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After clearing and grubbing the site, Geo-Solutions removed subsurface obstructions, including asphalt, concrete, abandoned utilities, and other former refinery structures, from within the footprint of the site treatment area(s) using excavators and demolition hammers. The former refinery structures included reinforced concrete building and tank pad foundations and fill material consisting of bricks, structural steel, wood, petroleum products, and other debris. Active utilities servicing the existing facility were capped and relocated along the newly installed access road alignment.

continued Brownfield

continued Ladder Safety

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March 2020 - National Ladder Safety Month

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The U.S. Bureau of Labor Statistics recorded a total of 615 fatal occupational injuries from falls to lower levels in 2018. Although ladders were not involved in all of these fatal occupational injuries, ladders present a significant risk of falling to a lower level. The ALI notes that every year over 100 people die in ladder-related accidents and thousands suffer disabling injuries. Clearly, ladder safety is important at the workplace and at home as well.

In honor of Ladder Safety Month, Geo-Solutions reviewed its procedures with its crews.

1. Plan for the work using JSAs, tool box talks, and equipment inspections.

2. Ensure the proper ladder is being used for the job by examining the working load.

continued on page 4
Cutoff Walls

Geo-Solutions recently completed several cutoff walls using the slurry trench installation method highlighting the many applications and versatility of this technique. The slurry trench installation method refers to construction practices that utilizes an engineered fluid (normally consisting of some mixture of clay and water) to hold open the sidewalls of an excavation, thereby permitting the excavation of deep and narrow trenches without the need for other conventional excavation support systems. These cutoff structures are mainly constructed to slow the flow of groundwater or to slow the migration of subsurface contaminants, primarily by slowing the flow of the groundwater carrying the contaminants.

Project 1 – Dewatering Support Feature for New High School Campus

Geo-Solutions completed a 3 foot wide, 3,300 foot long soil-cement-bentonite (SCB) cutoff wall to a maximum depth of 22 feet. The new high school campus proposed for this site includes a basement that extends below the groundwater table and through a highly porous gravel layer. The cutoff wall was designed to reduce groundwater seepage into the basement excavations by cutting off the porous gravel layer. The cutoff wall encircled the entire plan area. Excavation was accomplished under bentonite slurry using a CAT 336 excavator equipped with a stock stick and boom.

Project 2 – Gap Closure in Existing Cutoff Wall

Geo-Solutions completed a 2 foot wide, 1,500 vertical square foot (v/sf) self-hardening slag cement-bentonite (SCB) cutoff wall to a maximum depth of 20 feet. This cutoff wall was installed to close a gap between existing cutoff wall ends to reduce site contaminants from seeping into a nearby body of water. The gap was approximately 65 LF with a minimum 5-ft tie-in to the existing cutoff wall ends.

Project 3 – Dam Reconstruction

Geo-Solutions completed a 3 foot wide, 120 foot long cement-bentonite (CB) cutoff wall to a maximum depth of 33 feet. The cutoff wall was designed to provide water control and improve the strength and stability of a new dam. A Komatsu PC490 fitted with a custom long stick was used for the excavation of the cutoff wall.

Project 4 – Quarry Closure for Water Reservoir

Geo-Solutions installed a 2.5 foot wide, 300 foot long BFS/CB cutoff wall to a maximum depth of 40 feet. The cutoff wall was installed in a gap between native rock walls to limit the influx of high hardness water into a reservoir planned for municipal use. The cutoff wall essentially created a “plug” in the soil-filled gap in the former quarry. Excavation was accomplished using a Komatsu PC800 excavator fitted with a custom long boom and stick attachment.

Project 5 – Acidic Groundwater Control

Geo-Solutions installed a 3 foot wide, 950 foot long soil-bentonite (SB) cutoff wall to a maximum depth of 15 feet. The cutoff wall was installed to reduce lateral migration of acidic groundwater. The excavation was accomplished with a CAT 336 excavator with a stock stick and boom.

Steam Enhanced Soil Mixing

Geo-Solutions’ recently added steam enhanced soil mixing capabilities to its specialty construction techniques. Steam enhanced soil mixing can be used to perform thermal remediation by injection of hot air and steam. This technique can be cost effectively used to remove volatile organic compounds (VOCs) and semi volatile organic compounds (SVOCs) and has been used successfully on a number of project sites in the last 15 years. The process is completed using standard soil mixing augers that shear and mix the soils while steam and hot air are injected through ports on the auger(s). The steam and hot air raise the temperature in the subsurface to approximately 65° to 95° C causing thermal desorption and volatilization of the contaminants from soil particles and pores. Once vaporized, the compounds are carried through a highly porous gravel layer. The cutoff wall was designed to provide water control and improve the strength and stability of a new dam. A Komatsu PC490 fitted with a custom long stick was used for the excavation of the cutoff wall.

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Please join us in welcoming our most recent hires, Charlie Krug and Don Clift.

Charlie joins Geo-Solutions as a Project Manager with approximately 15 years of civil engineering design and construction experience. Charlie has a B.S. in Civil Engineering from Michigan State University. After Michigan State, Charlie worked as a consultant for a geotechnical/environmental firm before working as a project manager/estimator for a nationally recognized construction company specializing in cutoff wall installations via trenching. Charlie has managed and estimated a diverse range of construction projects from small environmental to large civil work is well versed with mixed-in-place cutoff walls, permeable reactive barriers (PRBs) and collection trenches. Besides managing construction projects, Charlie is active in the geotechnical community as a member of the Seepage Control Committee of the Deep Foundation Institute (DFI). In addition to his general industry experience, Charlie brings unique understanding to the Geo-Solutions team for the successful implementation of projects involving the Geo-Trencher.

Don joins Geo-Solutions as a Site Superintendent with over 31 years of construction project management and supervision experience in past roles. Don has been responsible for the on-site supervision and management of both public and private sector projects including responsibility for client relationship management, oversight of subcontractors, acquisition of permits, and coordination of equipment and materials. Don’s areas of expertise include remedial systems installations and maintenance, including soil vapor extraction and pump and treat system. Don formerly worked for a nationally recognized construction company that specialized in steam enhanced soil mixing used for thermal remediation / active stripping of contaminated soils. In addition to his general construction experience, Don brings unique familiarity for proper utilization of Geo-Solutions’ most recent equipment acquisitions for Steam Enhanced Soil Mixing.
Call any one of our offices, visit our website www.geo-solutions.com or email us at info@geo-solutions.com.

Photo of the Month
Geo-Solutions employees compete for the photo of the month! Winning photos are compiled into our calendar. Request a copy by emailing marketing@geo-solutions.com.

continued Ladder Safety
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continued Brownfield

The ISS included the stabilization of approximately 340,000 CY of impacted soil. The 31 acre site was divided into approximately 4,400 cells measuring 20-feet wide by 15-feet long. The ISS extended to a maximum depth of 16-feet bgs with an average depth of 6-feet bgs. A total of more than 5-million gallons of cement grout was mixed and pumped to the various cells to achieve a target unconfined compressive strength of 40 psi at 28 days.
A component of the site restoration included the installation of a 120 foot wide by 12,000 foot long stormwater management area containing a surface sand filter and associated drainage structures. The sand filter was installed to a depth of 7-feet bgs. The sand filter was designed to collect and filter site stormwater before being discharged to the local sewer. A cover of vegetated material and aggregate subbase was installed across the remainder of the site. The cover consisted of a demarcation fabric, subbase material and/or topsoil.

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