# Southeast Police Precinct Pervious Concrete

2475 Deer Park Boulevard, Omaha, NE

City of Omaha Stormwater Program

## SITE AND PROJECT SUMMARY

The Omaha Police Department Southeast Precinct is located in the southeast corner of Omaha, at the corner of 25th Street and Deer Park Boulevard. In 2012, the Southeast Police Precinct renovated their parking lot on the west side of the facility to address stormwater issues and reduce runoff flow rates during storm events, which helps to relieve pressure on the combined sewer system. A little less than half (47%) of the old parking lot was removed and replaced with roughly 315 cubic yards of pervious concrete. The pervious concrete was separated into five distinct cells, covering all of the parking stalls throughout the parking lot.

Pervious concrete is a carefully controlled mixture of water, cement, and coarse aggregate material. This mixture contains little to no sand, allowing for a system of interconnected voids to form, creating highly permeable concrete that drains rapidly. Typically, pervious concrete consists of 15% to 25% voids allowing for long-term durability and proper drainage.

Stormwater enters the pervious concrete parking stalls through surface sheet flow and passes through into the aggregate sublayers below, which then discharges to an underdrain system connected to the combined sewer system. The underground aggregate acts as a storage area, allowing stormwater to infiltrate into the surrounding subsoil and slowly releasing excess stormwater. This system has been retrofitted with control valves, which provides greater retention times and additional storage capacity of the system. These valves can be controlled electronically to open or close based on rainfall predictions and water levels within the storage aggregate.

Monitoring efforts for this project included the installation of wiers to monitor flow rates coming out of the pervious concrete cells within the parking lot. Water level sensors installed in the reservoir monitor storage capacity of the system and retention times during storm events. Temperature sensors have been installed within two of the pervious concrete cells and placed at varying depths below the pervious concrete. This temperature data allows the City to monitor how the concrete pavement performs and reacts during cold weather, as well as examine temporal depths of the freeze/thaw lines throughout the aggregate system.

## PROJECT DETAILS

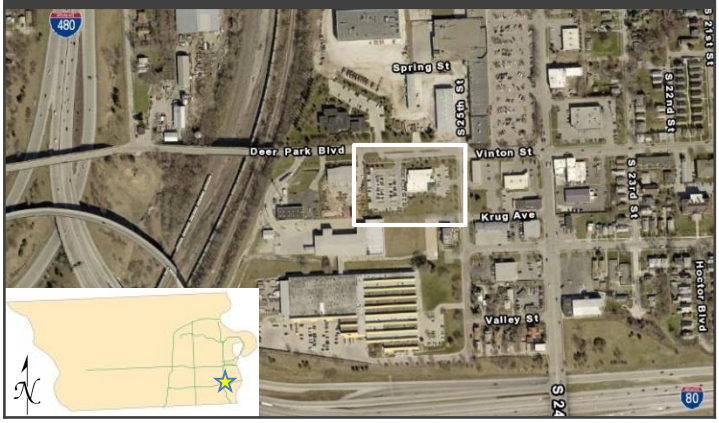
| | PERVIOUS CONCRETE |
|---|---|
| System Footprint | 16,840 ft$^2$ |
| Underdrain | 4" PVC & washed limestone |
| Pre-Treatment System | None |
| Outlet Control | Automated Valve |
| Contributing Area | 0.83 Acres |
| Predominant Land Use | Roof, parking, and sidewalk |
| Percent Impervious (%) | 55% |
| Predominant Soil Types | Sand clay loam |

| MONITORING | METHOD |
|---|---|
| Weather Conditions | Temperature, Wind, & Rainfall |
| Inflow | Calculated |
| Outflow | Palmer-Bowlus Flume |

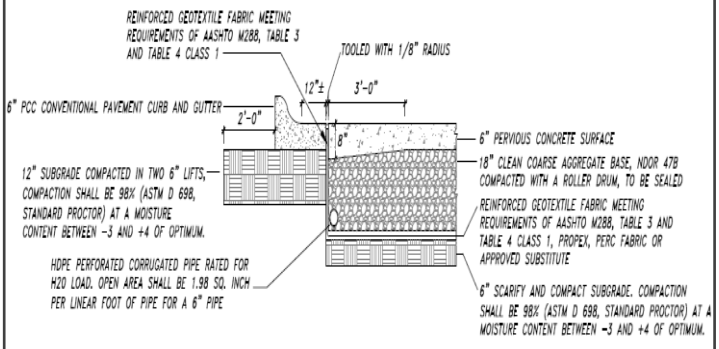

| COSTS | |
|---|---|
| Design | $19,602.00 |
| Construction | $139,450.00 |
| Construction Oversight | $2,228.00 |
| Material Testing | $7,782.00 |
| Total | $169,062.00 |

| DESIGNED BY | CONSTRUCTED BY | MONITORING/ ASSESSMENT BY | MAINENTANCE BY |
|---|---|---|---|
| Kirkham Michael | TAB Construction | City of Omaha; Nebraska Concrete & Aggregates Association | City of Omaha Stormwater Program |

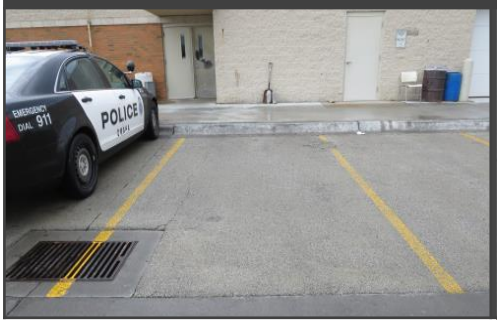
## SITE LOCATION – 2475 Deer Park Boulevard

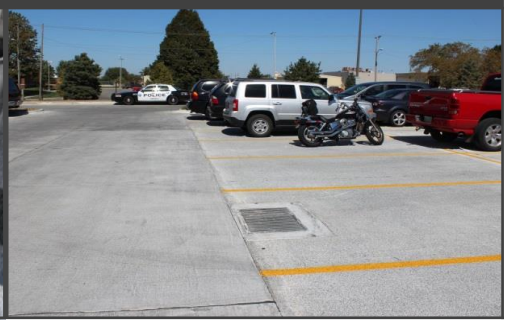



## PERVIOUS CONCRETE CROSS SECTION




## PHOTOS



## PROJECT LAYOUT