



**Engineering &
Environmental**
CONSTRUCTION

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EXCAVATION OF CONTAMINATED SOILS

CASE STUDY

PROJECT OVERVIEW

Project Name: Gas Station Excavation

Location: Garden Grove CA

Job Type: Excavation with shoring, and application of Oxygen Release Compound (ORC)

DESCRIPTION

Implementing a permanent solution for ongoing and unresolved contaminations at a Southern California gas station. After prolonged remediation efforts prior to engaging E&E, this site still had a significant hot spot of petroleum hydrocarbon impacts. This project involved excavating to a depth of 18 ft (7ft below the groundwater level) in an operating busy gas station to remove the source of the hot spots. Then, it was backfilled with crushed rocks to the top of ground water level and ORC pellets were mixed in to support continued bio remediation activities. The final stage included loading, transporting, and disposing of excavated soil; back-filling with clean soil; and resurfacing.



MAIN TASKS

- A Geo Physical Survey to locate conflicting utilities or obstructions
- Erecting a temporary chain link fence to secure the work site
- Saw-cutting and removal of existing pavement within a few feet of a busy pedestrian way and bust stop
- Excavate using a slide rail shoring system to approximately (-17) BGS with GW at (-10) BGS
- Ongoing PID and 1166 monitoring to ensure the site and work zone stayed within H&S and required parameters
- Backfill the first 7ft with ¾" crushed rock and mix in ORC pellets through the crushed rock using the excavator bucket
- Place geo textile fabric on top of the crushed rock layer prior to backfilling the remaining space with clean fill – under the direction of the geo technical technician
- Compaction testing
- Resurface the area
- Replace curbs, planters, and sprinklers
- Slurry seal and re-stripe the entire parking lot



CHALLENGES

- Limited Space – The site offered limited space for the scope of the soil excavations, so we implemented a 3-phase approach to allow sufficient room for staging equipment, shoring, soil piles, and truck loading.
- Community Safety – The site was adjacent to the city sidewalk and an active bus stop, and one of the excavations was in close proximity to the property line. A temporary fencing system ensured the public and gas station employees wouldn't access the work zone accidentally.
- Impact to Surrounding Areas – Immediately adjacent to the site were residential housing units, and the excavated soil had a significant odor. We used a combination of odor suppressants and continued plastic covering to minimize impact.

INTERESTING POINTS

This site had been under in-situ SVE and GW remediation for years, and the site conditions had prevented the site from getting closure, this alternate method has allowed remediation to proceed and the client to obtain site closure in a rapid time frame.

ABOUT E&E CONSTRUCTION

Engineering and Environmental Construction (E&E) was founded in 2006 with a primary focus on the installation of environmental remediation systems. Over the years, we've continually expanded our skill-sets to become one of the industry's leading purveyors of full-service construction services – both within the environmental industry and in general construction. Today, we are proud to offer a wide range of highly specialized environmental engineering capabilities and a full-suite of general construction services to support our clients' ever-evolving needs.



STATEMENT OF QUALIFICATIONS

Engineering and Environmental Construction, Inc (E&E) is a privately held corporation established in 2006. E&E's main construction offices are based in Huntington Beach, CA. We are licensed to conduct operations throughout California, Arizona, Nevada, and Washington.

Contractor Licenses and Certifications Include (but aren't limited to):

- Class A General Engineering License
- B General Building License
- C-10 Electrical License
- C-36 Plumbing License
- Hazardous Substances Removal License
- Annual OSHA Excavation & Trenching Certification
- Remedial Action Certification
- SCAQMD Rule 1166 – Various Locations Permit

E&E is recognized as an SBE with many entities, such as the DGS, and we are also pre-cleared by Homeland Security for access to ports and military installations. We maintain a Zero Incident Safety Record and a 0.78 Experience Modification Rate (EMR), among other H&S recognitions.

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