

**Paulus Engineering, Inc.**

*Pipeline Construction*

Lic# 724114

(714) 632-3975

8" Sewer Repair

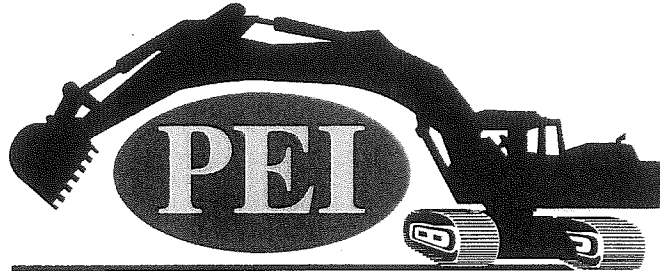
On

Leonore, Garden Grove

For

Garden Grove Sanitary  
District

<b>1</b>	Invoice/Summary
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## Paulus Engineering, Inc.

### Work Order Breakdown

Project Name: 8" Sewer Repair  
Location: Leonore, Garden Grove  
Dates Performed: 02/07/17-03/23/15

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Invoice, Summary  
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# Paulus Engineering, Inc.

General Engineering Contractor and Construction Management  
License Number 724114

May 3, 2017

City of Garden Grove Sanitary District  
13802 Newhope Street  
Garden Grove, CA 92843

Attn: Brent Hayes

Subject: Lenore Ave Sewer Repair

Here is a time line of work at performed at the Lenore Ave Repair:

2-2-17 - Paulus Engineering was requested to repair a length of damaged 8"VCP sewer main on Lenore Ave. in Garden Grove. USA ticket called in.

2-7-17 & 2-8-17 - PEI mobilized equipment, prepared Chapman storage yard for the wet contaminated soil. Crew saw cut AC & pot holed the beginning point and ending points to verify ground water elevation around the 8"VCP. Ground water at these locations looked to be manageable with minimal dewatering.

2-9-17 - PEI crew proceeded with the repair in coordination with City Sanitary district vac truck and PEI vac truck to control the 8" sewer flow. PEI encountered extreme ground water differing from the pot hole information and 40' of 8" C900 partial repair on the upper section of the total length. The ground water was too intense for the dewatering equipment being utilized.

2-10-17 The City was provided a plan & price to drill 5 dewatering wells to control the ground water.

2-14-17 & 2-15-17 - The dewatering wells were installed in two days. Additional steel plates and temporary asphalt were needed to protect the jobsite. A residents sewer main had stopped working and a temporary sewer cleanout was installed to try and pump out the house water and keep the sewer flowing. This did not work as there was again too much ground water. The resident was placed in a hotel until the main line and house lateral were repaired.

2-20-17 The wells were checked and the water table was not receding quickly. The existing sewer main was compromised creating a condition that required bypassing the main line. A sewer bypass sytem was installed over the next couple of days.

2-23-17 to 3-5-17 Maintained bypass and pumps. Waiting for water level to recede in order to finish the construction.

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3-9-17 & 3-10-17 Ground water levels and were down to 24' level in the wells. Potholed at the pipe zone and still lot of water in trench zone. A decision to install a french drain from the pipe zone to the well was approved and installed, which diverted water from the pipe zone into the wells thereby lowering the water table around the pipe zone.

3-11-17 & 3-12-17 With the ground water lowered, 98 feet of compromised 8" sewer line was removed and replaced with new PVC sewer pipe. The downstream sewer line was also flushed and cleaned of sediment to ensure a free flowing sewer main.

3-14-17 to 3-23-17 Removal of damaged existing asphalt, grading of street and new asphalt installed. Demobilization and clean up of job site.

Paulus Engineering, Inc.

*Roger Betten*  
Project Manager