

# New Boston Local Schools K-12 School Flood Study, Survey, Demolition, Site Design, Retaining Wall, Utility & SWPP New Boston, Ohio



Howerton Engineering & Surveying was contracted by New Boston Local Schools as the engineers and surveyors for their proposed K-12 school.

Phase I of the project started with a full boundary and topographic survey of the proposed school site. A site analyses and flood study was performed as well. Phase II was the site design. First a demolition plan was established in order to remove all existing buildings, pool, utilities, and other miscellaneous structures. The next step was to create a paving plan and overall site plan following Ohio School Facilities Commission standards. A full grading plan was developed to ensure the school was out of the 1 00 year flood plain and that the site would have proper drainage, this included a hill cut and slope design along with a retaining wall to prevent future slipping. The utility plan was then designed. The existing waterline was relocated to better suit the site, this was done in coordination with The City of Portsmouth and the Ohio EPA. The existing gas line was also relocated in coordination with Columbia Gas. A sanitary sewer extension was needed to connect the proposed school to the existing sanitary sewer. A full storm sewer system was designed to accommodate any on site drainage. This system included two detention areas, risers, and stormceptors. Plans and specifications were submitted to the Ohio EPA and proper approval was obtained. The next part of the site design was an erosion control plan.

## Demolition Plan

Based off the boundary and topographic survey performed by Howerton Engineering & Surveying, a demolition plan was developed to remove all undesired structures existing on the proposed school site. This included the removal of an 80' x 130' in ground concrete swimming pool along with a 65' diameter in ground concrete kiddie swimming pool. The demolition included: over 38,000 square feet of concrete to be removed, three block buildings, playground equipment, over a dozen trees, and a perimeter fence.

## Client/Location

New Boston Local Schools  
1 Glenwood Tiger Trail  
New Boston, OH 45662

## Client Reference

Mike Staggs  
New Boston School  
Superintendent  
(740) 456-4559  
mike.staggs@newboston.k12.oh.us

## Project Status

Complete - 2011

## Dates of Service

Design – 2010  
Construction - 2012

## Special Features

- Topographic Survey
- Boundary Survey
- Demolition Plan
- SWPP
- Erosion Control
- Water System Design
- Fire Protection Line
- Retaining Wall Design
- Bore Hole Staking
- Sidewalk Design
- Stormwater Design
- Sanitary Sewer Design
- Retaining Pond Design
- Ste Lighting Design

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## Site Plan

Howerton Engineering & Surveying was provided with a building plan for the proposed New Boston School. Using the floor plan, Howerton Engineering & Surveying developed a site design to satisfy The State of Ohio School Facilities Commission Design Manual. Three parking lots were design to serve the school along with 3 access roads for the parking lots. The site included over 2,300 linear feet of curb and over 2,000 linear feet of sidewalk design with over a dozen handicap ramps. The site included over 5,000 square feet of porous paving technique to be placed between the back of the school's sidewalk and the retaining wall. Howerton Engineering & Surveying created a model of the proposed school to be used in Path Planner R3. Path Planner was used to ensure that the designed parking lot and the placement of the dumpster could be accessed. Since Pepsi trucks were to be making deliveries to the back of the building and the dumpster was also located back there, it was important that they could get their trucks in and turned around. The modeled included interviewing Pepsi and modeling the exact trucks to be used to ensure a proper design.



## Grading Plan

After a floodway study was performed, it was determined that the finished floor elevation of the building had to be at least 540.1'. This elevation would require over 6' of fill in some places. Howerton Engineering, based on the initial topographic survey and site plan, developed a grading plan to properly drain all surface water and prevent pending. Due to the placement of the school and the steep hillside, 250 linear feet of retaining wall was designed to prevent the hillside from slipping into the proposed school.



## Utility Plan

As part of this project, a full site utility plan was developed. In order to place the school where it needed to be, Columbia Gas and The City of Portsmouth's Water Department needed to relocate their lines that passed through the property. A relocation plan was developed and the new gas line was staked out. The plan included designing new waterlines to supply the school's fire protection system and domestic water. This design included over 2,000 linear feet of 4" and 8" AWWAC900 pipe; 4 fire hydrants placed as per The Village of New Boston Fire Department's request and one custom meter pit. The

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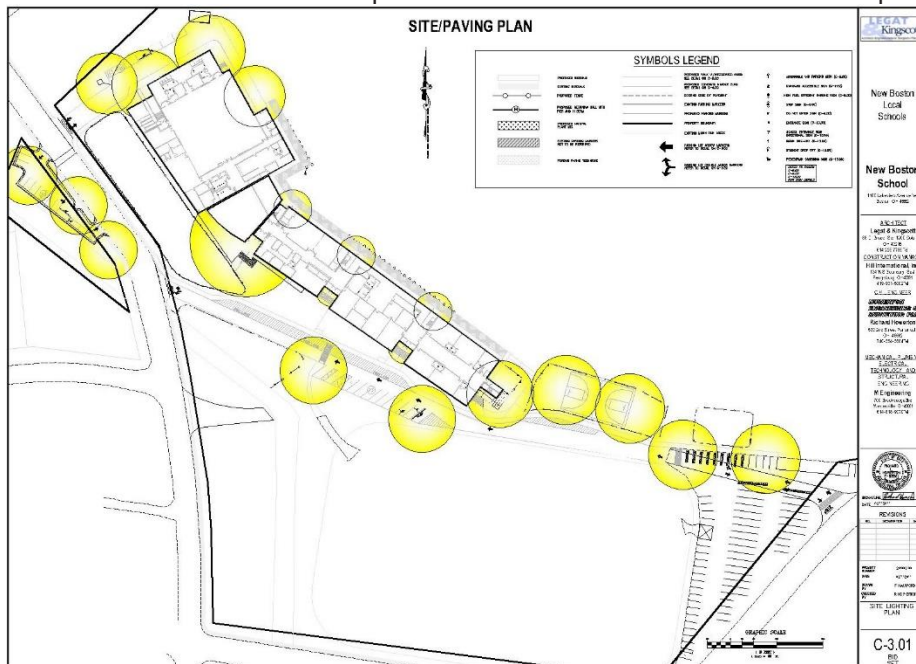
plans were submitted to The Ohio EPA and were approved for construction. A sanitary line had to be designed as per Ohio EPA standards to service the school. This was achieved by designing nearly 200 linear feet of 8" SDR pipe and 3 manholes to tie into The City of Portsmouth's existing 12" clay line. Ohio EPA Permit-To-Install forms were submitted and approved.



The stormwater plan was developed using StormCAD. The site's runoff was calculated to determine how much on-site stormwater detention would be needed. As a result, two retention ponds were designed totaling over 6,000 cubic yards of storage. The surface water was collected and drained off site by an intricate system consisting of: over 2,000 linear feet of 12" and 24" ADS pipe and 48" RCP pipe; 2 risers, 2 stormceptors, 8 storm manholes, and 13 catch basins. Since the site was partially in a floodplain, the site followed FEMA guidelines.

## Illumination Mapping & Site Lighting Design

Howerton Engineering & Surveying developed a Storm Water Prevention Plan to prevent debris and site run off. The plan consisted of over 1,500 linear feet of silt fence and 4 rock check dams. The contract was also to provide all new catch basins with inlet protect. A BMP Plan was developed.



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