District*

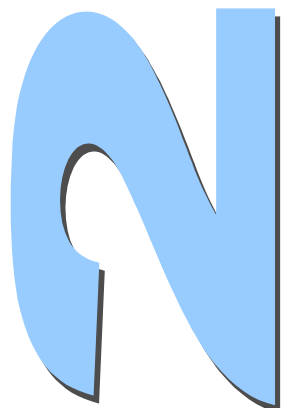
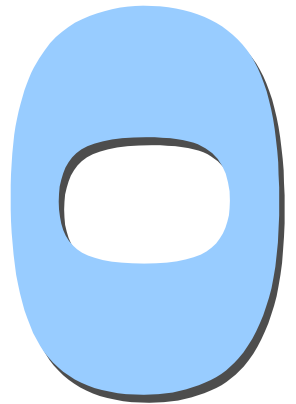
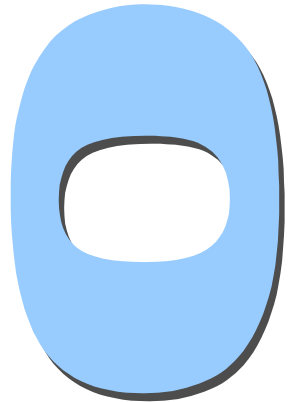
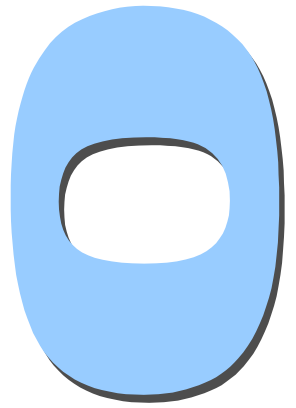
# Interceptor System Master Plan 2000

## Appendix B

# Traffic Handling Criteria

*Black & Veatch*

October 5, 2000



# SRCSD Interceptor System Master Plan 2000

<i>Table of Contents</i>		<i>Page</i>
2.0	Traffic Handling Criteria .....	1
2.1	Introduction.....	1
2.2	Requirements of Various Agencies .....	1
2.2.1	County of Placer .....	1
2.2.2	County of Sacramento.....	1
2.2.3	City of Citrus Heights .....	2
2.2.4	City of Folsom .....	2
2.2.5	City of Sacramento .....	2
2.2.6	City of West Sacramento .....	3
2.3	Traffic Handling Procedures .....	3
2.3.1	Design Report Stage .....	3
2.3.2	Final Design Stage .....	4
2.4	Corridors With Potential Traffic Impacts .....	5
2.4.1	City of Sacramento .....	5
2.4.2	City of Citrus Heights .....	5
2.4.3	City of Sacramento .....	5
2.4.4	City of West Sacramento .....	5
2.5	Budget Level Construction Cost Data .....	5



## **2.0 Traffic Handling Criteria**

### **2.1 Introduction**

The Sacramento Regional County Sanitation District (SRCS D) is updating the 1993 Sacramento Sewerage Expansion Study and subsequent 1994 update. The potentially affected agencies include County of Placer, County of Sacramento, City of Citrus Heights, City of Folsom, City of Sacramento, and the City of West Sacramento. This letter report provides an overview of the traffic control and the encroachment permit requirements of each affected agency and the traffic control procedures required during the interceptor design report and final design stages. It also identifies the potentially affected traffic corridors in each agency and provides the budget level construction cost data for traffic control.

### **2.2 Requirements of Various Agencies**

#### **2.2.1 County of Placer**

The County of Placer requires the design engineer to submit 10 sets of plans and specifications to the Land Development Office of the Public Works Department to apply for the encroachment permit. The design engineer needs to make an appointment with the County's plan-checker prior to the formal submittal to describe the proposed facilities to the plan-checker. At that meeting, the plan checker will inform the design engineer the amount of the plan checking fee and inspection fee that is based on a percentage of the construction cost. The traffic control plan must be included in the submitted plan set. The contact at the Land Development Office is Mr. Paul Jacobson, who can be reached at (530) 889-7529. Mr. Lyle Brown, the Traffic Engineer of Placer County, will review the traffic control plan. Mr. Brown can be reached at (530) 889-3159.

Placer County will not allow any road closures. At least one 10-ft. reversible lane operated by a flagman shall be provided. Contractors shall install advance information signs to alert the motorists at least one week prior to beginning of construction. All driveway access shall be maintained at all times. In case driveway closure is inevitable, the Contractor shall notify the affected residents or business at least one week before the construction begins. The restriction of work hours varies case by case, and shall be determined by the Public Works Department and the County Traffic Engineer. If moving work zone strategy is used, the maximum length of the moving work zone is 200 feet. There is no restriction on the length of the non-moving work zone provided that the traffic control plan is acceptable to the County.

#### **2.2.2 County of Sacramento**

Sacramento County does not require the design engineer to apply for an encroachment permit during the design stage. However, the County does require an encroachment permit



for the soil technician to collect soil samples. In addition, the County also requires the Contractor to apply for an encroachment permit prior to beginning of construction. The encroachment permit can be applied at the County's Technical Resources Division. Mr. David Franke, a Senior Engineer with the Sacramento County Transportation Division is in charge of reviewing the traffic control plan. Mr. Franke can be reached at (916) 874-6291. Contractors shall follow the requirement specified in the County's Standard Construction Specifications. The proposed work hours shall be included in the traffic control plan. The maximum length of a moving work zone is 1,000 feet. There are no limits on the length of the non-moving work zone, provided that the traffic control plan is acceptable to the County.

### **2.2.3 City of Citrus Heights**

The City of Citrus Heights requires the design engineer to apply for an encroachment permit at the City's Public Works Department. The plan-checking fee and inspection fee will be the actual cost the City incurs in retaining a contract plan-checker and an inspector to check the plans and inspect the construction. Mr. Bob Lee, the City Engineer will review the traffic control plan. Mr. Lee can be reached at (916) 727-4770. In general, the City would like to maintain one lane of travel in each direction on the affected road. All traffic control designs shall meet Caltrans requirements specified in the Caltrans' Traffic Manual. The construction work hours and the length of the construction zone varies case by case. These shall be approved by the City's Public Works Department prior to the issuance of an encroachment permit.

### **2.2.4 City of Folsom**

The City of Folsom requires the design engineer to apply for an encroachment permit at the City's Public Works Department. The plan-checking fee and inspection fee will be four percent of the construction cost for backfilling, paving, and traffic control. Mr. Mark Rackovan of the City's Public Works Department will review the traffic control plan. Mr. Rackovan can be reached at (916) 355-7379. All construction on major roads shall be limited to off-peak hours, 9:00 a.m. to 3:30 p.m. The City's noise ordinance prohibits construction on Sundays. The City has no limits on the length of construction work zone, provided that the traffic control plan is acceptable to the City.

### **2.2.5 City of Sacramento**

The City of Sacramento requires the design engineer to apply for an encroachment permit at the City's Public Works Department. The engineer in charge of the encroachment permit application is Farmarz Ansari who can be reached at (916) 264-7493. The City will not charge SRCSO a plan-checking fee. However, the City will charge SRCSO an inspection fee based on a percentage of the construction cost for backfilling and paving. The City's inspector would inspect the backfilling and paving of the street only. The interceptor installation will be inspected by the SRCSO inspector. On all the major roads,



construction shall be restricted to the period between 8:30 a.m. and 4:00 p.m. No construction on the major roads will be allowed between Thanksgiving and New Years. In cases where construction during peak hours, at night or during the weekends is required, the Contractor shall coordinate with Mr. Marty Hanneman, the City's Traffic Engineering Manager. Mr. Hanneman can be reached at (916) 264-7508. The maximum allowable length of a moving work zone is 500. The City has no limits on the length of non-moving construction work zone, provided that the traffic control plan is acceptable to the City.

### **2.2.6 City of West Sacramento**

The City of West Sacramento requires the design engineer to apply for an encroachment permit at the City's Engineering Department. The engineer in charge of the encroachment permit application is Mr. Mark Collier, who can be reached at (916) 373-5854. The plan-checking fee and inspection fee will be a percentage of the construction cost. Mr. David Yatabe, the City's Traffic Engineer, will review the traffic control plan. Mr. Yatabe can be reached at (916) 373-5854. In general, the construction shall be limited to the period between 8:00 a.m. and 4:00 p.m. The City has no limits on the length of the construction work zone, provided that the traffic control plan is acceptable to the City.

## **2.3 Traffic Handling Procedures**

### **2.3.1 Design Report Stage**

The design team should compare potential traffic impacts on various alignment alternatives when selecting the interceptor alignment. "Traffic Factor" analysis, which was used in the Lower Northwest Interceptor Design Report and the Laguna Creek Interceptor Alignment Study, is recommended for comparing potential traffic impacts on various alignment alternatives for future projects. The steps for "Traffic Factor" analysis are listed below:

- Obtain existing Average Daily Traffic (ADT) and Year 2020 traffic projections from the affected agency. Consult SRCSD staff to determine the year of construction. The construction year traffic projections will be established by interpolating the existing and Year 2020 traffic volumes.
- Each alternative is divided into segments as necessary to reflect any changes of traffic flow along the alignment.
- Determine the construction year lane configurations of each studied road based on the information provided by the local agencies.
- Determine the Level-of-Service (LOS) of each segment based on the method described in the *County of Sacramento Traffic Impact Study Guidelines*. If a segment is outside any existing roadway, the LOS analysis is not applicable to the segment.



- Convert the LOS to average delay in seconds, based on the signalized intersection method described in the *County of Sacramento Traffic Impact Study Guidelines*. If a segment is outside any existing roadway, the average delay of this segment is zero.
- Determine the total delay of each segment. The total delay of each segment equals the product of the average delay multiplied by the ADT of this segment.
- Determine the Traffic Factor. The Traffic Factor (TF) of each segment equals the product of total delay multiplied by the length of the segment.

The following assumptions are used in this planning level analysis:

1. Only the roadway LOS is analyzed. The intersection LOS is not analyzed. Some intersections along the corridor may operate at a LOS worse than the reported roadway LOS.
2. The average delay defined for each category of the LOS was originally developed for signalized intersections. This average delay concept is used in estimating the average delay of roadway segments.
3. LOS E is defined as having an average delay over 60 seconds per vehicle. For estimating purposes, we assume LOS F will have an average delay of 80 seconds per vehicle. This assumption is consistent with the general concept of LOS that each level of degradation of LOS will increase the average delay by 20 seconds.

This methodology incorporates the projected traffic flow and anticipated traffic delays during the construction year and the length of the construction zone within the roadway into the analysis. The concept of this traffic analysis is based on the assumption that the higher the traffic volume and the longer the construction zone within the roadway, the more negative traffic impacts will be created.

### **2.3.2 Final Design Stage**

The design team shall obtain and review existing traffic volumes to determine whether lane closure is possible. If lane closure is not possible, alternate methods should be explored to mitigate the construction traffic impacts. These methods include removing parking/bike lanes temporarily, constructing temporary pavement, and changing the existing signal timing. If road closure is required, potential detour routes shall be identified. The design team shall consult the traffic engineers of the affected agencies to discuss the proposed traffic control measures. The design team should also prepare a traffic control plan to reflect the consideration of various traffic control measures and to incorporate the input of the City and County's traffic engineers.



## 2.4 Corridors With Potential Traffic Impacts

The traffic corridors that may be impacted by the proposed interceptors are listed below:

### 2.4.1 City of Sacramento

- Elk Grove Boulevard between UPRR and Bruceville Road
- Bond Road between Bradshaw Road and S.R. 99
- Laguna Boulevard between S.R. 99 and UPRR
- Big Horn Road between Laguna Boulevard to Franklin Boulevard
- Bradshaw Road between Calvine Road to Bond Road, and between Elder Creek Road and Kiefer Boulevard
- Old Placerville Road between Happy Lane and Mather Field Road
- Sunrise Boulevard between U.S. 50 and Winding Way

### 2.4.2 City of Citrus Heights

- Antelope Road between Sunrise Boulevard and Roseville Road
- Fair Oaks Boulevard between Old Auburn Road and Oak Avenue
- Oak Avenue between Fair Oaks Boulevard and Kenneth Avenue

### 2.4.3 City of Sacramento

- 24<sup>th</sup> Street between C Street and Meadowview Road
- Northgate Boulevard between West El Camino Avenue and Garden Highway
- West El Camino Avenue between Fairweather Drive and Northgate Boulevard
- San Juan Avenue between I-80 and Pelican Court

### 2.4.4 City of West Sacramento

- Jefferson Boulevard between 15<sup>th</sup> Street and Stone Boulevard

## 2.5 Budget Level Construction Cost Data

The construction cost for traffic control varies from project to project, depending on the size of the project, the number of construction stages, the location of the project, and the type of roadways that the interceptor locates. A previous study by Caltrans indicates that the traffic control cost varies from four to ten percent of the project construction cost. For budgeting purposes, five percent of the construction cost may be assumed for the traffic control cost in developed areas. Traffic control in semi developed areas, may range from



one to three percent of the total construction cost. The estimated unit cost for the traffic control items are listed below:

- Temporary traffic sign \$300 each
- Temporary traffic stripe (paint) \$0.40/ft.
- Temporary traffic stripe (tape) \$1.00/ft.
- Temporary pavement markings (paint) \$1.20/sq.ft.
- Temporary pavement markings (tape) \$4.00/sq.ft.
- Channelizer (surface-mounted) \$35 each
- Temporary pavement marker \$4.00 each
- Flashing arrow sign \$1,500 each
- Portable changeable message sign \$3,000 each
- Temporary flashing beacon \$70 each
- Temporary railing (Type K) \$12/ft.
- Temporary crash cushion module \$300 each
- Temporary traffic screen \$15/ft.
- Temporary barricade (Type III) \$50 each
- Temporary barricade (Type II) \$35 each

If moving construction zone strategy is used, all traffic control equipment will be paid once, except the K-rail that requires a considerable amount of effort to relocate. The relocation cost of the K-rail is approximately half of the “in-place” cost listed above.

