# 4 | ELECTRICAL SYSTEM IMPACT ANALYSIS

RFS engineering

# Memorandum

**Date:** February 8, 2013

**Job No.:** 12-7147

**To:** Zachary Chrisco, Sasaki Associates, Inc.
Tala Klinck, Sasaki Associates, Inc.

**From:** Phil Whitton, P.E. Rist-Frost-Shumway Engineering, P.C.

**Re:** Babson College
New Residence Hall
Electrical System Impact Analysis

The estimated electrical service size for the new residence hall is 2500 amps at 208Y/120 volts, three-phase; four-wire. The anticipated utility demand will be approximately 270 kW at times of the year the air conditioning system is in operation and 230 kW during the heating season.

The primary electric distribution system for Babson College is comprised of a double loop (underground) system at 13.8kV, fed out from a medium-voltage switchgear line-up located on Forest Street (near Park Manor Way). The local underground distribution conductors (loop feeders #1A and #1B) pass through a manhole system that runs along College Drive and tap out to loop-feed transformers at each campus building.

The new residence hall will be located in the center of a quad where an underground ductbank currently runs from an electrical manhole on College Drive out to transformer T-15 at Tomasso Hall (passing through a manhole in the center of the quad).

A new electrical ductbank will be constructed from existing #EMH E13-1 to transformer T-15, and a new manhole will be centrally located at a point where it can feed out (via loadbreak terminal junctions) to the new residence hall dry-type transformer (unit substation) located in the Ground Level main electrical room. Transformer T-15, Tomasso, will be cut over and re-fed through the new ductbank, and the existing ductbank and manhole will be removed to clear the area for the new building. Parallel sets of loadbreak terminal junctions will be installed in existing manhole #EMH E13-2, and new primary cables will be run (via two (2) existing spare 5" conduits) from #EMH E13-2 back to #EMH E13-1, and then out in new ductbank to the new manhole, the residence hall, and Tomasso T-15.

RFS has been in contact with Wellesley MLP to review the anticipated electrical demand for the new Residence Hall. Per the attached memo from Wellesley MLP, MLP has verified the local electrical infrastructure will have no problems servicing the new building.

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Attachments #1 & #2

cc: RFS Team Distribution

## Babson College - New Residence Hall

Anticipated Electrical Loads

| Load Description | Square Footage | kVA Connected | Demand |
|---|---|---|---|
| | 78000 | | |
| Lighting | | 70.2 | 56.2 |
| General Power - Receptacles | | 156.0 | 51.5 |
| Laundry | | 20.0 | 10.0 |
| Plumbing/Hot Water | | 35.0 | 17.5 |
| Ventilation/HVAC Control | | 110.0 | 55.0 |
| Heating Equipment | | 88.0 | 44.0 |
| Air Conditioning System | | 132.0 | 87.1 |
| Total | | 611.2 | 321.3 |

# WELLESLEY MUNICIPAL LIGHT PLANT

**MEMO**

**To:** Philip G. Whitton, Jr., P.E., LEED AP BD+C
Manager, Electrical Engineering
Rist-Frost-Shumway Engineering, P.C.
71 Water St., Laconia, NH 03246

**From:** Jim Verner
Assistant Superintendent

**Date:** February 7, 2013

**Re:** Babson College New Residence Hall (7147)

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The Municipal Light Plant ("MLP") has checked the electrical infrastructure for Babson College and would have no problem servicing this new facility.

If you have any questions or need clarification please feel free to contact me at 781-235-7600 ext. 3373.

Cc: Donald H. Newell, MLP Superintendent