



CASE STUDY

Sub-Slab Depressurization System

DESCRIPTION

The site formerly used chlorinated solvents in a manufacturing process. The soil below the proposed footprint of the new 94,000 sf warehouse building contained impacts from the chlorinated solvents which could potentially allow vapors to migrate through the concrete slab and collect in the building.

To mitigate the potential of chlorinated solvent vapors collecting in the breathing air of the building's occupants, E&E trenched and installed approximately 2,300 linear feet of vapor collection piping within the building pad prior to and during construction of the building, working in close harmony with the General Contractor tasked with the building construction to avoid major disruptions to each other's deliverables.

A 60-mil thick HDPE liner was subsequently installed over the pad, ready for the building slab to be poured on top. Once the slab was completed, E&E connected the below grade piping through eleven penetrations in the slab, up the columns within the building structure and through the roof. Each pipe, on penetration of the roof, was fitted with a wind turbine. These provided an environmentally friendly solution to maintain a constant vacuum condition in the subsurface below the building pad thereby pulling the vapors up and out, exhausting them above the roof elevation.

MAIN TASKS

- Trenching in building pad, under building.
- Installed geofabric in the trenches to mitigate fine grain materials from migrating into the gravel pack around the subgrade piping.
- Installed subgrade piping.
- Installed piping in the building through the slab, up the columns and through the roof.

- Installed 60-mil thick HDPE liner and connected to the slab footings to create a vapor seal.
- Installed valving and protection cages around piping in the building.
- Installed wind turbines on the roof to vacuum vapors from subgrade and exhaust them above the roof.

CHALLENGES

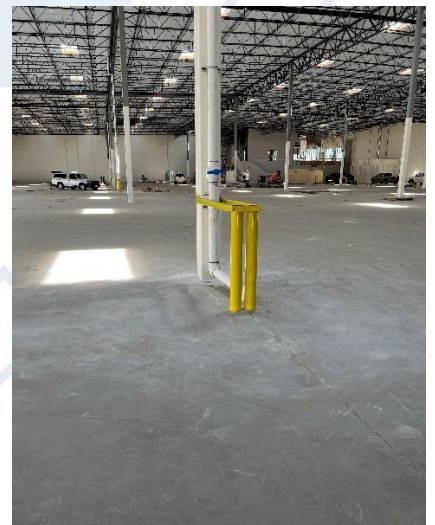
Due to E&E performing its project deliverable as a component of a larger building construction project of a General Contractor, very careful consideration needed to be given to the choreography and communication between the building GC and E&E. An obvious reason was to ensure each contractor did not encroach upon and/or disrupt the tasks and workflow of the other during construction. However, more importantly, Health and Safety considerations needed to be at the forefront of everyone's daily planning and toolbox safety meetings. With multiple crews from two different entities working within the same construction zones, the potential for hazards increased exponentially. The sharing between the teams of task planning, crew movements and related JSA's, among other factors, helped ensure the safety and well-being of all on the site throughout the duration of the project.

Footings were being poured while E&E was trenching through the building pad and installing subgrade pipe.

E&E had to connect 60-mil liner to footings to create vapor seal before slab could be poured on top of liner.

INTERESTING POINTS

This was a very environmentally sound system without the use of electricity, using only wind power to remove sub slab vapors.



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