



MANUFACTURING RUNOFF SOLUTIONS

Metal fabricator manages its own storm water discharge

By Tim Hahn

Pacific Corrugated Pipe Co. (PCP) has manufactured corrugated steel pipe and related drainage products since 1935. Its metal fabricating site in Eugene, Ore., sits on 15 acres and has been in continuous operation for more than 30 years. As an industrial manufacturer of products containing zinc, aluminum and iron, PCP is responsible

for monitoring and treating storm water before it is discharged from its property. The Oregon Department of Environmental Quality (DEQ), in association with the U.S. Environmental Protection Agency, regulates storm water treatment.

Handling Discharge

Because the PCP Eugene site's runoff

discharges into a conveyance feeding Amazon Creek, samples are taken during rainfall events and sent to a lab for analysis. All results from lab testing are populated into a discharge monitoring report, which then is communicated to DEQ to maintain a 1200-Z permit.

Recently, the DEQ reduced the amount of pollutants, including metals and suspended solids, considered acceptable for industrial manufacturing sites in Oregon. Companies found to be out of compliance with the revised benchmarks were provided an opportunity to address their storm water treatment issues during a grace period, which ended June 30, 2016.

PCP's commitment to environmental quality and continuous improvement at its facilities prompted the initiation of a consulting contract with Aquarius Environmental LLC to perform a site environmental study and assist in selecting the best treatment system to increase clean water properties on site.



Crushed rock backfill was compacted in layers, allowing the corrugated steel pipe to support heavy-duty forklift traffic.



The storm water detention system consists of two 140-ft runs of 78-in.-diameter corrugated steel pipe.

Design & Installation

The total water inflow area on the property is approximately 7.3 acres, 28.7% of which is impervious ground. Given the site parameters and using the Santa Barbara Urban Hydrograph methodology for a 24-hour Type 1A Storm, the team determined a design flow rate of 0.26 cu ft per second was required to conform to DEQ design storm requirements. Hydro CAD modeling output resulted in a 100-gal-per-minute (gpm) water removal requirement.

In order to store captured rainfall prior to performing treatment, PCP utilized its in-house expertise to design a subsurface detention system. The design allows for normal use of the property above ground, while providing storage for up to 69,440 gal during a storm event.

The detention system consists of two 140-ft runs of 78-in.-diameter, 14-gauge, 5x1 polymer-coated corrugated steel pipe.

In order to achieve watertight joints,

PCP used bolted, rolled-angle flange joints with neoprene rubber gaskets. The neoprene gaskets were temporarily held in place by spraying them with adhesive prior to bolting the joints. Because the groundwater table is so close to the surface, several Eco-Blocks were attached to the system and used as anchors to counteract buoyancy.

Standard trench installation was accomplished using typical construction practices. A crushed rock backfill was compacted in layers to achieve 95% standard Proctor density, allowing the corrugated steel pipe to support the heavy-duty forklift traffic that occurs at this industrial manufacturing site.

Pollutant Removal

After evaluating several technologies for treating identified pollutants, PCP installed an electrocoagulation (EC) storm water treatment system designed and built by Enpursion. The EC system sits downstream from the detention tanks; during a storm event, the water

automatically will be pumped into the first stage of the treatment system.

The unit consists of eight electrolysis reactors that can treat up to 200 gpm. Electricity is applied to the reactor cells through an automated control panel, and the suspended metals in the storm water are attracted to a sacrificial anode. Once the electrolysis reaction has occurred, the storm water is pumped through a sedimentation tank and module of sand filters to complete treatment. Performance of systems installed with similar site conditions has demonstrated near-perfect compliance using EC technology.

The combination of a polymer-coated corrugated steel detention system and an EC storm water treatment system allows PCP to discharge clean water in the community and comply with DEQ regulations. **SWS**

Tim Hahn is operations manager for Pacific Corrugated Pipe Co. Hahn can be reached at 541.461.0990.