

APPENDIX 1

Capacity Rehabilitation and Augmentation Project

#1

The Capacity Rehabilitation and Augmentation Project is a result of the capacity analysis performed under EOCWD’s Sewer Master Plan. The project involves distinct sewer segments as described below. Figure 1 shows a view of the overall project area.



Figure 1 - Capacity Rehabilitation and Augmentation Project

BROWNING AVENUE SEWER

Segment 1 - Includes trenchless installation of approximately 300 feet of 18-inch pipe in a casing under the I-5 Freeway to connect El Camino Real on the north and Nisson Road on the south. A section of the I-5 Freeway from the I-405 to the I-55 Freeway is planned for improvements, one additional lane each way, starting in 2026; the project is in the early stages of planning by the Orange County Transportation Authority. EOCWD requires that the existing sewer, originally constructed in 1962 with 184 feet of 30-inch diameter steel casing jacked and bored, and 18 feet of concrete encasement, be maintained as backup. The sewer was lengthened when the I-5 Freeway was widened. This segment will also require construction of new manholes and reconstruction of a portion of the sewer in El Camino Real. El Camino Real is a heavily traveled street that will require special attention for traffic control during construction.



Segment 2 – This segment will replace and upsize 2,475 feet of 12-inch sewer in Browning Road between Bryan Avenue and the I-5 Freeway and upsize of approximately 1,500 feet of 10-inch sewer between Bryan Avenue and Bent Twig Lane. The recommended replacement sizes are 18-inches (replacing the 12-inch pipes) and 15-inches (replacing the 10-inch pipes.)

Replacement/upsizing of the existing pipes will be performed either via open trench excavation or using pipe bursting.

Segment 3 – This segment will replace and upsize 1,235 feet of 12-inch sewer in Browning Road between the I-5 Freeway and Mitchell Avenue. The recommended replacement size is 18-inches. Replacement/upsizing of the existing pipes will be performed either via open trench excavation or using pipe bursting.

FALLEN LEAF SEWER

There is an existing 21-inch vitrified clay pipe (VCP) sewer that is the continuation of the Browning Trunk Sewer. It is located between the cul-de-sacs at Royal Oak Rd. and Fallen Leaf Place and it runs southwest crossing under the OCFD's Santa Ana-Santa Fe Channel, which is a riprap lined trapezoidal channel, and under the AT&SF Railroad (Metrolink rails) before trying to the existing sewer in Edinger Avenue.

Based on record drawings, the sewer is encased in concrete under the 65 feet channel right-of-way and steel casing under the railroad right-of-way. EOCWD has experienced issues in maintaining this section of sewer due to the difficulty of access on both sides (one manhole in the sidewalk between the cul-de-sacs and the downstream manhole is located inside the railroad fence). The 21-inch pipe below the channel has about 3 feet of cover to the concrete encasement and appears to have a sag, which may retain debris that could cause blockage and a potential overflow. EOCWD

also requires that the existing sewer be maintained as a backup; this means that the existing sewer may also have to undergo some form of rehabilitation.

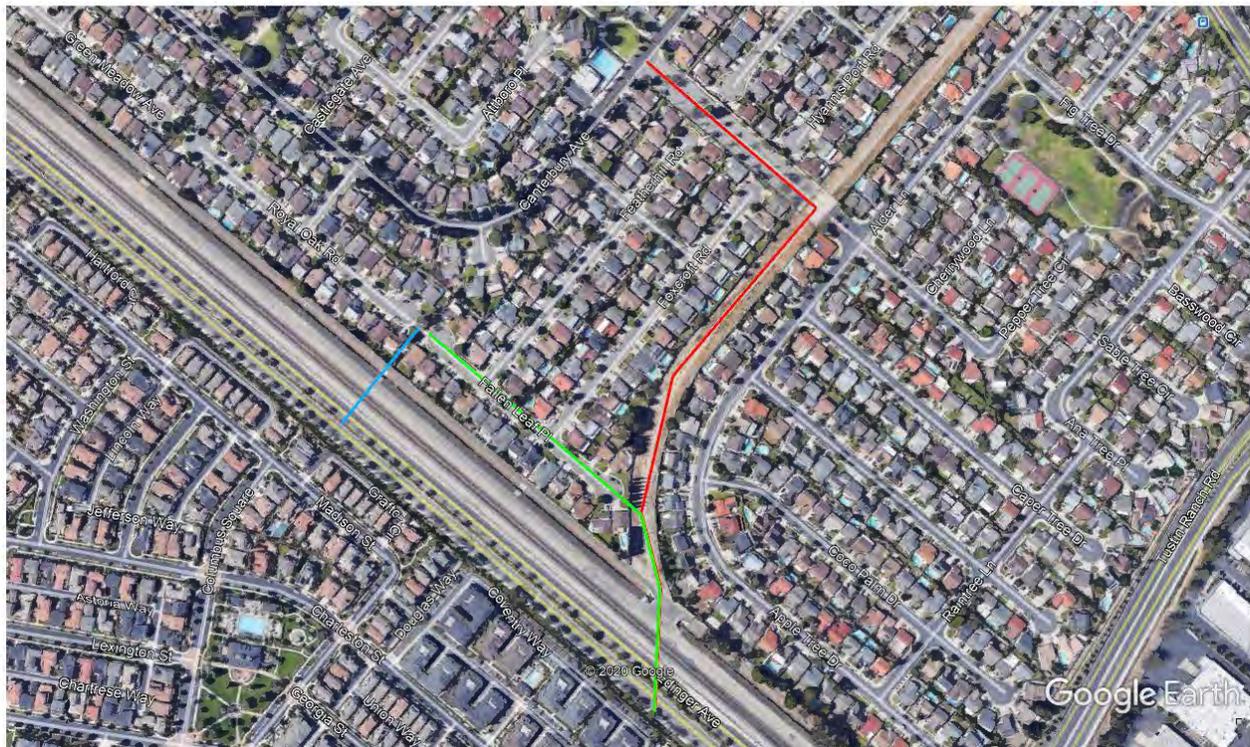
There are 3 options for this sewer:

Option 1

Construct a new 20 to 24-inch sewer parallel to the existing crossing. Construction would entail boring and jacking of a steel encasement and the carrier pipe would be installed inside the steel pipe. The annular space would be filled with grout. The parallel line would be bored adjacent to the existing line, and level of service to the affected homes will be improved. Permitting this new line may take longer due to crossing the Metro Rail lines but is the most cost-efficient alternative. Constructing a parallel line within the existing easement will entail negotiations with the affected homeowners to allow a temporary construction easement.

Option 2

This option consists of installing approximately 1,400 feet of 21-inch pipe crossing under the railroad and flood control channel; the crossing will require trenchless methods and major coordination with Metrolink and Orange County Flood Control District. The sewer is about 20 feet deep and there is potentially unstable soil conditions and ground water in the area that could make the construction very difficult. This option is anticipated to be completed with tunneling methods to avoid disruption to the Fallen Leaf homes. This option also requires permitting thru Metro Rail and the OCFCD storm channel but avoids the disturbance of the two homes on Royal Oak.

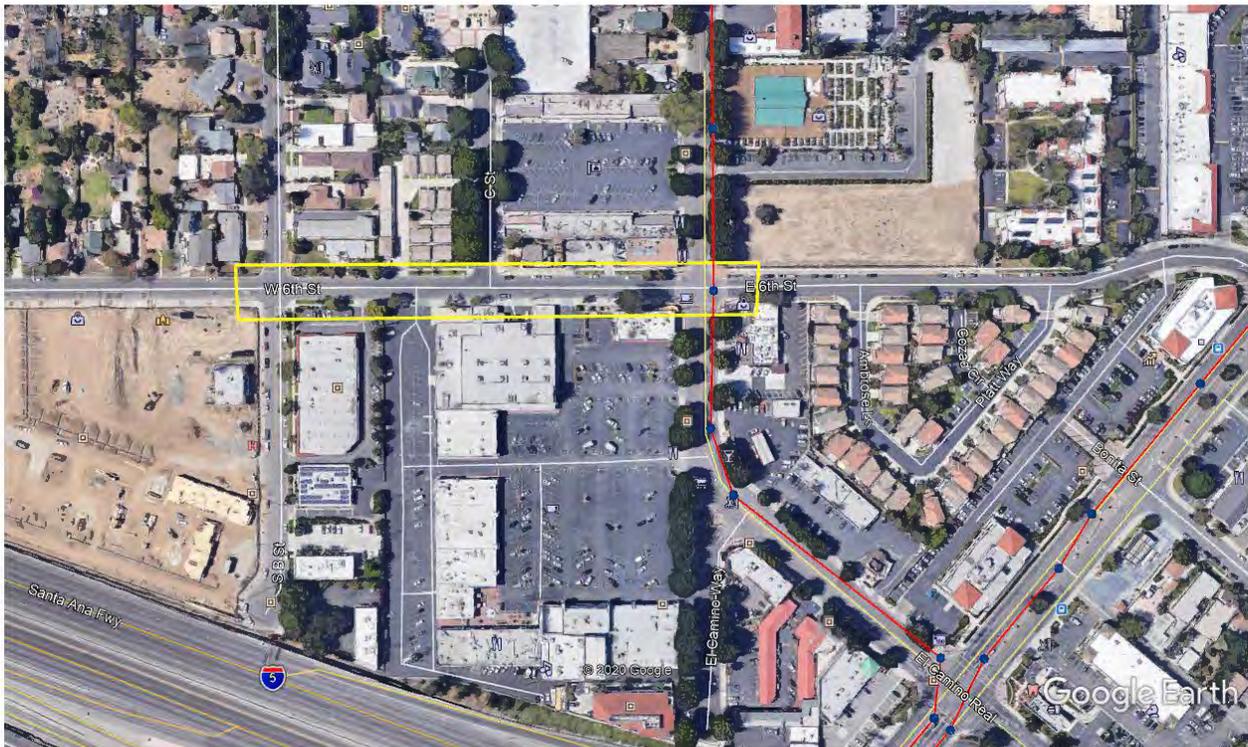


Option 3

This option consists of installing approximately 2,300 feet of new 21-inch pipe connecting to the existing sewer in Canterbury Avenue, running east in Sycamore Avenue, then southwardly in the old railroad spur and parallel to an existing storm drain pipe and finally crossing under the existing Santa Ana-Santa Fe Flood Control Channel and the Southern California Railroad Authority (Metrolink) rails. The new sewer would connect to the existing sewer line in Edinger Avenue.

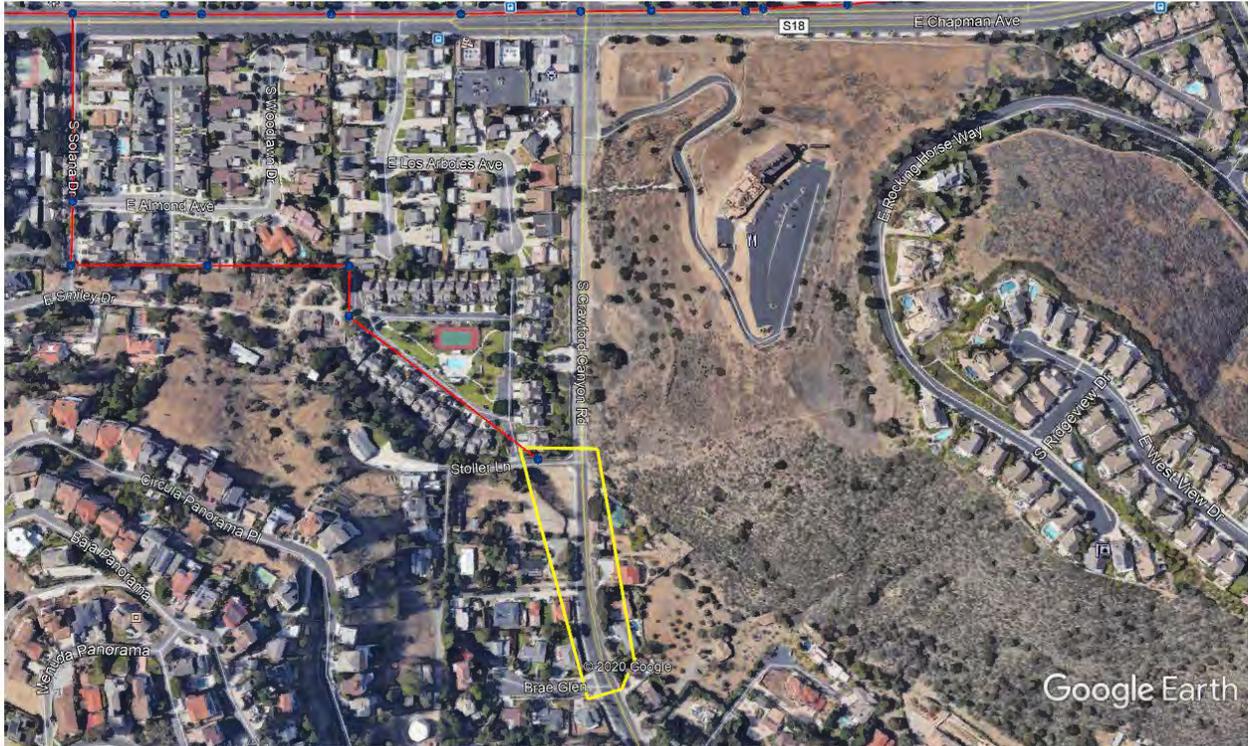
6th Street (B Street) Sewer

This segment will convey the flows north of B Street by designing and constructing a new 10-inch sewer line in 6th Street that connects to the existing OCS D manhole located at the intersection of 6th and El Camino Real. This new line would relieve future capacity issues to the existing sewer line in B Street south of 6th Street. Construction of the new line is expected to be completed using open trench methods.



Crawford Canyon Sewer

This segment entails the replacement and upsizing of about 600 feet of existing 8-inch sewer with a new 12-inch sewer. The line is deep, so pipe bursting would be preferred for replacing it, but open trench replacement is also potential alternative.



Clarissa Lane

This is an existing sewer that crosses under another OCPW flood control channel. It is about 500-ft in length and only 6-inches in diameter and is in bad shape. Two alternatives will be considered during preliminary design: (1) design and construct a new parallel sewer (with siphon under the channel); (2) Design and construct a new sewer connecting the existing MH at Clarissa Lane to the existing MH in Plaza Dr. with a new 8-inch sewer, about 220 ft long, and about 5-8 ft deep, via either open trench or bore and jack between the two existing homes in Clarissa Ln; easement research and negotiations would have to be included.

