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CONSULTANT NARRATIVES



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MEMORANDUM

- **TO:** Vladimir Lyubetsky, Principal
- FROM: David M. Conway, P.E.
- DATE: December 3, 2020
- RE: Northeast Metro Technical High School-Site Utility Narrative

SCHEME C.3

Site Utilities

Storm Drainage

A new storm drainage system to address stormwater quantity, rate and quality would be constructed for the campus. Currently, the existing stormwater system does not properly address stormwater quality and with the increase in developed area on the site, stormwater rates and volumes will need to be mitigated.

The new stormwater system would consist of a closed drainage system consisting of a catch basin to drain manhole system, with stormwater conveyed via 12-inch high density polyethylene (hdpe) pipes between the structures. Roof drains from the new school buildings would also tie into the new closed drainage system. To address stormwater quality, runoff from the parking lots would need to be directed through water-quality inlets similar to Stormceptor Models STC 4800. The water-quality inlets work to remove total-suspended solids, oils and grease from the storm water stream. Addressing stormwater quality in the stormwater stream prior to discharge or infiltration is required under Massachusetts Stormwater Regulations. Due to the large catchment areas, pipe sizes in the drain manhole-drain manhole connections would increase to 24-inch hdpe moving downstream in the closed drainage system.

To mitigate stormwater rates and volumes due to the increase in developed area, the stormwater would be routed through subsurface infiltration systems prior to discharge. The subsurface infiltration systems would consist of galleys of perforated pipe located within beds of clean, crushed stone. The pipe and stone configuration create a large storage volume that detains the stormwater on site and also allows for some of the stormwater to infiltrate into the ground. Pipes outlets from the subsurface infiltration systems would direct stormwater overflows to existing wetland areas. Due to high ledge and groundwater within the site the subsurface infiltration systems would generally have to be located in fill areas such as under the new athletic fields.

Sanitary Sewer

A new sanitary sewer system consisting of 6-inch pvc pipe and pre-caste concrete sewer manholes would be constructed on site to serve the school. Flows from the kitchen and cafeteria would be routed through a new 10,000-gallon, precast concrete grease trap prior to discharge to the new on-site sanitary sewers. The new system would tie into the existing sanitary line that exits the north side of the site. The portions of the existing sanitary sewer system that would be re-used would need to be cleaned and video inspected to identify any sections that may need to be repaired. Repairs could consist of spot repairs of discrete portions of the system or wholesale relining of the system.

NEMT: Nitsch Project #13872 December 4, 2020 Page 2 of 2

Water

A new cement-lined, ductile iron water main would be extended down Farm Road, down the new access drive and around the new school to form a loop around the building. Past the school building the new main would be extended down the access drive to the athletic field/parking area where it would tie into the existing site water main to form a true loop through the site with two redundant connections to the Town of Wakefield system. The Town of Wakefield Engineering Department is currently what, if any, additional infrastructure improvements may be required to serve the new building. New water mains would consist of 8-inch, cement lined, ductile iron pipe. New separate domestic and fire water mains would serve the new school from the extended loop. Additional fire hydrants would be located throughout the site along the site drives and in the parking areas.

Gas

Gas service to the new school building would be provided by a new service line from the main in Hemlock Road. The new service would enter the site via the existing site drive off of Hemlock Road, then proceed up the new access road to the school. The sizing of the main would be determined by the mechanical engineer and utility provider.

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- RENOVATE EXISTING BASEBALL FIELD. INSTALL NEW SKINNED INFIELD. AMEND THE NATURAL GRASS ROOTZONE. EXISTING CHAIN LINK FENCE TO REMAIN.

MAINTENANCE SUPPORT BUILDING. REFER TO ARCHITECTURAL CONCEPTS

> VERTICAL GRANITE CURBING ALONG DRIVE LANES AND PARKING STALLS

> > VEHICULAR ASPHALT PAVEMENT

20' CHAIN LINK BACKSTOP

(*)

TWO (2) SCOREBOARDS INSTALLED BACK-TO-BACK. ONE FOR SOFTBALL, ONE FOR SOCCER

TEAM AREA AT SOFTBALL SOFTBALL FIELD WITH CHAIN LINK PERIMETER FENCE. 225 OUTFIELD DISTANCE ATHLETIC FIELD LIGHTS. FOUR (4) AT THE SOFTBALL FIELD

> ROAD WAY INTO BREAKHEART RESERVATION TO BE REMOVED







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SHEET NO. 2 OF 5

PRECAST CONCRETE RETAINING WALL BLOCKS ALONG ACCESS DRIVE LANE

VEHICULAR ASPHALT PAVEMENT

PRECAST CONCRETE RETAINING -WALL BLOCKS ALONG ACCESS DRIVE LANE

VEHICULAR ASPHALT PAVEMENT VERTICAL GRANITE CURB, TYP. CONCRETE SIDEWALK, TYP.

PLANTING ISLANDS, TYP.

CONCRETE SIDEWALK, TYP.

VEHICULAR ASPHALT PAVEMENT VERTICAL GRANITE CURB AT PERIMETER OF PARKING STALLS, TYP. PLANTING ISLANDS BETWEEN PARKING BAYS PARKING STALL, TYP.

S2812'16"W 3566.54' 895.04'

BASEBALLE SCOREBOARD, TYP CONCRETE SIDEWALK, TYP DRIVE LANE TO CONNECT TO BREAKHART RESERVATION FOOTBALL SCOREBOARD, TYP

PRECAST CONCRETE RETAINING WALL BLOCKS ALONG ACCESS DRIVE LANE

> Conceptual Utility Sketch Northeast Metro Tech October 27, 2020 Nitsch Engineering Project #1/3872



Sanitary Sewer Notes:

1) Assume 1 precast concrete 10,000 gallon external

greasetrap 2) Assume 10 precast concrete sewer manholes

3) Solid red lines are 6-inch pvc gravity sanitary sewers 4) Dashed red line is a 4-inch pvc force main

5) Red rectangle is a sanitary sewer pump station with

duplex 4-HP pumps

7) Green box with red hatch is a 150' x 300' subsurface infiltration system with 10,000 linear feet of perforated 24-inch pipe in a bed of double-washed crushed stone

6) Yellow line indicates relining of existing gravity sanitary sewer

1) Solid blue line is 8-inch, cement lined, ductile iron pipe

CONCRETE SIDEWALK, TYP. VERTICAL GRANITE CURB, TYP.

VEHICULAR ASPHALT PAVEMENT

Include 500 linear feet of additional sewer line cleaning and lining from this point

6

13/2020

See sheet 2 of the 1994 Fay, Spofford and Thorndike gas and water improvements plan for continuation.

NEW BASEBALL FIELD NEW SKINNED INFIELD SURFACE, FERMETER CHAIN LINK FENCE, 20' CHAIN LINK FENCE BACKSTOP, TEAM AREAS, SCOREBOARD.

> ACCESS DRIVE FOR MAINTENANCE OF LOWER PRACTICE FIELDS

BLEACHER STRUCTURE FOR SPECTATOR SEATING. PRESSBOX AT BACK OF BLEACHERS

- LOWER ATHLETIC PRACTICE FIELDS TO REMAIN IN CURRENT STATUS AND CONFIGUTATION

PRECAST CONCRETE RETAINING WALL BLOCKS ALONG ACCESS DRIVE LANE

RUNNING TRACK AND ASSOCIATED JUMPING AND THROWING EVENTS, TYP.

- ORGANIC INFILLED SYNTHETIC TURF FOOTBALL FIELD, TYP

- ATHLETIC FIELD LIGHT'S. FOUR (4) AT - PRECAST CONCRETE RETAINING WALL BLOCKS ALONG ACCESS DRIVE LANE

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SCALE: 1'' = 60' - 0''





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SHEET NO. 2 OF 5



SCALE: 1" = 60' - 0"0 30' 60'









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