

Memorandum

TO: Town of Darien Planning & Zoning Commission
FROM: Will Walter, PE
SUBJECT: Ox Ridge Elementary School – Stormwater Management Report Executive Summary
DATE: March 20, 2020

The property is situated on approximately 16.17 acres of land at 395 Mansfield Avenue in Darien, Connecticut. It currently consists of the Ox Ridge Elementary School building. To the east of the building lies the main parking lot. To the southeast of the building lies the baseball field, playgrounds and large open athletic field. To the west of the building lies portable classrooms, a small field and blacktop playground. At the western edge of the property lies a woodland corridor and stream that outlets to Stony Brook.



The site slopes from east to west with terraced landforms to accommodate the existing building. The slope varies at about 10% slope at the access drive to Mansfield Avenue, 4.5% slope at the eastern parking lot, 3% at the southeastern field and 2% at the western field. At the western edge of the site, at the edge of the woodland corridor, the grade steeply drops at about 40%.



The stormwater runoff around the building and parking lot is captured with typical catch basins and underground piping. The water is carried and outlets to the northwestern edge of the property with two daylighting pipes. The pipes daylight out of a sheer-faced soil wall about two and a half feet high. They have no outlet protection. The current conditions show signs of possible channel erosion or soil instability.

The project proposes a complete demolition of the existing school and reconstruction of a new school and site. The proposed stormwater drainage system was designed to promote the use of LID practices to protect water quality, reduce runoff volume, maintain groundwater recharge, and address peak flows and flooding during larger storms. The site has been designed with a series of drainage facilities, including catch basins, area drains, manholes, piping, overflow structures, hydrodynamic separators and underground retention chambers. They are designed to remove stormwater from paved and pervious surfaces, provide water quality treatment, reduce runoff volume, maintain groundwater recharge, and address peak flows and flooding during larger storms.

Peak Flow Detention

Although the project only slightly increases imperviousness, the Town regulations require us to reduce the peak flows under the assumption that the existing site is undeveloped (meadows, woods, etc.). In order to reduce the peak flow for the required design storms to assumed existing conditions, an underground concrete detention chamber will be constructed under the lower field. The underground system will be an open-bottom concrete system on 16" of crushed stone. This design will promote stormwater recharge, treatment for water quality, and peak flow detention.

Treatment for Water Quality

The project will treat surficial runoff for the treatment of water quality, specifically the paved areas, via a series of treatment methods, including deep sump catch basins, bioretention, a hydrodynamic separator, and infiltration. The existing site outfall is being replaced with a concrete endwall and associated rip rap scour hole. This will provide dissipation of energy at the outfall, thereby stopping the erosion that is occurring under existing conditions.

Analysis of Stony Brook Watershed

Town regulations require an analysis of the project effect on the overall Stony Brook Watershed, as there are existing flooding issues with Stony Brook. This affect was analyzed, utilizing a 2008 town analysis of the Stony Brook watershed. This project will result in a net decrease in peak flow within Stony Brook for storms up to the 100-year design storm, thereby no exacerbating any existing flooding issues.