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September 6, 2017

VIA EMAIL AND U.S. MAIL

Ms. Melanie A. Bachman  
Executive Director  
Connecticut Siting Council  
Ten Franklin Square  
New Britain, Connecticut 06051

**PETITION NO. 1317** – Broad Street Fuel Cell, LLC petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed construction, maintenance and operation of a 1.4 megawatt customer-side combined heat and power fuel cell facility to be located adjacent to and south of the Ferris Athletic Center at Trinity College, 300 Summit Street, Hartford, Connecticut

Dear Ms. Bachman:

Pursuant to the Council's request dated August 25, 2017, enclosed on behalf of Broad Street Fuel Cell, LLC (the "Company") are an original and 15 copies of the Company's responses to the Council's questions 1-23 in the above-referenced matter.

If you have any questions regarding the enclosed, please feel free to contact me.

Respectfully submitted,

Henry Sire  
Associate Counsel

Encl.

Interrogatory CSC-1

Broad Street Fuel Cell, LLC

Witness: N/A – Legal Question

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Q-CSC-1      Were return receipts received for each abutting landowner identified in the petition? If not, list the abutters that did not receive notice and describe any additional effort to serve notice.

A-CSC-1:      No return receipts were requested or received, though the Company did receive a forwarding address for one abutter and has re-submitted the petition to the corrected address. The Company believes that it has complied with the Council's prior guidance regarding giving notice to abutting landowners.

Interrogatory CSC-2

Broad Street Fuel Cell, LLC

Witness: Ben Toby

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Q-CSC-2      Was this project selected in a Connecticut Department of Energy and Environmental Protection (DEEP) or regional procurement? When? What RFP is the proposed project associated with?

A-CSC-2:      This project is supported by an LREC incentive from Eversource Energy but was not selected in any DEEP or regional procurement and is not associated with any RFP.

Interrogatory CSC-3

Broad Street Fuel Cell, LLC

Witness: Kirk Arneson

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Q-CSC-3      Please provide a detailed site plan for the proposed facility including but not limited to, the dimensions and location of the proposed fuel cell facility, cooling module, concrete pads, fence design and bollards (if applicable) and utility connections.

A-CSC-3:      Please find a detailed site plan attached hereto as **Exhibit A**.

Q-CSC-4      Would the proposed fence have an anti-climb design? Would bollards be used to protect the fuel cell facility from being accidentally struck by vehicles?

A-CSC-4:      Yes, the proposed fence will match the fencing installed around the existing Trinity College heating plant and will include anti-climb panels (the fencing around the existing plant is shown in Figure 1 below).

The fuel cell facility will be enclosed by a perimeter fence. Consequently, no bollards will be required to protect the facility. Pursuant to page 2 of the site plan attached hereto as Exhibit A, bollards *will* be installed to protect the site transformer as well as equipment owned by Trinity College (namely, the MV switch and back-up generator that are being relocated as a part of site preparation work).



Figure 1

Interrogatory CSC-5

Broad Street Fuel Cell, LLC

Witness: George Berntsen

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Q-CSC-5      Could the facility continue operating during a power outage and provide seamless uninterrupted power?

A-CSC-5:      The equipment supplied with the facility has the capability and capacity to be incorporated into a microgrid for the Trinity College campus. Trinity College is planning to incorporate that functionality at a later date when campus infrastructure upgrades have been put into place. Once incorporated into the microgrid, the facility's operation during an outage would be drop-and-pickup, rather than seamless/uninterruptable.

Interrogatory CSC-6

Broad Street Fuel Cell, LLC

Witness: Ben Toby

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Q-CSC-6      Petition page 2 states Trinity College and Broad Street Fuel Cell LLC have entered a Power Purchase Agreement, the term of which is 15 years. Is 15 years the anticipated life of the fuel cell project? If not explain.

A-CSC-6:      The fuel cell project has a general design life of 20 or more years. The 15 year power purchase agreement term was selected by Trinity College based on Trinity College's capital plan, economics and campus needs. If mutually desired by Trinity College and the Company, the power purchase agreement may be extended for additional years.

Interrogatory CSC-7

Broad Street Fuel Cell, LLC

Witness: Lou Ernst

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Q-CSC-7      Do the fuel cell media have to be changed? If so, at what intervals?

A-CSC-7:      The fuel cell module itself has to be replaced every five (5) to seven (7) years. The service life of other media (i.e., catalysts/chemicals) utilized by the fuel cell are as below:

Item	Service Life <sup>(1)</sup>
<b><i>Fuel Preparation</i></b>	
Sulfur Sorbent	6-24 months <sup>(2)</sup>
Pre-converter Catalyst	60 months
<b><i>Water Treatment</i></b>	
Anti Scalant	Dependent on the quality of the water supply
RO Membranes	18 months
De-chlorination Chemical	6 months
Water Pump Oil Sump	18 months
<b><i>Electrical Balance of Plant</i></b>	
Chiller Glycol	18 months

**Notes:**

- (1) Service life is based on typical site conditions. Actual service life will vary with site conditions and fuel, water and air quality.
- (2) At 100% capacity; dependent on type of odorant in natural gas.

Interrogatory CSC-8

Broad Street Fuel Cell, LLC

Witness: Kirk Arneson

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Q-CSC-8      Please identify media to be used for pipe cleaning procedures at the proposed facility in accordance with Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission.

A-CSC-8:      A clean rag will be drawn through the pipe multiple times to ensure there is not construction debris or foreign matter remaining in the pipe. Compressed air will then be used to blow out any remaining dust. All fuel pipe cleaning operations will be conducted in accordance with Public Act 11-101 and Connecticut Siting Council Docket NT-2010.

Interrogatory CSC-9

Broad Street Fuel Cell, LLC

Witness: Lou Ernst

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Q-CSC-9      Petition Exhibit D, page 20 states “The entire plant has been designed to and complies with the provisions of the ANSI/CSA safety code FC-1 (2004).” Is this code now (2014)? If not, identify appropriate code.

A-CSC-9:      Yes, the current CSA safety standard for the proposed plant is FC-1 2014. The complete title of the standard is as follows: “ANSI/CSA FC-1:2014 – Fuel cell technologies – Part 3-100: Stationary fuel cell power systems – Safety”. Petition Exhibit D mistakenly referred to a prior CSA safety standard.

Interrogatory CSC-10

Broad Street Fuel Cell, LLC

Witness: N/A – Legal Question

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Q-CSC-10      What is the municipal zoning of the host property? What surrounding land uses is adjacent to the host property?

A-CSC-10:      As depicted in the City of Hartford Adopted Zoning Map (effective April 13, 2017 and available at

[http://www.hartford.gov/images/DDS\\_Files/Plan\\_Zoning/Zoning\\_Regs/ADOPTED\\_Zoning\\_Map\\_04132017.pdf](http://www.hartford.gov/images/DDS_Files/Plan_Zoning/Zoning_Regs/ADOPTED_Zoning_Map_04132017.pdf)

, the host property is zoned as a multi-use mix district with a campus overlay district. The lands adjacent to the host property are zoned as open space, main street, multi-use mix, neighborhood mix and neighborhood districts, and appear to be used primarily for residential or commercial purposes.

Interrogatory CSC-11

Broad Street Fuel Cell, LLC

Witness: Kirk Arneson

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Q-CSC-11      Would any tree clearing or grading be required for the proposed project?

A-CSC-11:      Yes, one (1) tree will have to be cleared and excavation work will be required for the construction of the concrete pad.

Interrogatory CSC-12

Broad Street Fuel Cell, LLC

Witness: Lou Ernst

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Q-CSC-12      Provide the distance and direction of the nearest wetland.

A-CSC-12:      As depicted in the U.S. Fish & Wildlife Service's National Wetlands Inventory (via their Wetlands Mapper available at <https://www.fws.gov/wetlands/data/mapper.html>), the nearest wetland to the proposed facility is approximately 0.7 miles to the northwest.

Interrogatory CSC-13

Broad Street Fuel Cell, LLC

Witness: Lou Ernst

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Q-CSC-13      Is the proposed facility within a Department of Energy and Environmental Protection-designated Aquifer Protection Area?

A-CSC-13:      No, the proposed facility is not within a Department of Energy and Environmental Protection-designated Aquifer Protection Area.

Interrogatory CSC-14

Broad Street Fuel Cell, LLC

Witness: Lou Ernst

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Q-CSC-14      What is the distance and direction of the proposed facility to the nearest airport? Did the petitioner provide notification to the Federal Aviation Administration regarding the proposed fuel cell facility?

A-CSC-14: The nearest airport to the proposed facility is Hartford-Brainard Airport, which would be approximately 1.9 miles (3 kilometers) away to the southeast. The Company has not provided notification to the Federal Aviation Administration regarding the proposed facility.

Interrogatory CSC-15

Broad Street Fuel Cell, LLC

Witness: Lou Ernst

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Q-CSC-15      Is methane ( $\text{CH}_4$ ) broken down to zero in the reforming process? Is there some small amount of  $\text{CH}_4$  emissions that would still occur?

A-CSC-15:      Methane is normally completely converted to hydrogen by the reforming reaction within the fuel cell stacks, but if any is left unconverted (for example at low power conditions) it is destroyed by a subsequent catalytic oxidation reactor in the fuel cell process. Between the reforming and oxidation processes virtually all of the methane is destroyed, although trace amounts may survive and be present in the exhaust at very low levels (parts per million).

Q-CSC-16      Natural gas has sulfur dioxide injected as an odorant. Please submit a desulfurization plan narrative for the proposed fuel cell facility containing the following information:

- a) Chemical reaction overview concerning what substances are produced from the desulfurization process, as well as plans for their containment and transport;
- b) How much solid sulfur oxide would result from the desulfurization process, and methods and locations for containment, transport, and disposal;
- c) Whether any of these desulfurization substances are considered hazardous, and if so, plans for the containment, transport, and disposal of hazardous substances;
- d) Anticipated method of disposal for any other desulfurization substances; and
- e) Whether any gaseous substances resulting from desulfurization can be expected to vent from the fuel cells, as well as the applicable DEEP limits regarding discharge of these gasses.

A-CSC-16: The fuel cell stacks that generate the electric power can be fouled by the sulfur odorant compounds (primarily mercaptans and/or sulfides; sulfur dioxide is not used) that the gas utility company injects into the natural gas. Accordingly, FuelCell Energy, Inc.'s fuel cell plant technology incorporates a desulfurization process that consists of two flow-through vessels configured in series filled with a specialized, proprietary desulfurization adsorption media. The sulfur removal mechanism is a physical adsorption or chemisorption process wherein the sulfur atoms are captured by the granular solid media without the release (production) of any other chemical species. In the process of removing the sulfur compounds from the gas, the capacity of the media for continued sulfur removal is diminished up until the point when it becomes exhausted and, if the media is not changed, sulfur breakthrough would occur. At this point, the media is deemed to be "spent." When the spent media in the lead desulfurizer vessel needs to be replaced, the fuel gas process flow is switched to the lag vessel so that the spent media may then be removed from the off-line vessel and replaced with fresh media. Prior to accessing the spent media, the vessel is inerted with nitrogen to allow safe access into the vessel. During this inertion process, a small volume of natural gas is vented to the atmosphere. Subsequent to media replacement and once the vessel containing the fresh media has been inerted and purged into service, it then serves as the second (polishing) desulfurizer vessel in the process flow series.

Broad Street Fuel Cell, LLC

Witness: Lou Ernst

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The spent solid waste media removed from the process has been characterized at similar locations to be RCRA hazardous by toxicity characteristic for benzene (D018). The benzene, present in the natural gas in very low parts per million concentrations or less, is co-adsorbed onto the media along with the target sulfur compounds.

The waste generation quantity during any single desulfurizer media replacement event is less than 2000 pounds (900 kg) and previous operating experience throughout Connecticut suggests that desulfurizer maintenance events will be no more frequent than annually, and more likely less frequent than every two years (this varies, depending on the actual sulfur concentration in the gas locally). The monthly waste generation rate is within the range for generators that operate under Small Quantity Generator rules. The Company, as the plant owner/operator, will comply with all rules for hazardous waste generators as promulgated through the regulations at Regulations Connecticut State Agencies § 22a-449(c).

The waste generated when removing the spent desulfurizer media from the process is managed by immediately containerizing and transporting the waste off-site to a licensed disposal facility. Waste will not be treated, stored or disposed of at the site. The containerized waste is shipped off-site under a Uniform Hazardous Waste Manifest under the generator's EPA RCRA identification number. A licensed hazardous waste transporter under contract to FuelCell Energy, Inc., as service provider for the fuel cell project (e.g. Clean Harbors, Triumvirate, Miller Environmental), will be contracted to collect the waste and transport it to an approved designated disposal facility. The licensed waste destination facility will be determined at the time of contracting the waste contractor firm.

Interrogatory CSC-17

Broad Street Fuel Cell, LLC

Witness: Kirk Arneson

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Q-CSC-17      If the proposed facility is approved, approximately when would construction commence and when is it expected to be completed and operational? What are the expected typical work hours and days of the week that construction would occur?

A-CSC-17:      If the proposed facility is approved, construction is expected to begin at the end of October 2017 and commercial operation of the facility would be expected to commence in mid-March 2018. The typical construction work hours and days of the week would be 6:30 a.m. to 3:00 p.m., Monday through Friday.

Interrogatory CSC-18

Broad Street Fuel Cell, LLC

Witness: Kirk Arneson

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Q-CSC-18      Provide a decommissioning plan for the proposed facility.

A-CSC-18:      The decommissioning plan for the proposed facility, upon the expiration of the power purchase agreement (including any extension thereof) would be as follows: (a) all utility connections would be cut and capped at the grade level; (b) all fuel cell equipment would be removed from the site; and (c) equipment pads and retaining walls would remain as-is for future use by Trinity College.

Interrogatory CSC-19

Broad Street Fuel Cell, LLC

Witness: Ben Toby

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Q-CSC-19      Will all power be consumed by Trinity College?

A-CSC-19:      Yes, all power will be consumed by Trinity College via totalized metering. All power produced by the plant will be billed to Trinity College.

Interrogatory CSC-20

Broad Street Fuel Cell, LLC

Witness: Kirk Arneson

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Q-CSC-20      Petition Page 6 comments that approximately 1,000 Liters of nitrogen will be stored on site. Will the nitrogen be stored as a gas or liquid? Will this be used for cooling? How will it be stored; i.e., standard cylinders or cryogenic?

A-CSC-20:      The nitrogen will be stored as a liquid in a 1,000 liter micro-bulk tank. Nitrogen is used by the fuel cell power plant during storage and upset conditions to purge fuel from the fuel system, to maintain a reducing atmosphere and to prevent humidity from entering the fuel cell module.

Interrogatory CSC-21

Broad Street Fuel Cell, LLC

Witness: Lou Ernst

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Q-CSC-21      Petition Page 6, Figure 1, has an aerial view of the site which is the same view included in Exhibit A and Plot Plan Drawing No. 16-0024. Yet the surrounding area in this aerial view is vastly different from Exhibit C, Figure 1. Clarify the differences in these views. What dates are the photographs?

A-CSC-21:      The aerial view shown on Page 6, Figure 1 and Exhibit A of the petition is taken from the latest satellite view of the site currently available on Google Maps; it appears to be from around September 2013. The aerial view shown on Exhibit C, Figure 1 is the latest satellite view of the site currently available on Google Earth; it appears to be current as of April 2016. Trinity College looks to have engaged in some redevelopment work in the vicinity of the proposed facility in between the taking of these images.

Interrogatory CSC-22

Broad Street Fuel Cell, LLC

Witness: Kirk Arneson

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Q-CSC-22      Petition pages 7 and 8 comment that an emergency generator will be installed. Exhibit A shows a photograph of an existing generator that will be relocated. Will the project use this generator or install an additional generator?

A-CSC-22:      The existing Trinity College backup generator that is currently installed at the site (and shown on Exhibit A of the petition) is the property of Trinity College. It will be relocated and will not be used for the operation of the fuel cell power plant. A black start generator will be supplied and installed at the fuel cell site as part of the Company's scope of work for the project and will allow for a future microgrid at the Trinity College campus.

Interrogatory CSC-23

Broad Street Fuel Cell, LLC

Witness: Lou Ernst

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Q-CSC-23      Petition pages 11 and 12 comment that the project will require water and will discharge approximately 3,200 gpd of wastewater. The petition then comments that the wastewater will be discharged to the existing Trinity College wastewater system, and that the project will register under CTDEEP's Miscellaneous Sewer Compatible Discharges General Permit (GP). This GP authorizes discharges to a POTW either directly via sanitary sewer or to a holding tank whose contents would periodically be transported to a POTW. Because the GP allows direct discharge to the POTW via sanitary sewer, why would the Trinity College wastewater treatment system be used? If indeed the project intends to use the Trinity College wastewater treatment system, would that no longer fall under the GP and then require a permit modification from CTDEEP to do so?

A-CSC-23:      As noted, the petition refers to the discharge of water "to the existing Trinity College wastewater system." This reference was intended to indicate that water will be discharged by the fuel cell power plant into Trinity College's existing wastewater conveyance system, which will take the water into the public sanitary sewer system. The petition did not intend to imply that the water will be treated by Trinity College or that the water will require any treatment prior to discharge into the public sanitary sewer system, neither of which is the case.

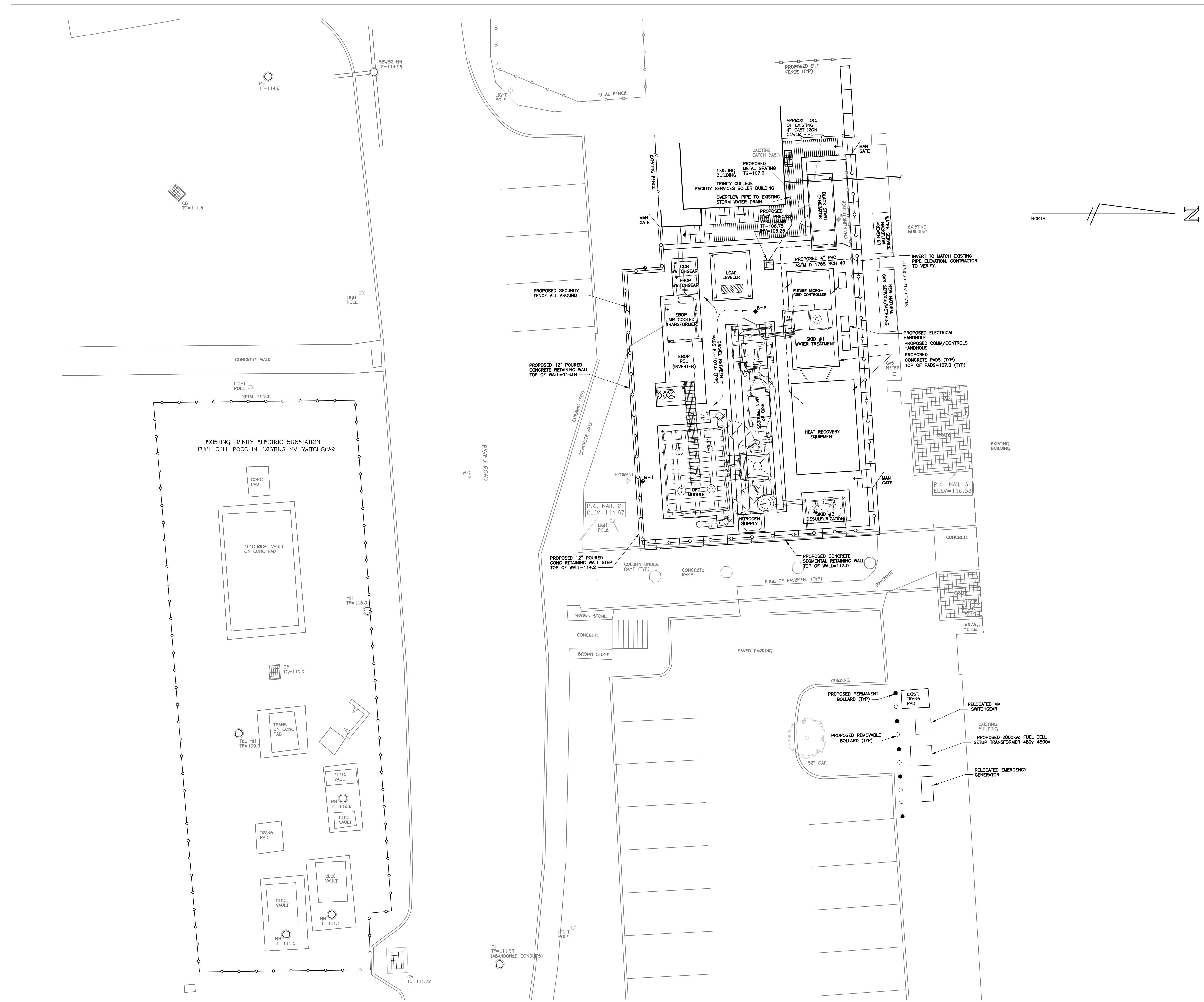
**Exhibit A**

Broad Street Fuel Cell, LLC

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See attached.



**ELM ELECTRICAL INC.  
68 UNION ST  
WESTFIELD, MA 01085**



# Trinity College



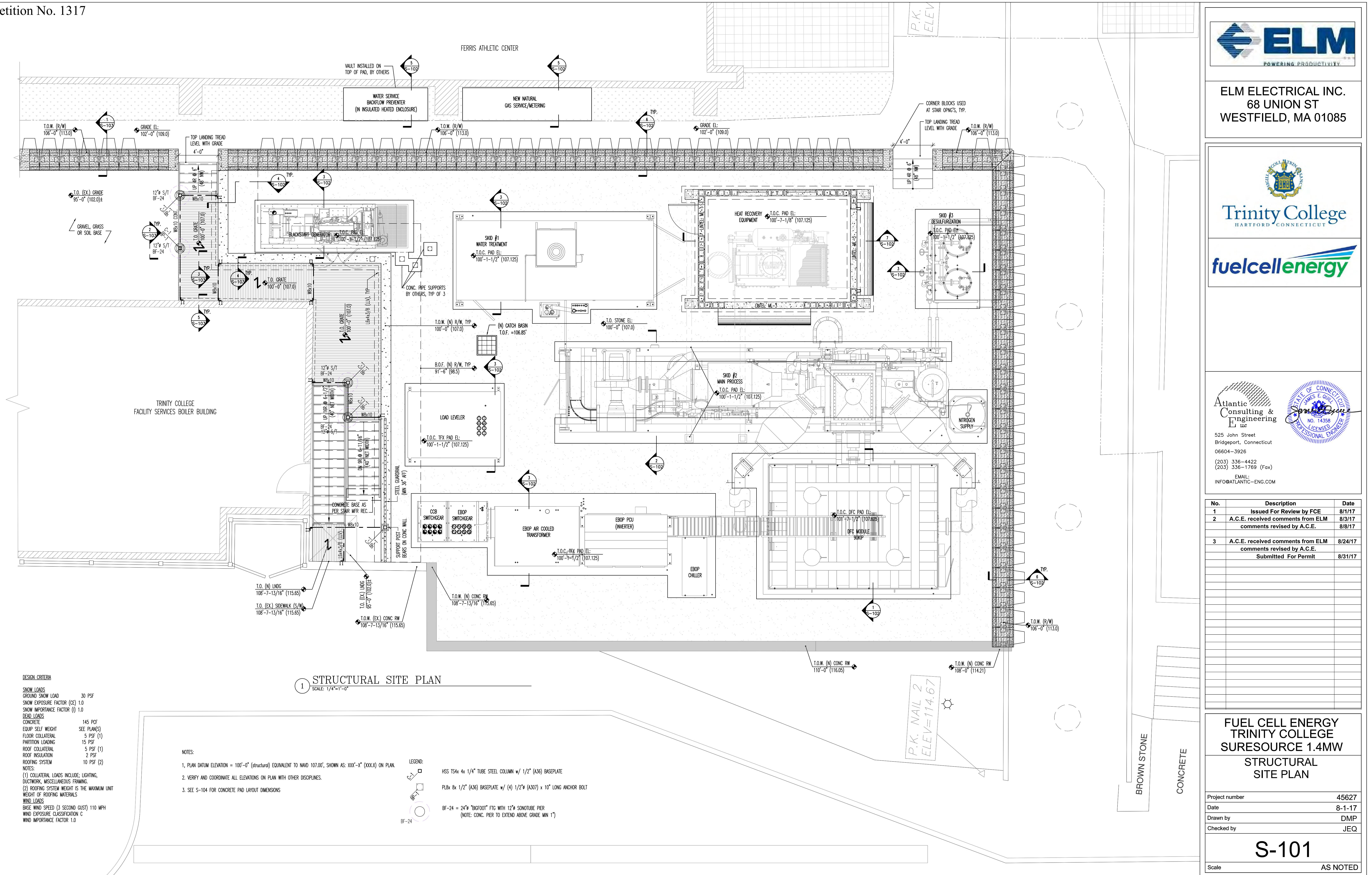
The logo for Angus McDonald, Gary Sharpe & Associates, Inc. is a square divided into four quadrants. The top-left quadrant contains the text 'LAND & MARINE' in white. The top-right quadrant contains the text 'SURVEYING' in white. The bottom-left quadrant is a dark gray area containing a white line drawing of a coastal area with a lighthouse, a small boat, and a grid overlay. The bottom-right quadrant is a dark gray area containing a white line drawing of a ship's hull and a grid overlay.

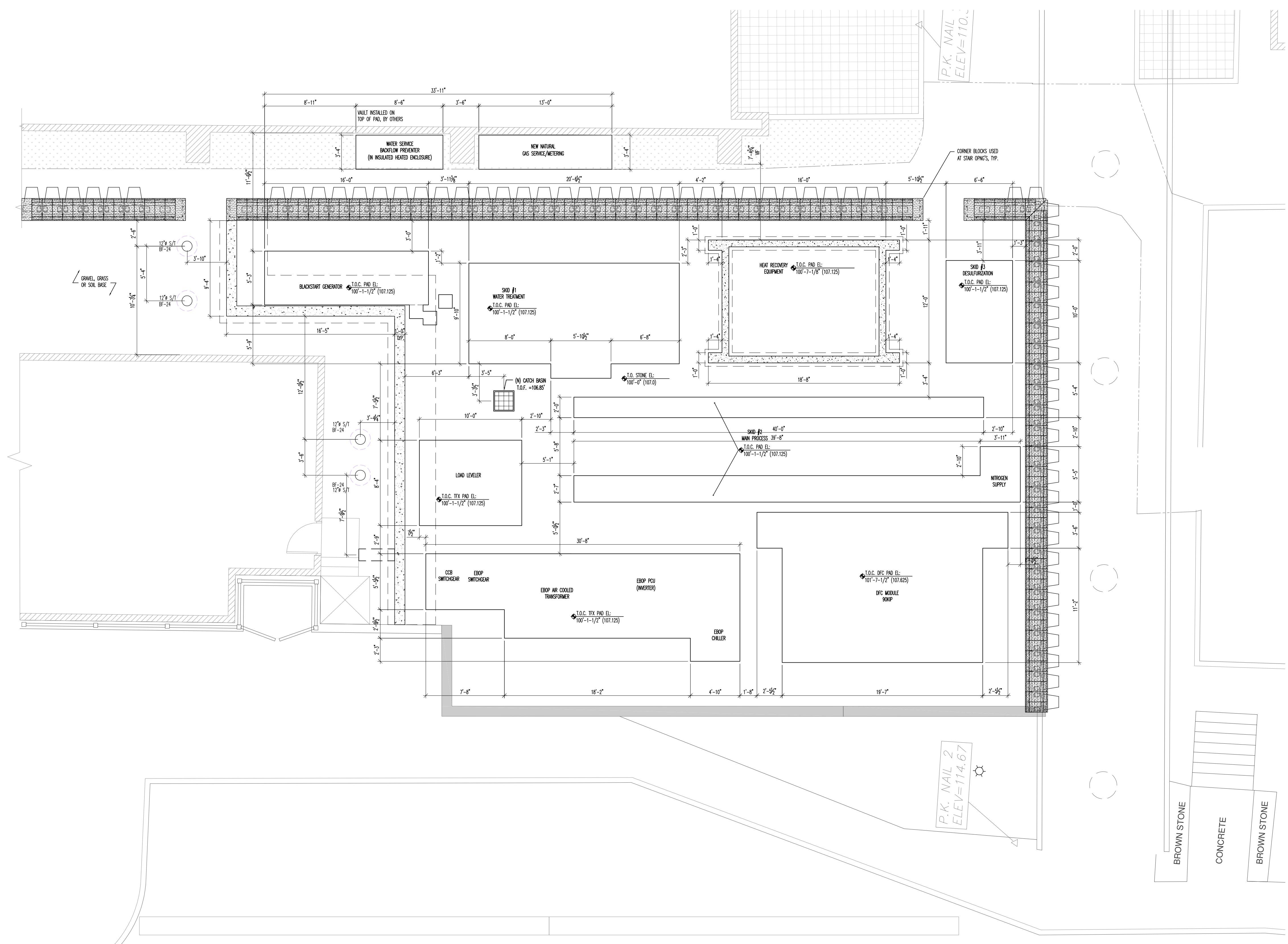
# FUEL CELL ENERGY TRINITY COLLEGE SUBRESOURCE 1.4MW

# CIVIL PROPOSED SITE PLAN

Project number	45627
Date	8-1-17
Drawn by	TJR
Checked by	GD

Petition No. 1317





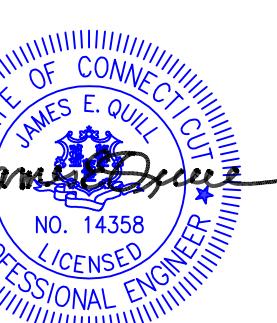
ELM ELECTRICAL INC.  
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No.	Description	Date
1	Issued For Review by FCE	8/1/17
2	A.C.E. received comments from ELM comments revised by A.C.E.	8/3/17 8/8/17
3	A.C.E. received comments from ELM comments revised by A.C.E. Submitted For Permit	8/24/17 8/31/17

FUEL CELL ENERGY  
TRINITY COLLEGE  
SURESOURCE 1.4MW  
PAD LAYOUT PLAN  
& ENLARGED PLAN(S)

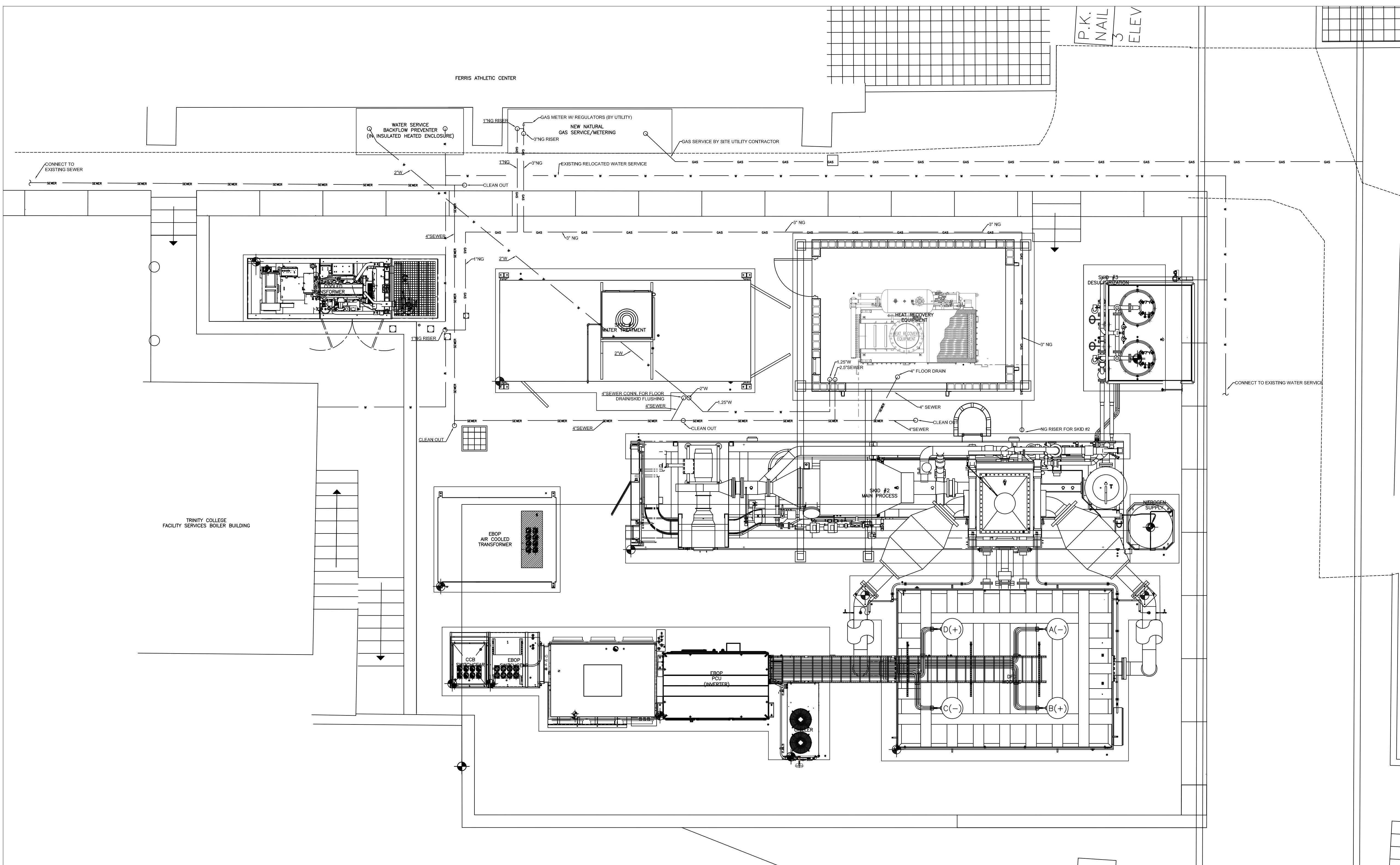
Project number 45627  
Date 8-1-17  
Drawn by DMP  
Checked by JEQ  
Scale AS NOTED

**S-104**

## LEGEND

— GAS — UNDERGROUND NATURAL GAS  
 — W — UNDERGROUND WATER  
 — SEWER — UNDERGROUND SEWER

NORTH



1 MECHANICAL UNDERGROUND SITE PLAN



ELM ELECTRICAL INC.  
68 UNION ST  
WESTFIELD, MA 01085



Trinity College  
HARTFORD CONNECTICUT

**fuelcellenergy**



No.	Description	Date
1	Issued For Review by FCE	8/1/17
2	Revised Per FCE Comments	8/31/17

FUEL CELL ENERGY  
TRINITY COLLEGE  
SURESOURCE 1.4MW

MECHANICAL  
UNDERGROUND SITE PLAN

Project number 45627  
 Date 8-1-17  
 Drawn by TJR  
 Checked by PN

M-101

Scale AS NOTED