UTILITY ANALYSIS

ELECTRICAL SERVICE

4.1.2 – 07c

BALA

MEMO

To: Vladimir Lyubetsky/ DRA Architects

From: Mark J. Blundell

Date: 06/04/2021

RE: Northeast Metropolitan Regional Technical High School
Electric Service Availability Coordination Approach

Project #: 60-20-409

Existing school building is served via existing overhead 13.8 kV line routed down Hemlock Road from the intersection of Farm Street.

Existing primary electric service terminates at the building via a riser pole with fused cutouts. Primary electric service conduits are routed down riser pole to an underground electric service and terminate in a utility co. transformer vault.

Transformer vault contains 3 transformers rated at 1000kVA 13.8kV to 277V single phase units located inside the school. Transformers are connected via collector bus duct with cable tap boxes and power is extended to main switchboard. Secondary electric service is 480/277volts, 3 phase 4 wire.

Existing main switchboard is rated at 480/277volts, 3 phase 4 wire with a capacity of 4000A.

Based on WMGL records, existing maximum demand is 600-700kVA range, indicating sufficient capacity exists to serve existing building and new building construction loads. Upon demolition of existing school, electric service capacity from existing school building will be reallocated to new school building.

Please refer to the attached electric load letter created to get the coordination process started with the electric company. Please refer as well to attached electric company response letter which verifies that electric service will be available for the project.

cc: KJC; SPS; KJA - Bala

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Mark J. Blundell

From: Mark J. Blundell
Sent: Wednesday, March 17, 2021 10:40 AM
To: Vincent McMahon
Cc: Kevin J. Alles
Subject: RE: standards
Attachments: 2021-02-25 NEMT Landscape Slides - New Connections to Existing Electric Services.pdf; 60-20-409 Projected Preliminary Electrical Connected Loads.pdf

Categories: Filed by Newforma

Vinnie
Nice to speak with you today and thank you for the construction standards information…the transformers with integral switches sound like they will eliminate any primary switch requirements…

As we discussed, we anticipate serving the building with 2 transformers each serving a 3000A switchboard at 480/277V 3phase with Kirk key interlock.

Attached is our anticipated connected loads letter with a proposed preliminary primary service routing for your review and comment based on a Google Earth assessment. More information will be provided once the civil plans are developed.

We will discuss the electrical vehicle charger and photovoltaic arrangements and potential for running the generator in a peak shaving mode with the Architect.

Thank you

Mark J. Blundell, LEED AP
Electrical Engineer | Direct 857-444-8603 | mjb@bala.com

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From: Vincent McMahon <vmcmahon@wmgld.com>
Sent: Wednesday, March 17, 2021 9:32 AM
To: Mark J. Blundell <MJB@bala.com>
Subject: standards

Vinnie McMahon
Senior System Engineer
Wakefield Municipal Gas & Light Department
480 North Avenue, Wakefield MA 01880
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WMGLD
P.O. BOX 190 480 North Ave.
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Peter D. Dion, General Manager

December 2, 2020

Dear Kevin Alles,

The Wakefield Municipal Gas & Light Dept currently provides power to Northeast Metro Tech at 100 Hemlock Rd, Wakefield MA. We understand a new school is being planned and will be built next to the existing school. WMGLD is committed to providing power to the new Northeast Metro Tech and maintaining power to the existing school until it is no longer needed.

Regards,

Vinnie McMahon
Senior Engineer, WMGLD
vmcmahon@wmgld.com

Projected Preliminary Electrical Connected Loads

Lighting (Code 3 watts/SF: 1,350 kW) (projected installed load at .75w/SF roughly 450kW, plus site lighting, 500 kW)		357	kW
Receptacles (1 watt / SF)		450	kW
Mechanical:			
• Miscellaneous Electric Heat (Cabinet Htrs/Unit Heaters/Etc.)		50	kW
• Heat Recovery Units Avg 20hp each - 180hp		135	kW
• Air Cooled Heat Pumps 200 tons		250	kW
• Roof Top Units Avg 150A each		375	kW
• Make-up Air Unit		25	kW
• Miscellaneous AC Split Systems 25 at 2 tons each		62	kW
• Exhaust Fans Majority fractional hp 1/3 – 1/4 Largest 3hp		15	kW
• Pumps (Est. qty 6 at 15 hp each/90 hp) 3 Hot Wtr Circ/3 Chilled Wtr Circ		67	kW
Plumbing:			
• Electric Hot Water Heaters		15	kW
• Miscellaneous Circ Pumps (Fractional hp)		5	kW
• Miscellaneous Pumps		5	kW
Elevators (two at 60 hp)		90	kW
Miscellaneous Power (Appliances, Copiers, Elec Heat Trace, Art Rm equipment, Field House Equipment, etc.)		100	kW
Kitchen (all electric)		200	kW
Miscellaneous Equipment		45	kW
	Total:	2,201	kW
	Call it	2,250	kW

Projected Preliminary Electrical Connected Loads with code applied Demand Factor:

2,250 kW/450,000 SF =	5kW/SF	
First 3w/SF at 100%	3W/SF	
Plus		
Over 33 through 220 w/SF at 75%	1W/SF	
Calculated demand load 4w/SF =	1,800	kW

Preliminary Design is based on two new Utility Company mounted transformers to serve the building at 277/480V, 3 phase, 4 wire.

Based on projected connected loads, proposed secondary service is 6,000 amps.

Project will have an exterior self-contained diesel generator.