

FREDERICK W. SEEBA, PE, MANAGING PARTNER  
LAWRENCE SALVESEN, AIA, PARTNER  
KEVIN J. WALSH, AIA, PARTNER  
KENNETH G. SCHUPNER, AIA, PARTNER  
JOSEPH B. RETTIG, AIA, PARTNER  
GARY W. SCHIEDE, AIA, PARTNER  
ROGER P. SMITH, AIA, FOUNDING PRINCIPAL

March 30, 2021

**BID ADDENDUM No. 1**

Re: Florida Union Free School District  
District Wide Capital Improvements (Bond Phase II)  
SED No.: 44-21-15-02-0-004-013  
SED No.: 44-21-15-02-0-001-015  
SED No.: 44-21-15-02-0-003-010  
BBS File No. 20-176a-c

This addendum contains changes to the requirements of the contract drawings and/or project manual. Such changes shall be incorporated into the contract documents and shall apply to the work with the same meaning and force as if they had been included in the original documents. Wherever this addendum modifies a portion of a paragraph of project manual or any portion of the drawing, the remainder of the paragraph or drawing affected shall remain in force.

The conditions of the basic project manual shall govern all work described in this addendum. Wherever the conditions of work and the quality or quantity of materials or workmanship are not fully described in this addendum, the conditions of work, etc. included in the basic project manual for similar items of work shall apply to the work described in this addendum.

The "Conditions of the Contract" apply to all work described in this addendum.

The following changes shall be and are hereby made:

**PROJECT MANUAL MODIFICATIONS**

1. Information Available to Bidders:
  - a. Pre-construction survey, bulk sampling and analysis of suspect asbestos containing materials at Golden Hill E.S. Kitchen is hereby added to the Project Manual.
2. Specification Section 08806 – Fire Rated Glazing:
  - a. Specification Section is hereby deleted from the Project Manual.
3. Specification Section 09672 – Resinous Flooring:
  - a. Attached Specification Section is hereby added to the Project Manual.
4. Specification Section 15903 – Automatic Temperature Controls:
  - a. Specification Section is hereby deleted and replaced with the attached.
5. Specification Section 16010 – General Provisions:
  - a. Specification Section is hereby deleted and replaced with the attached.

## CONSTRUCTION DRAWING MODIFICATIONS

1. Drawing A1.01a – Overall Key Plan:
  - a. Construction Drawing is hereby deleted and replaced with the attached.
2. Drawing FS.01a – Kitchen Equipment Plans:
  - a. Add the following: The General Contractor shall remove 6” of asbestos wire insulation below hot food well counter to accommodate electrical work by others. Refer to Project Manual Modifications herein for additional information.
  - b. Reminder – **Removal, disposal and replacement of the food service equipment is by the District under separate contract.** Plumbing and Electrical scope as shown on the MP-Series and E-Series drawings is in respective Base Bids.
3. Drawing MP1.01a – Mechanical and Plumbing Plans, Notes and Details:
  - a. Construction Drawing is hereby deleted and replaced with the attached.
4. Drawing A2.01b – Locker Room, Proposed Plan:
  - a. Attached Construction Drawing is hereby added to the Construction Documents.

## Response to Contractors Written RFI's

### **Bertussi Contracting, Dated 3-25-21**

1. *With regard to the 4'-0" sink cabinet in the closet, is the top plastic laminate or solid surface? Please advise.*
2. *Alternate 1a and 3a do not show room numbers in the spec, bid form or drawings. Other alternates clearly identify room numbers. Additionally, the alternate section has no information.*
3. *There is a spec on fire rated glazing, however, none is shown on the plans. Please advise.*
4. *Page 4 of the asbestos report mentions the possibility of asbestos. There is no table for any removals. Please clarify how the G.C. is to proceed.*
5. *Drawing A2.01b is missing from the bid set.*
6. *On Drawing A9.02a – Alternate No. 2 in the Gym, is spray painting allowed with regard to the ceiling?*

### **BBS Response:**

1. The counter top and backsplash for the Art Rm. sink shall be 1” phenolic resin. Surface color by Architect.
2. At Golden Hill E.S., Alternate 1a and 1b (to Base Bid GC-1) represent the same areas of flooring replacement. Under 1a, all rooms shown on Dwg. A9.01 are identified to receive carpeting; under 1b, the Bid Proposal Form clarifies the areas to receive carpeting or LVT. At S.S. Seward Institute, Alternate 3a and 3b (to Base Bid GC-1) represent the same areas of flooring replacement. Under 3a, all rooms shown on Dwg. A2.04 are identified to receive carpeting; under 3b, the Bid Proposal Form clarifies the areas to receive carpeting or LVT.
3. Refer to Project Manual Modifications herein for additional information.
4. The areas identified in the report as 'assumed asbestos - containing' for Golden Hill E.S. are not associated with Phase 2 (this project). The areas identified in the report as 'assumed asbestos - containing' for S.S. Seward Institute are not associated with Phase 2 (this project).
5. Refer to Construction Drawing Modifications herein for additional information.
6. Spray application will be permitted for walls and ceilings. Contractor shall properly protect all existing materials and surfaces not denoted to receive new painted finish.

# J.C. Broderick & Associates, Inc.

Environmental / Construction Consulting & Testing

March 26, 2021

Mr. Thomas Andryshak  
Florida Union Free School District  
S.S. Seward Institute  
51 N. Main Street  
Florida, NY 10921

**Re: Bulk Sampling and Analysis of Suspect Asbestos Containing Building Materials  
Golden Hill Elementary School – Kitchen  
478 Round Hill Road  
Florida, New York 10921  
Sampling Date: March 26, 2021**

**JCB #: 21-48417**

Dear Mr. Andryshak:

J.C. Broderick & Associates, Inc. (JCB) performed bulk sampling and analysis of suspect asbestos containing building materials (ACBM). The sampling was limited to the following suspect materials:

- Suspect wire insulation within kitchen junction boxes.

## **Inspection:**

The inspection and subsequent bulk sampling was conducted by a New York State Department of Labor (NYS DOL) Licensed Consulting Firm by a certified asbestos inspector. The suspect materials identified were classified into homogenous material areas and then representative sampling of these materials was performed in accordance with the United States Environmental Protection Agency (US EPA) 40 CFR Part 763.86 (AHERA). Copies of JCB's license and certifications are included in the attachment of this report.

Chain of custody forms were prepared for the samples collected. The samples were delivered to EMSL Analytical Laboratories, Inc. (EMSL) for analysis. EMSL is an independent environmental laboratory accredited by the New York State Department of Health, Environmental Laboratory Approval Program and the United States Department of Commerce, National Voluntary Laboratory Approval Program. EMSL's certifications are included in the attachment of this report. Technical information regarding the methods of analysis are available upon request.

NYS DOL Industrial Code Rule 56-2.1(p) and US EPA 40 CFR Part 763.8 (AHERA) define an asbestos containing material (ACM) as any material or product which contains more than one percent (1%) of asbestos. In accordance with this definition, the table below summarizes the results of the laboratory analysis reported by EMSL.



<b>Table 1.0: Summary of Result for Analysis of Suspect Asbestos Containing Building Materials</b>			
<b>ID</b>	<b>Material Description</b>	<b>Location</b>	<b>Asbestos</b>
HM 1	Black Cloth Wire Insulation	Kitchen Junction Box (Steamer)	Not Asbestos
<b>HM 2</b>	<b>White Cloth Wire Insulation</b>	<b>Kitchen Junction Box (Steamer)</b>	<b>ASBESTOS</b>
HM 3	White Cloth Wire Insulation	Kitchen Junction Box (Stove/Kettle)	Not Asbestos
<b>NOTE:</b> The results of this sampling/inspection are limited to the information specifically referenced within this table. It may not reflect all the assumed and/or confirmed ACBM within the referenced location(s). Refer to the District's AMP for additional information pertaining to the presence of other assumed and/or confirmed ACBM within the referenced location(s)/building.			

The intent of this inspection was to sample and analyze only the identified suspect ACBM. This survey was not intended to identify all ACBMs associated with the subject building and or the referenced subject spaces, unless otherwise noted.

No determination was made by JCB if the materials listed in the table are homogenous throughout the remaining portions of the building. That is, the findings of this inspection are limited to those areas specifically indicated in the table.

Any disturbance of the confirmed or assumed ACBM must be performed in accordance with all applicable federal, state and local regulations. The intent of the table above was to report the building materials that are "asbestos-containing" in accordance with the US EPA and NYS DOL. This report was not intended for compliance with the United State Occupational Safety & Health Administration (OSHA) standards. The contractor is responsible for their own compliance with OSHA and shall refer directly to the laboratory reports. All confirmed ACBM that are not scheduled to be removed should be incorporated into the District's asbestos management plan.

The following information has been included in the attachments of this report.

- Drawings & Photologs
- Chain of Custody & Laboratory Analysis
- Laboratory Certifications
- JCB Certifications

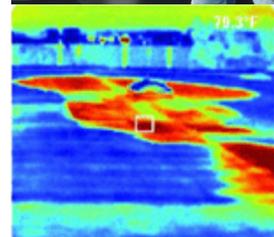
If there are any questions, or if more information is needed please feel free to call.

Sincerely,  
*Ryan Eid*

Ryan Eid  
Project Manager

**J.C. BRODERICK & ASSOCIATES, INC.**

# Drawings & Photologs



**J.C. Broderick & Associates, Inc.**

*Environmental Consulting & Testing*

1775 Expressway Drive North

Hauppauge, New York 11788

631.584.5492 fax 631.584.3395



**J.C. BRODERICK  
& Associates**

ENVIRONMENTAL  
CONSULTING & TESTING  
1775 Expressway Drive North  
Hauppauge, New York 11788  
631.584.5492 fax 631.584.5913

Photo Log

JCB# 21-48417

**Golden Hill  
Elementary School  
FLORIDA UFSD**

# Photo Log

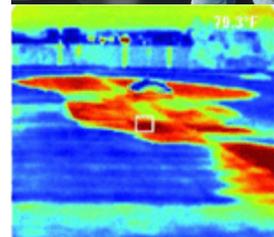
HM 1—Black Cloth Wire Insulation in  
Steamer Junction Box—Not Asbestos

HM 2—White Cloth Wire Insulation in  
Steamer Junction Box—ASBESTOS

HM 3—White Cloth Wire Insulation in  
Stove/Kettle Junction Box—Not Asbestos



# Chain of Custody & Laboratory Analysis



**J.C. Broderick & Associates, Inc.**

*Environmental Consulting & Testing*

1775 Expressway Drive North

Hauppauge, New York 11788

631.584.5492 fax 631.584.3395



# EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514  
Tel/Fax: (516) 997-7251 / (516) 997-7528  
<http://www.EMSL.com / carleplacelab@emsl.com>

**EMSL Order:** 062105323  
**Customer ID:** JCBR50  
**Customer PO:**  
**Project ID:**

**Attention:** Ryan Eid  
J.C. Broderick & Associates  
1775 Expressway Drive North, Suite 1  
Hauppauge, NY 11788  
**Phone:** (631) 584-5492  
**Fax:**  
**Received Date:** 03/25/2021 12:27 PM  
**Analysis Date:** 03/26/2021  
**Collected Date:** 03/24/2021  
**Project:** Golden Hill Elementary School, 478 Round Hill, Florida NY, Florida UFSD, 21-48417

## Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos		Asbestos
			Fibrous	Non-Fibrous	
<b>Sample ID</b> 1-1 062105323-0001			<b>Description</b> Kitchen Junction Box (Streamer) - Black Cloth Wire Insulation <b>Homogeneity</b> Homogeneous		
<b>PLM NYS 198.1 Friable</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 VCM</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 NOB</b>	03/26/2021	Black	62.00% Glass	38.00% Other	<b>Inconclusive: None Detected</b>
<b>TEM NYS 198.4 NOB</b>	03/26/2021	Black		100.00% Other	<b>None Detected</b>
<b>Sample ID</b> 1-2 062105323-0002			<b>Description</b> Kitchen Junction Box (Streamer) - Black Cloth Wire Insulation <b>Homogeneity</b> Homogeneous		
<b>PLM NYS 198.1 Friable</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 VCM</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 NOB</b>	03/26/2021	Black	51.00% Glass	49.00% Other	<b>Inconclusive: None Detected</b>
<b>TEM NYS 198.4 NOB</b>	03/26/2021	Black		100.00% Other	<b>None Detected</b>
<b>Sample ID</b> 2-3 062105323-0003			<b>Description</b> Kitchen Junction Box (Streamer) - White Cloth Wire Insulation <b>Homogeneity</b> Homogeneous		
<b>PLM NYS 198.1 Friable</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 VCM</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 NOB</b>	03/26/2021	White	19.00% Glass	67.00% Other	<b>14.00% Chrysotile</b>
<b>TEM NYS 198.4 NOB</b>					<b>Not Analyzed</b>
<b>Sample ID</b> 2-4 062105323-0004			<b>Description</b> Kitchen Junction Box (Streamer) - White Cloth Wire Insulation <b>Homogeneity</b> Homogeneous		
<b>PLM NYS 198.1 Friable</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 VCM</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 NOB</b>	03/26/2021	White	29.00% Glass	45.00% Other	<b>26.00% Chrysotile</b>
<b>TEM NYS 198.4 NOB</b>					<b>Not Analyzed</b>
<b>Sample ID</b> 3-5 062105323-0005			<b>Description</b> Kitchen Junction Box (Stove/Kettle) - White Cloth Wire Insulation <b>Homogeneity</b> Homogeneous		
<b>PLM NYS 198.1 Friable</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 VCM</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 NOB</b>	03/26/2021	White	30.00% Glass	70.00% Other	<b>Inconclusive: None Detected</b>
<b>TEM NYS 198.4 NOB</b>	03/26/2021	White		100.00% Other	<b>None Detected</b>

Initial report from: 03/26/2021 12:32:45



# EMSL Analytical, Inc.

528 Mineola Avenue Carle Place, NY 11514  
Tel/Fax: (516) 997-7251 / (516) 997-7528  
<http://www.EMSL.com> / [carleplacelab@emsl.com](mailto:carleplacelab@emsl.com)

**EMSL Order:** 062105323  
**Customer ID:** JCBR50  
**Customer PO:**  
**Project ID:**

## Test Report:Asbestos Analysis of Bulk Material

Test	Analyzed Date	Color	Non-Asbestos		Asbestos
			Fibrous	Non-Fibrous	
<b>Sample ID</b> 3-6 062105323-0006		<b>Description</b>	Kitchen Junction Box (Stove/Kettle) - White Cloth Wire Insulation		
		<b>Homogeneity</b>	Homogeneous		
<b>PLM NYS 198.1 Friable</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 VCM</b>					<b>Not Analyzed</b>
<b>PLM NYS 198.6 NOB</b>	03/26/2021	White	37.00% Glass	63.00% Other	<b>Inconclusive: None Detected</b>
<b>TEM NYS 198.4 NOB</b>	03/26/2021	White		100.00% Other	<b>None Detected</b>

Initial report from: 03/26/2021 12:32:45



# EMSL Analytical, Inc.

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Tel/Fax: (516) 997-7251 / (516) 997-7528  
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**EMSL Order:** 062105323  
**Customer ID:** JCBR50  
**Customer PO:**  
**Project ID:**

## Test Report:Asbestos Analysis of Bulk Material

The samples in this report were submitted to EMSL for analysis by Asbestos Analysis of Bulk Materials via NYS ELAP Approved Methods . The reference number for these samples is the EMSL Order ID above . Please use this reference number when calling about these samples.

### Report Comments:

Sample Receipt Date: 3/25/2021  
Analysis Completed Date: 3/26/2021

Sample Receipt Time: 12:27 PM  
Analysis Completed Time: 10:13 AM

### Analyst(s):

Tomas Montes De Oca PLM NYS 198.6 NOB (6)

Jackson Li TEM NYS 198.4 NOB (4)

### Samples reviewed and approved by:

Daniel Clarke, Asbestos Laboratory Manager  
or Other Approved Signatory

NOB = Non Friable Organically Bound N/A = Not Applicable VCM = Vermiculite Containing Material

-In New York State, TEM is currently the only method that can be used to determine if NOB materials can be considered or treated as non-asbestos containing.

All samples examined for the presence of vermiculite when analyzed via NYS 198.1.

-NYS Guidelines for Vermiculite containing samples are available at [http://www.wadsworth.org/labcert/elapcert/forms/VermiculiteInterimGuidance\\_Rev070913.pdf](http://www.wadsworth.org/labcert/elapcert/forms/VermiculiteInterimGuidance_Rev070913.pdf) EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations . Interpretation and use of test results are the responsibility of the client. Samples were received in good condition unless otherwise noted.

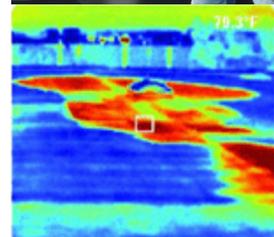
This report must not be used by the client to claim product certification , approval, or endorsement by NVLAP, NIST, or any agency of the federal government. This report may contain data that is not covered by the NVLAP accreditation .

Samples analyzed by EMSL Analytical, Inc. Carle Place, NY NYS ELAP 11469, NVLAP Lab Code 101048-10

Initial report from: 03/26/2021 12:32:45



# Laboratory Certifications



**J.C. Broderick & Associates, Inc.**

*Environmental Consulting & Testing*

1775 Expressway Drive North

Hauppauge, New York 11788

631.584.5492 fax 631.584.3395

NEW YORK STATE DEPARTMENT OF HEALTH  
WADSWORTH CENTER



Expires 12:01 AM April 01, 2021  
Issued April 01, 2020

**CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE**

*Issued in accordance with and pursuant to section 502 Public Health Law of New York State*

MR. DANIEL CLARKE  
EMSL ANALYTICAL, INC.  
528 MINEOLA AVE.  
CARLE PLACE, NY 11514

NY Lab Id No: 11469

*is hereby APPROVED as an Environmental Laboratory for the category  
ENVIRONMENTAL ANALYSES SOLID AND HAZARDOUS WASTE  
All approved subcategories and/or analytes are listed below:*

**Miscellaneous**

Asbestos in Friable Material	Item 198.1 of Manual EPA 600/M4/82/020
Asbestos in Non-Friable Material-PLM	Item 198.6 of Manual (NOB by PLM)
Asbestos in Non-Friable Material-TEM	Item 198.4 of Manual
Asbestos-Vermiculite-Containing Material	Item 198.8 of Manual
Lead in Dust Wipes	EPA 7000B
Lead in Paint	EPA 7000B

**Sample Preparation Methods**

EPA 3051A

NEW  
YORK  
STATE

Department  
of Health

Serial No.: 61402

Property of the New York State Department of Health. Certificates are valid only at the address shown, must be conspicuously posted, and are printed on secure paper. Continued accreditation depends on successful ongoing participation in the Program. Consumers are urged to call (518) 485-5570 to verify the laboratory's accreditation status.

United States Department of Commerce  
National Institute of Standards and Technology



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# Certificate of Accreditation to ISO/IEC 17025:2017

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NVLAP LAB CODE: 101048-10

**EMSL Analytical, Inc.**  
Carle Place, NY

is accredited by the National Voluntary Laboratory Accreditation Program for specific services,  
listed on the Scope of Accreditation, for:

## **Asbestos Fiber Analysis**

*This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017.  
This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality  
management system (refer to joint ISO-ILAC-IAF Communiqué dated January 2009).*

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2020-07-01 through 2021-06-30

Effective Dates



A handwritten signature in black ink, appearing to read "Peter S. Lander".

For the National Voluntary Laboratory Accreditation Program

**SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017**

**EMSL Analytical, Inc.**

528 Mineola Ave.

Carle Place, NY 11514

Daniel Clarke

Phone: 516-997-7251

Email: dclarke@emsl.com

http://www.emsl.com

**ASBESTOS FIBER ANALYSIS**

**NVLAP LAB CODE 101048-10**

**Bulk Asbestos Analysis**

**Code**

**Description**

18/A01

EPA -- 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples

18/A03

EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials

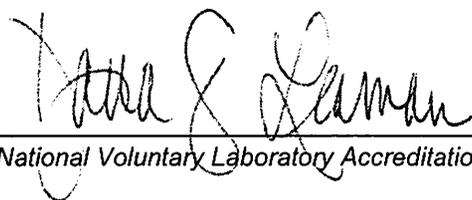
**Airborne Asbestos Analysis**

**Code**

**Description**

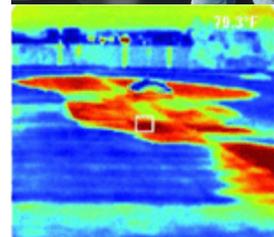
18/A02

U.S. EPA's "Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions" as found in 40 CFR, Part 763, Subpart E, Appendix A.



For the National Voluntary Laboratory Accreditation Program

# JCB Certifications



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*Environmental Consulting & Testing*

1775 Expressway Drive North

Hauppauge, New York 11788

631.584.5492 fax 631.584.3395

**New York State – Department of Labor**

Division of Safety and Health  
License and Certificate Unit  
State Campus, Building 12  
Albany, NY 12240

**ASBESTOS HANDLING LICENSE**

J.C. Broderick & Associates Inc.

1775 Expressway Drive No.

Hauppauge, NY 11788

FILE NUMBER: 99-0503

LICENSE NUMBER: 28731

LICENSE CLASS: RESTRICTED

DATE OF ISSUE: 05/14/2020

EXPIRATION DATE: 05/31/2021

Duly Authorized Representative – Brendan Broderick:

This license has been issued in accordance with applicable provisions of Article 30 of the Labor Law of New York State and of the New York State Codes, Rules and Regulations (12 NYCRR Part 56). It is subject to suspension or revocation for a (1) serious violation of state, federal or local laws with regard to the conduct of an asbestos project, or (2) demonstrated lack of responsibility in the conduct of any job involving asbestos or asbestos material.

This license is valid only for the contractor named above and this license or a photocopy must be prominently displayed at the asbestos project worksite. This license verifies that all persons employed by the licensee on an asbestos project in New York State have been issued an Asbestos Certificate, appropriate for the type of work they perform, by the New York State Department of Labor.



Eileen M. Franko, Director  
For the Commissioner of Labor



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**DIVISION 9 - FINISHES**

**SECTION 09672-RESINOUS FLOORING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This section includes the following:
  - 1. Resinous flooring system as shown on the drawings and in schedules.
- B. Related sections include the following:
  - 1. Cast-in-Place Concrete, section 03300

1.03 SYSTEM DESCRIPTION

- A. The work shall consist of preparation of the substrate, the furnishing and application of an epoxy based multi roller applied flooring system with Micro or Macro colored decorative chips and urethane topcoat. The system shall have the color and texture as specified by the Owner with a nominal thickness of 50 mils. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.
- B. Cove base (if required) to be applied where noted on plans and per manufacturers standard details unless otherwise noted.

1.04 SUBMITTALS

- A. Product Data: Latest edition of Manufacturer's literature including performance data and installation procedures.
- B. Manufacturer's Safety Data Sheet (SDS) for each product being used.
- C. Samples: A 3 x 3 inch square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system subject to normal tolerances.

1.05 QUALITY ASSURANCE

- A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.
- C. The Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.
- E. System shall be in compliance with requirements of United States Department of Agriculture (USDA), Food, Drug Administration (FDA), and local Health Department.

- F. System shall be in compliance with the Indoor Air Quality requirements of California section 01350 as verified by a qualified independent testing laboratory.
- G. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

#### 1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

##### A. Packing and Shipping

- 1. All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.

##### B. Storage and Protection

- 1. The Applicator shall be provided with a storage area for all components. The area shall be between 60 F and 90 F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
- 2. Copies of Safety Data Sheets (SDS) for all components shall be kept on site for review by the Engineer or other personnel.

##### C. Waste Disposal

- 1. The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

#### 1.07 PROJECT CONDITIONS

##### A. Site Requirements

- 1. Application may proceed while air, material and substrate temperatures are between 60 F and 90 F providing the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
- 2. The relative humidity in the specific location of the application shall be less than 85 % and the surface temperature shall be at least 5 F above the dew point.
- 3. The Applicator shall ensure that adequate ventilation is available for the work area.
- 4. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.

##### B. Conditions of new concrete to be coated with epoxy material.

- 1. Concrete shall be moisture cured for a minimum of 7 days and have fully cured a minimum of twenty eight days in accordance with ACI-308 prior to the application of the coating system pending moisture tests.
- 2. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary or desirable).
- 3. Sealers and curing agents should not to be used.
- 4. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.

### C. Safety Requirements

1. All open flames and spark-producing equipment shall be removed from the work area prior to commencement of application.
2. "No Smoking" signs shall be posted at the entrances to the work area.
3. The Owner shall be responsible for the removal of foodstuffs from the work area.
4. Non-related personnel in the work area shall be kept to a minimum.

### 1.08 WARRANTY

- A. Dur-A-Flex, Inc. warrants that material shipped to buyers at the time of shipment substantially free from material defects and will perform substantially to Dur-A-Flex, Inc. published literature if used in accordance with the latest prescribed procedures and prior to the expiration date.
- B. Dur-A-Flex, Inc. liability with respect to this warranty is strictly limited to the value of the material purchase.

## PART 2 - PRODUCTS

### 2.01 FLOORING

- A. Dur-A-Flex, Inc, Dur-A-Chip, Epoxy-Based seamless flooring system
  1. System Materials:
    - a. Primer: Dur-A-Flex, Inc, Dur-A-Glaze MVP resin and hardener.
    - b. First Broadcast Coat: Dur-A-Flex, Inc, Dur-A-Gard OPF resin and hardener.
    - c. Second Broadcast and Grout Coat: Dur-A-Flex, Inc. Dur-A-Glaze #4 resin and Water Clear hardener.
    - d. Chips: Dur-A-Flex, Inc. Macro or Micro Decorative Colored Chips.
    - e. Topcoat: Dur-A-Flex, Inc. Armor Top resin, hardener and grit.
  2. Patch Materials
    - a. Shallow Fill and Patching: Use Dur-A-Flex, Inc. Dur-A-Glaze #4 Cove Rez.
    - b. Deep Fill and Sloping Material (over ¼ inch): Use Dur-A-Flex, Inc. Dur-A-Crete.

### 2.02 MANUFACTURER

- A. Dur-A-Flex, Inc., 95 Goodwin Street, East Hartford, CT 06108, Phone: (860) 528-9838, Fax: (860) 528-2802
- B. Manufacturer of Approved System shall be single source and made in the USA.

### 2.03 PRODUCT REQUIREMENTS

- A. PrimeR Dur-A-Glaze MVP
  1. Percent Solids 100 %
  2. VOC0 g/L
  3. Viscosity at 70°F (mixed hardener and resin) 1,400 cps
  4. Hardness, ASTM D 2240 75-80
  5. Compressive Strength, ASTM D 69511, 200 psi
  6. Tensile Strength ASTM D 638 2,100 psi
  7. Flexural Strength - ASTM D 5705, 100 psi
  8. Permeability ASTM E96 0.1 perms

B. Broadcast Coat: Dur-A-Gard OPF

1. Percent Solids	100 %
2. VOC	59 g/L
3. Compressive Strength, ASTM D 695	16,000 psi
4. Tensile Strength, ASTM D 638	3,800 psi
5. Flexural Strength, ASTM D 790	4,000 psi
6. Abrasion Resistance, ASTM D 4060 C-10 Wheel, 1,000 gm load, 1,000 cycles	35 mg loss
7. Flame Spread/NFPA-101, ASTM E 84	Class A
8. Impact Resistance MIL D-3134	0.025 inch Max
9. Water Absorption. MIL D-3134	Pass
10. Potlife @ 70 F	20-25 minutes

C. Broadcast Coat and Grout Coat Dur-A-Glaze #4 Water Clear

1. Percent Solids	100 %
2. VOC	3.8 g/L
3. Compressive Strength, ASTM D 695	11,200 psi
4. Tensile Strength, ASTM D 638	2,100 psi
5. Flexural Strength, ASTM D 790	5,100 psi
6. Abrasion Resistance, ASTM D 4060 C-10 Wheel, 1,000 gm load, 1,000 cycles	29 mg loss
7. Flame Spread/NFPA-101, ASTM E 84	Class A
8. Impact Resistance MIL D-24613 cracking or delamination	0.0007 inches, no
9. Water Absorption. MIL D-24613	Nil
10. Potlife @ 70 F	20 minutes

D. Topcoat: Armor Top

1. Percent Solids	95 %
2. VOC	0 g/L
3. Tensile Strength, ASTM D 2370	7,000 psi
4. Adhesion, ASTM 4541	Substrate Failure
5. Hardness, ASTM D 3363	4H
6. 60° Gloss ASTM D 523	70
7. Abrasion Resistance, ASTM D4060 CS 17 wheel (1,000 g load) 1,000 cycles	Gloss Satin 4-8mg loss with grit 10-12 mg loss without grit
8. Pot Life, 70 F, 50% RH	2 Hours
9. Full Chemical Resistance	7 days

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, installation tolerances and other conditions affecting flooring performance.

1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

### 3.02 PREPARATION

#### A. General

1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, and bituminous products.
2. Moisture Testing: Perform tests recommended by manufacturer and as follows.
  - a. Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75% relative humidity level measurement.
  - b. If the relative humidity exceeds 75% then Dur-A-Flex, Inc Dur-A-Glaze MVP Primer moisture mitigation system must be installed prior to resinous flooring installation. Slab-on grade substrates without a vapor barrier may also require the moisture mitigation system.
3. There shall be no visible moisture present on the surface at the time of application of the system. Compressed oil-free air and/or a light passing of a propane torch may be used to dry the substrate.
4. Mechanical surface preparation
  - a. Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 3-4 as described by the International Concrete Repair Institute.
  - b. Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.
  - c. Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum 1/4 inch key cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also apply to drain perimeters and expansion joint edges.
  - d. Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired per manufacturer's recommendations.
5. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufacturer's recommendations.

### 3.03 APPLICATION

#### A. General

1. The system shall be applied in six distinct steps as listed below:
  - a. Substrate preparation
  - b. Priming
  - c. First broadcast coat application with first chip broadcast
  - d. Second broadcast coat with second chip broadcast
  - e. Grout coat application,
  - f. Topcoat application
2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil-free compressed air.

3. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

#### B. Primer

1. The primer shall be Dur-A-Glaze MVP Primer that is mixed at the ratio of 2 parts resin to 1 part hardener per the manufacturer's instructions.
2. The primer shall be applied using a notched squeegee and back rolled/cross rolled with a 3/8" nap roller at the rate of 100 sf/gal to yield a dry film thickness of 16 mils.

#### C. Broadcast Coats

1. The broadcast coat shall be applied as a double broadcast system as specified by the Architect.
2. The broadcast coat shall be comprised of two components, a resin, and hardener as supplied by the Manufacturer and mixed in the ratio of 2 parts resin to 1 part hardener.
3. The resin shall be added to the hardener and thoroughly mixed by suitably approved mechanical means.
4. The first broadcast coat shall be applied over horizontal surfaces using the dip and roll, and back roll method at the rate of 300 sf/gal using the Dur-A-Gard OPF material.
5. Chips shall be broadcast to excess into the wet material, Macro chips at the rate of 0.1 lbs/sf, and Micro chips at the rate of 0.15 lbs/sf.
6. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose aggregate.
7. Scrape the floor with a trowel or floor scraper. Sweep and vacuum the floor again.
8. Apply a second broadcast coat of resin shall be applied by flat squeegee then back rolled with a coverage rate of 200 sf/gal with the Dur-A-Glaze #4 Water Clear material.
9. Chips shall be broadcast to excess, Macro chips at the rate of 0.1 lbs/sf, and Micro chips at the rate of 0.15 lbs/sf.
10. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose chips.
11. Scrape the floor with a trowel or floor scraper. Sweep and vacuum the floor again.

#### D. Grout Coat

1. The grout coat shall be comprised of a Dur-A-Glaze # 4 Water Clear material that is mixed in the ratio of 1 part hardener to 2 parts resin and installed per the manufacturer's recommendations.
2. The grout coat shall be squeegee applied and back rolled with a coverage rate of 150 sf/gal.

#### E. Topcoat

1. The topcoat of Armor Top shall be roller applied at the rate of 500 sf/gal to yield a dry film thickness of 3 mils.
2. The finish floor will have a nominal thickness of 50 mils.

### 3.04 FIELD QUALITY CONTROL

#### A. Tests, Inspection

1. The following tests shall be conducted by the Applicator:
  - a. Temperature: Air, substrate temperatures and, if applicable, dew point.
  - b. Coverage Rates: Rates for all layers shall be monitored by checking quantity of material used against the area covered.

### 3.05 CLEANING AND PROTECTION

- A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.
- B. Remove masking. Perform detail cleaning at floor termination, to leave cleanable surface for subsequent work of other sections.

## **DIVISION 15 - MECHANICAL**

### **SECTION 15903 - AUTOMATIC TEMPERATURE CONTROLS**

#### **PART 1 - GENERAL REQUIREMENTS.**

##### **1.01 GENERAL**

- A. Furnish and install all temperature controls including all devices and accessories required for the installation of a complete Johnson web-based energy management and control system. All new controls shall be an extension of the existing Johnson Controls Facility Explorer DDC front-end. The existing FX-60/70/80 and FX Server will be expanded and upgraded, including all hardware, software, licenses, accessories as needed to accommodate all new controls and all sequences specified. The new equipment shall utilize the existing interface and shall be of comparable to the existing interface. Third party software or use of additional software to control the new equipment will not be acceptable. The ATC contractor will provide all network wiring between the FX60/70/80, and will provide all graphics, front-end programming to map up the new controls. The ATC contractor will include all additional licenses as necessary to accommodate the new controls.
- B. All new controls shall be of the DDC type unless specified otherwise. All DDC controls shall be manufactured by Johnson Controls. The design make for the web-based front-end controller and all local DDC controllers is Johnson Controls Facility Explorer.
- C. The ATC contractor shall be authorized by the system manufacturer and shall submit all training certificates and current proof that the ATC contractor is a Johnson Controls Authorized Systems Integrator - Gold (ASI-Gold).
- D. Under no circumstances, will the Owner accept bids for DDC systems that are proprietary in nature. If the bidding ATC contractor is including a DDC system other than Johnson FX, it must meet all of the requirements of this specification and the ATC contractor must list the DDC system in a substitutions list and include the following information with his bid:
  - 1. The name and address of the proposed ATC contractor and DDC system they are proposing.
  - 2. A list of at least two additional sources for the installation, service, and purchase of repair parts within a 50 mile radius of the School District. These sources must be completely independent from the proposed ATC contractor. The intent is to assure the District that they are not entering into a proprietary arrangement.
  - 3. Written assurance that the proposed substitute DDC system meets all of the requirements of this specification.
- E. Control systems shall be complete in all respects, including all labor, materials, equipment, and service necessary. The controls shall be of the DDC type unless otherwise specified.
- F. Control systems shall include, but not be limited to, all application specific controllers, transducers, transformers, cabinets, valves and operators, dampers and operators, relays, sensors, switches, and terminals.
- G. Control Systems shall be installed by competent mechanics regularly employed by a company whose primary business is the installation of automatic temperature control systems. The company must employ at

least ten control specialists who have successfully completed at least one Johnson factory-authorized training program on the controls specified for this project. The ATC contractor will be required to submit proof of such training in the form of a Johnson Controls Institute Certificate.

- H. Installation shall include all control components, installation of all control wiring and pneumatic tubing. All wiring required for interlocking and interfacing controls with the equipment to be controlled, whether low voltage or line voltage; calibration and adjustment of all controls, dampers, linkages, etc. is part of this contract.
- I. All control wiring concealed in walls or run in open areas of machine rooms shall be in conduit. In other locations, plenum rated cable shall be used.
- J. All pneumatic tubing, if any, shall be concealed in walls, run in open areas of machine rooms or in direct contact with uninsulated pipe shall be hard drawn copper tubing. Pneumatic tubing within control cabinets may be polyethylene. Tubing installed within areas (such as boiler rooms, mechanical rooms) or control panels that are subject to temperatures above 85°F, shall be rated for high temperature, and shall either be high temperature polyethylene, or copper tubing, as required above. Pneumatic fittings on control devices interfacing such high-temperature tubing shall be made of "non-conductive, high temperature material".
- K. The ATC Contractor shall provide (8) professionally bound submittal books showing how he proposes to complete the work specified herein. In this book, the ATC Contractor shall submit description of operation and schematic drawings, produced in AutoCAD, showing the wiring and pneumatic tubing of the entire control system to the District for review before starting any work. Bulletins describing each item of control equipment or component shall be included.
- L. Upon completion of his work, the ATC Contractor shall provide (8) professionally bound Operation & Maintenance Manuals showing exactly how each component of the system was installed, specifically noting any changes from the submittal book, and who authorized the change. Schematic drawings, sequences of operation and technical literature must be provided for all components of the system.
- M. All automatic temperature control work completed under this Contract shall be covered under a one (1) year warranty and service contract effective on date of acceptance. Scheduled maintenance service shall be provided to attend to the normal maintenance required for proper system operation in the building.
- N. It is the ATC Contractor's responsibility to inspect the buildings, their existing systems, and the project drawings to verify exact quantities of devices and controls required for the systems specified. No allowance will be made if the ATC Contractor fails to make such an examination.
- O. Provide nameplates on all devices, whether or not mounted on the face of the central and local control panels. In occupied areas, nameplates shall be concealed beneath covers of room type instruments, to describe functions.
- P. All control panels shall include wire markers for each wire, with an identifying wiring diagram.
- Q. The ATC Contractor shall provide a minimum of two (2) three-hour

training classes on the system operation and maintenance. This is to include both classroom and on-site training to ensure that the School District's custodial and maintenance personnel have adequate knowledge of the control system's features as well as operation and maintenance requirements. The ATC contractor will provide printed documentation to all persons attending the training sessions.

#### 1.02 CONTROLLERS

- A. All room thermostats shall have covers with concealed adjustment. Thermostat or sensor locations not shown on the drawings shall be subject to approval of the Architect. All thermostats or sensors sensing temperature within ductwork or at coils are to be provided with elements of sufficient length to measure average temperature across the duct cross section or coil face. DDC space sensors shall have no local setpoint adjustment or override capability. It is the intent to make all adjustments through the existing front-end graphical software.

#### 1.03 VALVES

- A. All automatic control valves shall be fully proportioning unless otherwise specified, quiet in operation, and shall be arranged to fail-safe in either a normally open or normally closed position in the event of power failure. The open or closed position shall be as specified or as required to suit job conditions. Valves shall be capable of operating at varying rates of speed to correspond to the exact dictates of the controller and variable load requirements. Provisions shall be made for valves operating in sequence with other valves or damper operators to have adjustable operating ranges and starting points to provide flexibility of adjustment, sequencing, and throttling range.
- B. Automatic Control Valves shall be sized by the ATC Contractor and guaranteed to meet the heating or cooling requirements as specified, and as indicated on the drawings. Unless otherwise specified, control valves shall have 125 psig cast iron bodies with flanged connections on valves 2 1/2" or larger. Unless otherwise specified, valve bodies shall have the same pressure characteristics as the piping in which they are installed.
- C. No single valve, except zone valves, shall be larger than 2" in size. Where the capacity of equipment to be controlled requires a valve larger than 2", two (2) valves shall be installed in parallel with the smaller valve sized for a maximum of 1/3 of the total capacity.
- D. All control valves, unless otherwise noted, shall be of the globe valve type. Unless otherwise noted, **ball valves, irrespective of whether or not they have characterized discs, are not acceptable for control applications.**
- E. Actuators shall be electronic. They shall be mechanically fail-safe. **Capacitor-based fail-safe actuators are not acceptable.**

#### 1.04 AUTOMATIC DAMPERS

- A. Automatic dampers shall be supplied and sized by the ATC Contractor to properly control the flow of air using methods similar to control valve sizing. The Sheet Metal Subcontractor shall provide required safing to fit the damper into the duct work. The dampers shall be constructed with galvanized blades and frames. Blades shall not exceed 6" in width and shall be provided with special replaceable

rubber seals on the blade edges and sides. Blades shall be formed from two spot-welded sheets for extra strength. Frames shall be channel shaped for strength, and to enclose linkage thus keeping linkage out of air stream.

- B. The entire construction shall be such that leakage does not exceed 10 cfm per square foot with 2" of static pressure across the damper.
- C. Dampers shall have opposed, or parallel blades as required by the application. The proper linkage shall be furnished to provide equal percentage or linear characteristics as required by the application.

#### 1.05 CONTROL PANELS

- A. All control panels for this project will meet the following requirements **as a minimum:**
  - 1. The control panel shall be a fully enclosed cabinet, of baked enamel, steel or aluminum material construction and shall meet the requirements of NEMA 1 enclosures.
  - 2. The panel will have a hinged door with a locking latch.
  - 3. Each component on the front panel shall have an appropriate engraved nameplate fabricated from .062" or .125" thick phenolic material, with engraved permanent lettering. **Stick-on labels are not acceptable.**

#### 1.06 DDC SYSTEM WIRING

- A. All conduit, wiring, accessories and wiring connections required for the installation of the Building Automation System, as herein specified, shall be provided by the ATC contractor unless specifically shown on the Electrical Drawings under Division 16 Electrical. The ATC contractor shall provide, install, and wire all repeaters, terminators as recommended by the BMS manufacturer.
- B. All wiring shall comply with the requirements of applicable portions of Division 16 and all local and national electric codes, unless specified otherwise in this section.
- C. All control wiring materials and installation methods shall comply with DDC system manufacturer's recommendations.
- D. The sizing, type and provision of cable, conduit, cable trays, and raceways shall be the design responsibility of the ATC contractor. If complications arise, however, due to the incorrect selection of cable, cable trays, raceways and/or conduit by the ATC contractor, the ATC contractor shall be responsible for all costs incurred in replacing the selected components.

#### 1.07 QUALITY ASSURANCE

- A. This project is an extensive installation of Johnson - Facility Explorer DDC controls within the District and in this building. The District must have assurance that the ATC contractor has full-time employees that are certified in the specified product line and has the resources within the ATC contractor's company to meet the requirements of this project, as well as interface with the existing Johnson DDC systems without voiding any current project warranties as a result of this project.
  - 1. As part of the BMS/controls submittal documentation, the ATC contractor is to supply the name and experience / qualifications of at least full-time ten employees the ATC

- contractor currently employs. These technicians should have at least five years' experience with the specified product line and in the automatic temperature control field. Employees of sub-contractors, suppliers or distributors are not eligible and shall not be counted in meeting this requirement.
2. The ATC contractor will also submit copies of factory-sponsored training certificates of at least ten employees certifying they have completed the manufacturer approved certification course on the specified Johnson Controls product line.
- B. The ATC contractor shall be authorized by the system manufacturer and shall submit training certificates and current proof that the ATC contractor is a Johnson Facility Explorer - Authorized Systems Integrator - Gold Certified (ASI-GOLD). If the bidding contractor wishes to use an ATC sub-contractor who is not a Johnson Controls FX-ASI-GOLD Contractor, the bidding contractor shall:
1. Provide a letter from the BMS manufacturer stating that the BMS manufacturer is fully supporting the proposed ATC sub-contractor and their technical capability for the duration of the project and the warranty period, and that the BMS manufacturer is undertaking liability in the event the ATC sub-contractor is unable to complete the project as specified or damages other components/functionality of the existing Johnson DDC BMS systems.
  2. As part of the BMS submittal and prior to commencing the project, the ATC sub-contractor will provide a time-stamped picture snapshot of each existing DDC graphic page on the BMS, as well as the system architecture of the entire network, recording the online/offline status and operating condition of each controller and I/O point on the BMS network. The ATC sub-contractor will create a digital library of these snapshots, labeling each picture with the unit tag and area served and submit this data in report form to the Engineer as part of the submittal documentation.
  3. Upon completion of the project and as part of the O&M documentation, the ATC sub-contractor will take a second time-stamped picture snapshot of each existing and new DDC equipment graphic page on the BMS, as well as the system architecture of the entire network, recording the online/offline status and operating condition of each controller and I/O point on the BMS network. The ATC sub-contractor will create a digital library of these snapshots, labeling each picture with the unit tag and area served, and submit this data in report form to the Engineer as part of the O&M documentation. Upon review and comparison of the system status and recorded snapshots at time of submittal and time of O&M, the Engineer will provide a punch-list to the Contractor for any differences between the two, deemed to have been caused as a result of the ATC sub-contractor's work on the system. The contractor will be required to rectify these deficiencies at no additional cost.
- C. The ATC contractor shall be an independent contractor whose primary business is the engineering, programming, installation/wiring and service of total integrated building management systems.
- D. The ATC Contractor shall have a fully staffed facility within a 50-mile radius of the project site supplying complete support and maintenance services available 24 hours-a-day, 7-days-a-week basis.
- E. All new DDC controllers shall be of the Johnson Controls Facility Explorer BACnet FX-PCG type. All controllers shall be non-proprietary and non-single source.

- F. Under no circumstances, will the Owner accept bids for DDC systems that are proprietary or single source in nature. If the bidding contractor is including a DDC system other than Johnson FX-60/70, it must meet all of the requirements of this specification and the contractor must list the DDC system in a substitutions list and include the following information with his bid:
1. The name and address of the proposed ATC sub-contractor and DDC system they are proposing.
  2. A list of at least two additional sources for the installation, service, and purchase of repair parts within a 50 mile radius of the School District. These sources must be completely independent from the proposed ATC sub-contractor. The intent is to assure the District that they are not entering into a proprietary arrangement
  3. Written assurance that the proposed substitute DDC system meets all of the requirements of this specification.

## PART 2 -SEQUENCES OF OPERATION

### 2.01 EXISTING JOHNSON DDC FRONT-END

- A. Furnish and install all temperature controls including all devices and accessories required for the installation of a complete Johnson web-based energy management and control system.
1. There is an existing Johnson Controls FX front-end controller installed at this school. This contractor will furnish and install as many FX-80 controllers as required to accommodate all new equipment.
  2. This ATC contractor will furnish and install as many FX-80 controllers as required to accommodate all new equipment, and maintain a free Java heap of at least 10MB, with 25% spare capacity for future expansion.
  3. The ATC contractor for this project will modify the existing schedules, trends, and alarms to seamlessly integrate the points, schedules, alarms, and trends for the new controls. The ATC contractor will provide schedules for all equipment, zoned by different areas of the building as designated by the Owner. Providing a separate dedicated schedule for each piece of equipment is not acceptable unless specifically directed by the Owner.
  4. The ATC contractor for this project will be responsible for modifying the existing floorplans to provide a seamless, single graphical interface for both the new and existing controls. The ATC contractor will provide a 3-D floor plan of the entire building, with links to all DDC controlled equipment. Upon completion of this project, all DDC controlled equipment will be one seamless DDC front-end with graphical interface for each piece of equipment. Simply putting hyperlinks or data tables to represent the new controls is not acceptable.
  5. The ATC contractor will provide all network wiring and will provide all graphics, front-end programming to map up the new controls. The ATC contractor will include all additional licenses as necessary to accommodate the new controls.
  6. Override and offline Indication: All overridden points/setpoints will be displayed on the graphic in a purple color background, with white text. All points operating under normal control logic will be in black backgrounds with white or yellow text. All points that are offline will be indicated

in yellow background with black text.

7. Alarm Indication: Alarms shall be programmed to display on a customized graphical alarm screen indicating when any unit's supply fan command does not match the supply fan status. Low discharge temperature alarms shall also be indicated on the alarm screen if the discharge temperature of any unit drops below 45°F. An Alarm notification image will indicate on the home page and on every graphical page indicating an unacknowledged alarm condition. The flashing alarm notification will disappear once the user has acknowledged the alarm, but the alarm will remain in the alarm history database.
8. All DDC points indicated in the points list to be trended will be recorded at 1 hour intervals (or change of value).

## 2.02 NEW AIR HANDLING UNITS WITH COOLING

- A. A Johnson TE-6315P-1 discharge air sensor (8' averaging capillary), a Johnson TE-6315P-1 mixed air sensor (8' averaging capillary), TE-6314P-1 space temperature sensor and FX-PCG controller are to be installed for these units.
- B. Control valves will be replaced with new DDC actuated modulating globe type control valves by the ATC contractor.
- C. The ATC contractor shall supply and install all required controls to allow the following sequences of operation to occur.
- D. The DDC front-end will index the units between occupied and unoccupied cycles. The ATC contractor will provide and install a freeze-stat, wired to shut off the supply fan in all positions of the H-O-A switch. Manual reset of the freezestat is required. Freezestat status is to be monitored at the BMS front-end. As an added feature, the DDC controller will use the discharge air sensor to detect a potential freezing condition. The set point will be 5° higher than the set point of the freeze-stat. If such a condition occurs, the outside air damper shall close, the fans will shut down, the heating valve shall open, and an alarm generated at the DDC front-end. Whenever the unit's supply fan is off, the outside air damper shall be fully closed.
- E. Optimal Start: An adaptive optimal start algorithm shall be used to enable the unit with the outside air damper closed and heating valve open to warm-up the space prior to occupancy time, necessary to achieve zone occupied temperature setpoints by the start of scheduled occupied period. The learning adaptive algorithm shall compare the zone temperature to its setpoint at beginning of scheduled occupied period and shall automatically adapt the heating response time for the next unoccupied period. The maximum warm-up start time will be adjustable at the DDC front-end. At no later than the scheduled occupancy time, the unit will transition to occupied mode sequence as indicated below, with the outside air damper modulating open to minimum position to provide minimum required volumetric flow of outside air (adjustable).
- F. Occupied Cycle - Heating Mode: The supply fan will start and indicate to the DDC controller via a current relay wired to a binary input of the controller that the fan is running. Whenever the space temperature is below the space set point of 68°F (adjustable), the heating valve will be modulated to maintain the discharge air temperature at the discharge heating setpoint. The discharge air setpoint shall reset automatically between the discharge high limit of 100°F (adjustable) and low limit of 60°F (adjustable) reset based

on deviation of the space temperature from the space heating setpoint. As the space temperature rises above the space set point (adjustable), the outside air damper shall modulate open beyond their minimum position, up to 100% to maintain the cooling space setpoint. The controller's program will maintain a minimum discharge temperature of 60°F (adjustable) by modulating the outside air damper and heating valve, beyond the minimum position required volumetric flow rate of outside air, in sequence without overlap.

- G. Occupied Cycle - Cooling Mode (For units with mechanical cooling): When free cooling is not available, the unit will be indexed into cooling mode via the existing DDC front-end (based on outside air temperature) and shall operate in cooling mode as follows. During the occupied cycle, the unit's supply fan will run, and the dampers will be at their minimum position. The DDC controller shall cycle the stages of DX cooling to maintain the space temperature setpoint.
- H. Unoccupied Cycle. During the unoccupied cycle, the rooftop unit's supply fan shall be cycled, and heating valve opened to maintain space setback temperature set point. The outside air dampers shall be closed. No unoccupied operation shall occur during the cooling mode.
- I. All set points will be adjustable from the Johnson DDC System Front-end.
- J. All outside air dampers shall fail in the closed position.

### 2.03 Existing Gym Air Handler and Exhaust Fans F-3 and F-16:

- A. The air handler freeze-stat is to be left in place to shut the fan off when a freezing condition occurs. Whenever the fan is off, the outside air damper will be closed. As an added feature, the DDC controller will use the discharge air sensor to detect a potential freezing condition. The set point will be 5° higher than the set point of the factory freeze-stat. If such a condition occurs, an alarm will be displayed on the front-end. An email will be sent from the DDC front-end system to those recipients designated by the District. The alarm and email messages will indicate what caused the alarm and be stamped with the date and time that the alarm occurred. Whenever the unit is off, the outside air damper shall be fully closed.
  - 1. All setpoints will be adjustable from the BMS front-end.
  - 2. The FX front-end will automatically switch the system between heating and economizer modes based on outdoor air temperature. The switchover set point will be adjustable via the BMS front-end.
- B. Based upon the makeup/exhaust air requirements for the exhaust fans the minimum OA provided by the gym unit is not sufficient. There is a significant air imbalance and has resulted in the locker room, mechanical room and the gym areas being very negative. In order to properly balance the air flow a VFD should be provided for the exhaust fan that serves the gym, fan F-3, and it should modulate to maintain differential setpoint between space and outside of 0.05" The locker room exhaust fan, F-16, should be left to exhaust 3750 cfm. Fan F-4 should be disabled. Based upon this new configuration the OA delivered by the air handler should be set to a minimum of 8000 cfm and total exhaust will be 8500 cfm. This difference in cfm will place these areas slightly under negative pressure. This ensures that there is no leakage of air to the surrounding areas. The gym exhaust fan can be balanced to 5500 cfm utilizing the VFD(\*See drawing 20-176B M2.04\*). The BMS should take control of both exhaust fans along with the air handler. The sequence should be as follows:
  - 1. F-4 8835 cfm, located above the gym mechanical. Decommission

2. F-3 8835 cfm. Located on the gym roof. Add VFD controlled by building pressure compared to outside, 0.05" differential setpoint (adj).
  3. F-16 3,750 cfm. Located above the locker rooms. Balance branch supply to the locker room to allow ~3,250CFM keeping the locker room slightly negative.
  4. Balance min of Gym AHU to min of 8,000CFM
- C. Occupied Mode - Heating: During the occupied period in heating mode, the air handler will run continuously, exhaust fan F-3 shall run continuously at its minimum speed via its VFD, and the locker room exhaust fan F-16 shall run continuously. Once the fans have been proven running by a current relay wired as a binary input to the DDC controller, the outside air damper shall open to its minimum position (adjustable from the BMS front-end). Whenever the space temperature is below the controller's occupied heating space set point, the heating valve modulates open. As the room temperature reaches the occupied heating space set point, the heating valve shall modulate closed. As the space temperature rises above the room set point, the outside air damper will modulate open, and the exhaust fan F-3 rpm shall be increased to exhaust the additional outside air. The air handler discharge air temperature shall be no lower than 60 deg F. The OA damper shall modulate between a maximum and minimum position configured in the BMS. The minimum position shall deliver 8,000 cfm of outdoor air and the maximum position shall deliver 11,000 cfm of OA. During the occupied period, the OA damper shall not go below the min position.
- D. Unoccupied Mode - Heating: During unoccupied periods, the controller will cycle the air handlers supply fan to maintain a lower, unoccupied space set point. This set point shall initially be set at 60° but will be adjustable at the BMS front-end. The heating valve will be modulated to maintain the night heating setpoint. The outside air damper shall be fully closed during unoccupied mode. The exhaust fans shall be off.
- E. Unoccupied Mode - Cooling: No operation will occur during unoccupied periods while in cooling season. The air handler's supply fan will be off, cooling will be disabled, and the outside air damper shall be fully closed during unoccupied mode.
1. All outside air dampers shall fail in the closed position.
  2. The heating control valve shall fail in the open position.
- F. All existing or new auxiliary finned tube radiation will be provided with a dedicated control signal from the DDC controller and will cycle a new auxiliary radiation control valve (provided by the ATC Contractor) to maintain the space setpoint. A lower set point will be maintained during the unoccupied cycle.

#### 2.04 NEW CABINET HEATERS

- A. Based The units shall be controlled by a Johnson TE-6314P-1 room mounted sensors to maintain occupied and unoccupied space temperature set points.
- B. The units shall be tied into the building's Johnson FX DDC control system for occupied/unoccupied cycle operation. All setpoints will be adjustable from the FX front-end.
- C. Occupied Period: Whenever the space temperature is below the controller's set point, the fan will cycle on and the heating valve shall be fully open. When the room temperature reaches the space set point, the fan will cycle off and the heating valve shall be closed.

- D. During the unoccupied cycle the unit's supply fan and heating valve shall be cycled to maintain space setback temperature set point.

#### 2.05 NEW UNIT VENTILATOR AND AUX FTR

- A. The units shall be controlled by Johnson TE-6314P-1 room mounted sensors to maintain occupied and unoccupied space temperature set points. A Johnson TE-6315P-1 discharge air sensor (8' averaging capillary), TE6314P-1 space temperature sensor and FX controller are to be installed for each unit.
- B. The units will be provided with a factory installed freeze-stat. This is to be left in place to shut the fan off when a freezing condition occurs. Whenever the fan is off, the outside air damper will be closed. As an added feature, the DDC controller will use the discharge air sensor to detect a potential freezing condition. The set point will be 5° higher than the set point of the factory freeze-stat. If such a condition occurs, the outside air damper will close, the face/bypass damper will fully face the coil and an alarm will be displayed on the front-end and an email will be sent from the DDC front-end system to those recipients designated by the District. The alarm and email messages will indicate which unit caused the alarm and be stamped with the date and time that the alarm occurred.
- C. The units shall be tied into the building's Johnson FX DDC control system for occupied/unoccupied cycle operation. All setpoints will be adjustable from the FX front-end.
- D. Occupied Period: The fan will run continuously. Once the fan has been proven running by a current relay wired as a binary input to the DDC controller, the outside air damper shall open to its minimum position (adjustable). Whenever the space temperature is below the controller's set point, the face and bypass damper shall modulate towards the bypass position. As the space temperature rises above the room set point, the outside air damper will be modulated open. The discharge low limit control will modulate the face/bypass and outside air damper in sequence to maintain a discharge air temperature of 60°F (adjustable).
- E. During the unoccupied cycle, the unit's supply fan shall be cycled to maintain space setback temperature set point. The face/bypass damper will be modulated to maintain the night heating set point. The outside air dampers shall be closed.
- F. All outside air dampers shall fail in the closed position.
- G. For any new units that have existing or new auxiliary finned tube radiation, a dedicated control signal from the DDC controller will cycle a new auxiliary radiation control valve (provided by ATC contractor) to maintain the space set point. A lower set point will be maintained during the unoccupied cycle.
- H. For any new units that have a relief hood serving the same space as the unit ventilator, the relief hood damper will be modulated to parallel the position of the outside air damper of the respective unit.

#### 2.06 NEW PTAC UNITS

- A. Based The units shall be controlled by a Johnson TE-6314P-1 room mounted sensors to maintain occupied and unoccupied space temperature set points.
- B. The units shall be tied into the building's Johnson FX DDC control

system for occupied/unoccupied cycle operation. All setpoints will be adjustable from the FX front-end.

- C. Occupied Period: Whenever the space temperature is below the controller's set point, the fan will cycle on and the heating valve shall be fully open. When the room temperature reaches the space set point, the fan will cycle off and the heating valve shall be closed. During the unoccupied cycle the unit's supply fan and heating valve shall be cycled to maintain space setback temperature set point.
- D. Occupied Cycle - Heating Mode: The supply fan will start and indicate to the DDC controller via a current relay wired to a binary input of the controller that the fan is running. Whenever the space temperature is below the space set point of 68°F (adjustable), the heating valve will be modulated to maintain the discharge air temperature at the discharge heating setpoint. The discharge air setpoint shall reset automatically between the discharge high limit of 100°F (adjustable) and low limit of 60°F (adjustable) reset based on deviation of the space temperature from the space heating setpoint. As the space temperature rises above the space set point (adjustable), the outside air damper shall modulate open beyond their minimum position, up to 100% to maintain the cooling space setpoint. The controller's program will maintain a minimum discharge temperature of 60°F (adjustable) by modulating the outside air damper and heating valve, beyond the minimum position required volumetric flow rate of outside air, in sequence without overlap.
- E. Occupied Cycle - Cooling Mode (For units with mechanical cooling): When free cooling is not available, the unit will be indexed into cooling mode via the existing DDC front-end (based on outside air temperature) and shall operate in cooling mode as follows. During the occupied cycle, the unit's supply fan will run, and the dampers will be at their minimum position. The DDC controller shall cycle the stages of DX cooling to maintain the space temperature setpoint.
- F. Unoccupied Cycle. During the unoccupied cycle, the rooftop unit's supply fan shall be cycled, and heating valve opened to maintain space setback temperature set point. The outside air dampers shall be closed. No unoccupied operation shall occur during the cooling mode.
- G. All set points will be adjustable from the Johnson DDC System Front-end.
- H. All outside air dampers shall fail in the closed position.

#### 2.07 REHAB OF EXISTING EXHAUST FANS & MOTORIZED DAMPERS

- A. This scope of work applies to all existing exhaust fans and dampers as noted on the plans.
- B. The following is intended to convey the spirit of the specification but does not limit the ATC contractor's responsibilities
  - a. All dampers are to be lubricated and adjusted for tight close off. Damaged or missing linkage is to be repaired or replaced. Defective actuators are to be repaired or replaced with new in kind.
  - b. The exhaust fans will be connected to the BMS system and will run during the occupied mode and remain off during the unoccupied mode based on a schedule in the front-end.
  - c. A signed sticker applied at the control device is required. The burden of proof that the control was looked at and proven functional is the ATC contractor's responsibility. Failure to apply stickers may be cause for redoing that system.

The color graphics that the user will see to operate the system shall be resident in the FX web-based front-end controller. PC-based systems are not acceptable. The main graphic shall be a three-dimensional floor plan of the building with links to each room and its HVAC system. The display will provide links to all DDC equipment in the building. Links to data trends and schedules shall be located on each system's graphic screen. The minimum point information that is to be mapped to the front-end panel and shown in the color graphic screens is as follows:

<b>Air Handling Units</b>				
<b>Description</b>	<b>Point</b>	<b>History</b>	<b>Alarm</b>	<b>Totalize</b>
Discharge Air Temperature	AI	X	X	
Space Temperature	AI	X	X	
Outside Air Temperature	AI	X		
Unoccupied Space Set Point	AV	X		
Occupied Space Set Point	AV	X		
Working Setpoint	AV	X		
Discharge Low Limit Set Point	AV	X		
Freezestat Status	BI	X	X	
Heating Valve	AO	X		
Cooling Command	BO	X	X	
Damper Command	AO	X		
Supply Fan Status	BI	X	X	X
Supply Fan Command	BO	X	X	
Minimum Outdoor Air Damper Position (adjustable)	AV	X		
Occupied Command	BV			
Occupied Status	BV	X		
Status of DDC controller	BV		X	

<b>Cabinet Heaters</b>				
<b>Description</b>	<b>Point</b>	<b>History</b>	<b>Alarm</b>	<b>Totalize</b>
Space Temperature	AI	X	X	
Unoccupied Space Set Point	AV	X		
Occupied Space Set Point	AV	X		
Working Setpoint	AV	X		
Heating Valve	BO	X		
Supply Fan Command	BO	X	X	
Occupied Command	BV			
Occupied Status	BV	X		
Status of DDC controller	BV		X	

<b>Unit Ventilators</b>				
<b>Description</b>	<b>Point</b>	<b>History</b>	<b>Alarm</b>	<b>Totalize</b>
Damper Command	AO	X		
Discharge Air Temperature	AI	X	X	
Discharge Low Limit Set Point	AV	X		
Heating Valve / Face & Bypass Damper	AO	X		
Auxiliary Radiation Valve	BO	X		
Minimum Outdoor Air Damper Position (adjustable)	AV	X		
Occupied Command	BV			

Occupied Space Set Point	AV	X		
Occupied Status	BV	X		
Outside Air Temperature	AI	X		
Space Temperature	AI	X	X	
Status of DDC controller	BV		X	
Supply Fan Command	BO	X	X	
Supply Fan Status	BI	X	X	X
Unoccupied Space Set Point	AV	X		
Working Setpoint	AV	X		
<b>Motorized Dampers</b>				
Relief Air Damper Command	BO	X		
Occupied Command	BV			
Occupied Status	BV	X		
Status of DDC controller	BV		X	

PART 4 - HISTORICAL DATA TRENDING REQUIREMENTS

All the points listed will be trended in the FX to record historical data for a period of 7 days, trended once per hour. The District intends to track these data for improving efficiency and occupancy conditions.

PART 5 - HARDWARE REQUIREMENTS:

5.01 GENERAL DESCRIPTION:

- A. The Building Automation System (BAS) shall use an open architecture and where applicable support a multi-vendor environment. To accomplish this effectively, the BAS shall not be limited to a single open communication protocol standard, but to also integrate third-party devices and applications via additional protocol and through the latest software standards. The system configuration shall be available for use on the Internet, or intranets using off the shelf, industry standard technology compatible with other owner provided networks.
- B. The Building Automation System shall consist of the following:
  - a. DDC Controllers (HVAC, etc.)
  - b. Input, Output Modules
  - c. Local Display Devices
  - d. Portable Operator's Terminals - Portable PC's
  - e. Distributed User Interfaces
  - f. Network processing, data storage and communications equipment
  - g. Other components required for a complete and working BAS
- C. The system shall be modular in nature, and shall permit expansion of both capacity and functionality through the addition of sensors, actuators, controllers and operator devices, while re-using existing controls equipment.
- D. The system architectural design shall eliminate dependence upon any single device for alarm generation and control execution. The failure of any single component or network connection shall not interrupt the execution of control strategies at other operational devices.
- E. Acceptable Systems
  - a. Facility Explorer by Johnson Controls
  - b. Others per addendum

5.02 BAS ARCHITECTURE - AUTOMATION NETWORK

- A. The automation network shall be configured as a Client/Server network with a web server operating on the Client's LAN/WAN. The web browser interface is extended over the LAN/WAN. Monitoring and control of the BAS is available using the web browser interface.
- B. The automation network shall include the option of a PC industry standard of Ethernet TCP/IP. Where used, LAN controller cards shall be standard "off the shelf" products available through normal PC vendor channels.
- C. The BAS shall network multiple user interface clients, system controllers and systems supervisors as required for systems operation.
- D. The automation network option shall be capable of operating at a communication speed of 100 Mbps.
- E. The automation network option will be compatible with other enterprise-wide networks. Where indicated, the automation network shall be connected to the enterprise network and share resources with it by way of standard networking devices and practices.

#### 5.03 BAS ARCHITECTURE - CONTROL NETWORK

- A. Network Automation Controllers, LP-FX60, (NAC) shall provide management over the control network(s) and shall support the following communications protocols:
  - a. BACnet® Standard (ANSI/ASHRAE Standard 135- ) MS/TP master.
  - b. LONWORKS® enabled devices using the free topology transceiver (FTT-1x). Johnson Controls® N2 Open.
  - c. Modbus RTU and Modbus TCP.
- B. The NAC shall be BTL (BACnet Testing Laboratories) listed as B-BC (BACnet Building Controller) and support the following data link options:
  - a. BACnet Internet Protocol (IP) (Annex J). BACnet IP (Annex J) Foreign.
  - b. ISO 8802-3, Ethernet (Clause 7).
- C. Control networks shall provide either "Peer-to-Peer," Master-Slave, or Supervised Token Passing communications, and shall operate at a minimum communication speed of 9600 baud.
- D. Digital Controllers shall reside on the control network.
- E. A BACnet Protocol Implementation Conformance Statement (PICS) shall be provided for each controller device (master or slave) that will communicate on the BACnet MS/TP Bus.
- F. The PICS shall be submitted 10 days prior to bidding.

#### 5.04 USER INTERFACE - BROWSER BASED INTERFACE

- A. The system shall be capable of supporting an unlimited number of clients using standard Web browser such as Internet Explorer™ or Mozilla Firefox™. Systems requiring additional software (to enable a standard Web browser) to be resident on the client machine, or manufacture-specific browsers shall not be acceptable.
- B. The Web browser software shall run on any operating system and system configuration that is supported by the Web browser. Systems that require specific machine requirements in terms of processor speed, memory, etc., in order to allow the Web browser to function with the Building Automation System (BAS), shall not be acceptable.
- C. The Web browser client shall support at a minimum, the following functions:
  - 1. User log-on identification and password shall be required. If an unauthorized user attempts access, notice of access failure shall be displayed. Security using authentication and

- encryption techniques to prevent unauthorized access shall be implemented.
2. HTML programming shall not be required to display system graphics or data on a Web page. HTML editing of the Web page shall be allowed if the user desires a specific look or format.
  3. Storage of the graphical screens shall be in the Network Automation Controller (NAC) or the server, without requiring any graphics to be stored on the client machine. Systems that require graphics storage on each client are not acceptable.
  4. Real-time values displayed on a Web page shall update automatically without requiring a manual "refresh" of the Web page.
  5. Users shall have administrator-defined access privileges. Depending on the access privileges assigned, the user shall be able to perform the following:
    6. Modify common application objects, such as schedules and setpoints in a graphical manner.
    7. Commands binary objects to start and stop.
    8. View logs and charts.
    9. View alarms.
  - D. Graphic screens on the Web Browser client shall support hypertext links to other locations on the Internet or on Intranet sites, by specifying the Uniform Resource Locator (URL) for the desired link.

#### 5.05 USER INTERFACE - ALARMS

- A. Alarm feature shall allow user configuration of criteria to create, route, and manage alarms and events. It shall be possible for specific alarms from specific points to be routed to specific alarm recipients. The alarm management portion of the user interface shall, at the minimum, provide the following functions:
  1. Allow configuration to generate alarms on any numeric, binary, or data point in the system.
  2. Generate alarm records that contain a minimum of a timestamp, original state, acknowledged state, alarm class and priority.
  3. Allow the establishment of alarm classes that provide the routing of alarms with similar characteristics to common recipients.
  4. Allow a user, with the appropriate security level, to manage alarms - including sorting, acknowledging, and tagging alarms.

#### 5.06 USER INTERFACE - REPORTS AND SUMMARIES

- A. Reports and Summaries shall be generated and directed to the user interface displays, with subsequent assignment to printers, or disk. As a minimum, the system shall provide the following reports:
  1. All points in the BAS
  2. All points in each BAS application
  3. All points in a specific controller
  4. All points in a user-defined group of points
  5. All points currently in alarm
  6. All BAS schedules
  7. All user defined and adjustable variables, schedules, interlocks and the like
- B. Reports shall be exportable to .pdf, .txt, or .csv formats.
- C. The system shall allow for the creation of custom reports and queries.

#### 5.07 USER INTERFACE - SCHEDULES

- A. A graphical display for time-of-day scheduling and override

scheduling of building operations shall be provided. At a minimum, the following functions shall be provided:

1. Regular schedules
  2. Repeating schedules
  3. Exception Schedules
- B. Weekly schedules shall be provided for each group of equipment with a specific time use schedule.
- C. It shall be possible to define one or more exception schedules for each schedule including references to calendars.
- D. Monthly calendars shall be provided that allow for simplified scheduling of holidays and special days. Holidays and special days shall be user-selected with the pointing device or keyboard.

#### 5.08 USER INTERFACE - PASSWORDS

- A. Multiple-level password access protection shall be provided to allow the system manager to assign user interface control, display, and database manipulation capabilities deemed appropriate for each user based on an assigned password.
- B. Each user shall have the following: a username, a password, and access levels.
- C. The system shall provide the capability to require a password of minimum length and require a combination of characters and numerical or special characters.
- D. When entering or editing passwords, the system shall not echo the actual characters for display on the monitor.
- E. The system shall provide unlimited flexibility with access rights. A minimum of four levels of access shall be provided along with the ability to customize the system to provide additional levels.
- F. A minimum of 100 unique passwords shall be supported.
- G. Operators shall be able to perform only those commands available for their respective passwords. Display of menu selections shall be limited to only those items defined for the access level of the password used to log-on.
- H. The system shall automatically generate a report of log-on/log-off and system activity for each user.
- I. All log data shall be available in .pdf, .txt, and .csv formats.

#### 5.09 USER INTERFACE - DYNAMIC COLOR GRAPHICS

- A. The graphics application program shall be supplied as an integral part of the User Interface.
- B. The graphics applications shall include a create/edit function and a runtime function. The system architecture shall support an unlimited number of graphics documents (graphic definition files) to be generated and executed.
- C. The graphics shall be able to display real-time data that is acquired, derived, or entered.
- D. Graphics runtime functions - Each graphic application shall be capable of the following functions:
- E. All graphics shall be fully scalable
- F. The graphics shall support a maintained aspect ratio.
- G. Multiple fonts shall be supported.
- H. Unique background shall be assignable on a per graphic basis.
- I. Operation from graphics - It shall be possible to change values (setpoints) and states in systems controlled equipment within the Web browser interface.
- J. Graphic editing tool - A graphic editing tool shall be provided that allows for the creation and editing of graphic files. The graphic editor shall be capable of performing/defining all runtime binding.

#### 5.10 HISTORICAL DATA COLLECTION

- A. All numeric, binary or data points in the system database shall allow their values to be logged over time (trend log). Each historical record shall include the point's name, a time stamp including time zone, and the point's value.
- B. The configuration of the historical data collection shall allow for recording data based on change of value or on a user-defined time interval.
- C. The configuration of the historical data collection shall allow for the collection process to stop or rollover when capacity has been reached.
- D. A historical data viewing utility shall be provided with access to all history records. This utility shall allow historical data to be viewed in a table or chart format.
- E. The history data table view shall allow the user to hide/show columns and to filter data based on time and date. The history data table shall allow exporting to .txt, .csv, or .pdf file formats.
- F. The historical data chart view shall allow different point histories to be displayed simultaneously, and also provide panning and zooming capabilities.

#### 5.11 AUDIT LOG

- A. For each log entry, provide the following data;
  - 1. Time and date
  - 2. User ID
  - 3. Change or activity: i.e., Change setpoint, add or delete objects, commands, etc.

#### 5.12 NETWORK AUTOMATION CONTROLLER (NAC) - FX80

The NAC must provide the following hardware features as a minimum:

- A. Communications
  - 1. Two 10/100 Mb Ethernet Port - RJ-45 connections
  - 2. One RS-485 port (up to 57,600 baud)
  - 3. Expandable communications ports including LON, RS485, Modem, Wireless Terminal Equipment Control
  - 4. All required protocol drivers as required by the sequence of operation.
- B. Battery Backup: Battery backup provided for all on board functions including I/O
  - 1. Battery is monitored and trickle charged
  - 2. Battery maintains processor operation through power failures for a pre-determined interval, and then writes all data to flash memory, shuts the processor down, and maintains the clock for three months.
  - 3. Environment Must be capable of operation over a temperature range of 32 °F to 122 °F.
  - 4. Must be capable of withstanding storage temperatures of between 32 °F to 140 °F.
  - 5. Must be capable of operation over a humidity range of 5% to 95% RH, non-condensing
- C. The Network Automation Controller (NAC) shall be a fully user-programmable device capable of providing all of the capability described in Section 2.3 Part A.
- D. Automation network - The Network Automation Controller (NAC) shall reside on the automation network. Each NAC shall support one or more sub-networks of controllers.
- E. The Network Automation Controller shall have the capability to communicate directly with Modbus without the use of an additional gateway.
- F. The Network Automation Controller shall have the capability to

provide secure communications via SSL (Secure Socket Layer).

- G. User Interface - Each Network Automation Controller (NAC) shall have the ability to deliver a web based user interface as previously described. All computers connected physically or virtually to the automation network shall have access to the web based UI.
- H. Power Failure - In the event of the loss of normal power, The Network Automation Controller (NAC) shall continue to operate for a defined period after which there shall be an orderly shutdown of all programs to prevent the loss of database or operating system software. Flash memory shall be incorporated for all critical controller configuration data.
- I. During a loss of normal power, the control sequences shall go to the normal system shutdown conditions.
- J. Upon restoration of normal power and after a minimum off-time delay, the controller shall automatically resume full operation without manual intervention through a normal soft-start sequence.
- K. Certification - All controllers shall be listed by Underwriters Laboratories (UL).

5.13 INPUT DEVICE CHARACTERISTICS General Requirements: Installation, testing, and calibration of all sensors, transmitters, and other input devices shall be provided to meet the system requirements.

- A. Temperature Sensors: Sensors and transmitters shall be provided, as outlined in the input/output summary and sequence of operations. The temperature sensor shall be of the resistance type and shall be either two-wire 1000 ohm nickel RTD, or two-wire 1000 ohm platinum RTD.
- B. Room Temperature Sensors: Room sensors shall be constructed for either surface or wall box mounting.
- C. Thermo wells: When thermo wells are required, the sensor and well shall be supplied as a complete assembly, including wellhead and Greenfield fitting. Thermo wells shall be pressure rated and constructed in accordance with the system working pressure. Thermo wells and sensors shall be mounted in a threadolet or ½-inch NPT saddle and allow easy access to the sensor for repair or replacement. Thermo wells shall be constructed of 316 stainless steel.
- D. Outside Air Sensors: Outside air sensors shall be designed to withstand the environmental conditions to which they will be exposed. They shall also be provided with a solar shield. Sensors exposed to wind velocity pressures shall be shielded by a perforated plate that surrounds the sensor element. Temperature transmitters shall be of NEMA 3R construction and rated for ambient temperatures.
- E. Control Relays: Control pilot relays shall be of a modular plug-in design with retaining springs or clips. Mounting bases shall be snap-mount. DPDT, 3PDT, or 4PDT relays shall be provided as appropriate for application. Contacts shall be rated for 10 amps at 120 VAC. Relays shall have an integral indicator light and check button. Acceptable manufacturers: Idec, Functional Devices
- F. Electronic/Pneumatic Transducers: Electronic to Pneumatic transducers shall provide: Output: 3-15 psig,
- G. Input: 4-20 mA or 0-10 VDC, manual output adjustment, pressure gauge external replaceable supply air filter. Acceptable manufacturers: Johnson Controls, Mamac

5.14 APPLICATION SPECIFIC CONTROLLERS

- A. Each FX-60 supervisory panel shall be able to extend its monitoring and control through the use of standalone Application Specific Controllers (ASCs).

- B. Each ASC shall operate as a standalone controller capable of performing its specified control responsibilities independently of other controllers in the network. Each ASC shall be a microprocessor-based, multi-tasking, real-time digital control processor.
  
- C. Each ASC shall have sufficient memory to support its own operating system and data bases including:
  - 1. Control Processes
  - 2. Energy Management Applications
  - 3. Operator I/O (Portable Service Terminal)
  
- D. The operator interface to any ASC point data or programs shall be through the FX-80 supervisory panel or portable operator's terminal connected to the ASC on the network.
  
- E. ASCs shall directly support the temporary use of a portable service terminal that can be connected to the ASC via zone temperature or directly at the controller. The capabilities of the portable service terminal shall include, but not be limited to, the following:
  - 1. Display temperatures
  - 2. Display status
  - 3. Display set points
  - 4. Display control parameters
  - 5. Override binary output control
  - 6. Override analog set points
  - 7. Modification of gain and offset constants

(END OF SECTION)

**DIVISION 16 - ELECTRICAL**

**SECTION 16010 - GENERAL PROVISIONS**

PART 1 - GENERAL

1.01 GENERAL

- A. Applicable provisions of the Conditions of the Contract shall govern the work of Division 16 and its related sections.
  
- B. Intent:
  - 1. The drawings and specifications are intended to provide for a complete and ready for operation electrical installation. However, both the drawings and specifications are for the Division 16 Contractor's guidance and are not intended to give every detail of the existing conditions or new installations nor do they describe every fitting required for the installation of the work. The Division 16 Contractor shall furnish, install, and place in workmanlike manner all equipment, accessories, supports, fittings, and all other material needed for the complete electrical installation. The Division 16 Contractor shall prepare such additional drawings as necessary or required for any purpose and shall submit them for the approval of the Engineer.
  
  - 2. Before submitting his proposal, the Division 16 Contractor shall be fully informed to the extent, character, and intent of the work to be done by him. No consideration will be granted for any misunderstanding of the material to be furnished or work to be performed. See also the applicable sections of the Conditions of the Contract.
  
- C. Verifying Existing Conditions:
  - 1. The Division 16 Contractor, before submitting his bid, shall examine the site to which this work is in any way dependent upon according to the intent of these specifications and accompanying drawings. He shall report to the Engineer, in writing, with his bid, any conditions which prevent him from performing his work. No "Waiver of Responsibility" for inadequate, incomplete, or defective work will be considered by the Engineer unless writing notice had been filed by the Division 16 Contractor with his bid.
  
- D. Cooperation:
  - 1. The work called for in this Specification and indicated on the accompanying drawings shall be carried on in conjunction with the continued operation of the building and shall be so arranged that its installation and operation will conform with and facilitate the early installation of the work.

2. The Division 16 Contractor shall bear the expense required to revise his work due to any failure to coordinate the installation of his work with that of the buildings operation.
3. The Division 16 Contractor shall be responsible for the distribution and information concerning his work as required for the prompt installation. The Division 16 Contractor will be held fully responsible for any delay in the work as to any information, etc. regarding his work as required. See also the applicable sections of the Conditions of the Contract.
4. The Division 16 Contractor shall assist the Owner in applying for any available rebates from manufacturer's, utility companies, etc. on equipment or materials installed under the contract. Provide all required documentation and assist in the completion of applications as required to complete the rebate process. All proceeds from rebates remain the property of the Owner.

E. Accessibility and Clearances:

1. The Division 16 Contractor shall inform himself fully regarding peculiarities and limitations of space for the installation the materials and equipment under Division 16. He shall verify all dimensions and conditions in the field and from rough-in drawings of the equipment manufacturer. No extra compensation will be allowed because of differences between actual dimensions and the sizes shown on the drawings.
2. The Division 16 Contractor shall see that all his equipment such as apparatus necessary to be reached from time-to-time for operation and maintenance are made easily accessible. All work shall be checked for interferences with beams, ducts, pipes, etc. prior to installation of any equipment.
3. Although the location of equipment may be shown on the drawings in a specific place, the construction of the building may disclose the fact that the location for this work does not make its position easily and quickly accessible. In such case, the Division 16 Contractor shall call the Engineer's attention to same before installing the work and shall be guided by the Engineer's instruction.

F. Protection of the Work:

1. The Division 16 Contractor shall effectively protect, at his expense, all materials and equipment, including his employees, during the period of construction and he shall be held responsible for all damage done to his work, until the same is fully accepted by the Architect. See also the applicable sections of the Conditions of the Contract.
2. The Division 16 Contractor shall exercise particular care insuring that work in progress, and notably switchgear,

shall not become wet from condensation or water for any source. Further, he shall protect work in progress from contamination, overspray, or other damage from other trades, including his own. All traces of such events shall be removed, remedied, or otherwise corrected to turn over the electrical system to the Owner in new condition.

G. Shop Drawings:

1. For Shop Drawing requirements, see the applicable sections of the Conditions of the Contract. In addition, The Division 16 Contractor shall submit all shop drawings within 30 days of signing Contract. Generally, all equipment and materials of the same classification, type, or kind shall be submitted at one time in a bound brochure. All shall include a minimum of special shop drawings and shall be accomplished by a written detailed sequence of operation together with schematic wiring diagrams which shall show the functions, facilities, operation, and inter-connections of the equipment. Shop drawing submission not including this information will not be considered. Any construction delays caused by failure to submit shop drawings on time or in the proper format shall be the responsibility of the Division 16 Contractor.
2. Engineer/Architect review of contractor submittals and shop drawings is for general conformance with the design concept of the project and for compliance with the information provided in the Contract Documents. The Contractor is responsible for confirming all quantities and fit. Engineer / Architect acceptance of quantities provided in the Contractor's Submission shall not be used as basis of Change Order.
3. Contractor submission of equivalent or substitute items other than those specified is at Contractor convenience only. If a substitution or equivalent is accepted, the Contractor shall coordinate the installation of the substitute or equivalent and make all associated changes required. The Contractor also waives any claim for additional costs associated with the substitute / equivalent which becomes apparent before, during or after installation. The Contractor agrees to bear any and all additional costs to all other contractors or subcontractors which are caused by the incorporation of the substitution / equivalent.

H. Guarantee:

1. For guarantee requirements, see the applicable section of the Conditions of the Contract.

1.02 SPECIAL CONDITIONS

- A. This Contractor, as well as subcontractors for his work, must carefully read the "Instructions to Bidder" and study the plans and specifications.
- B. It is the intention of these specifications and the drawings accompanying same that they shall provide for the furnishing and installing of the indicated items complete as specified and as shown. Any work on the drawings, particularly described in these specifications, or vice versa, or any work or change which may be evidently necessary to complete the installation shall be furnished by the Contractor as being included in this Contract.
- C. During the course of the work, should any ambiguities or discrepancies be found on the drawings or in the specification, to which the Contractor has failed call attention before submission of his bid, than the Engineer shall interpret the intent of the drawings and specifications, and the Contractor hereby agrees to abide by the Engineer's interpretation and agrees to carry out the work in accordance with the decision of the Engineer. It is expressly stipulated that neither the drawings nor the specifications shall take precedence, one over the other, and it is further stipulated that the Engineer may interpret or construe the drawings and specifications of the work, and of that question, the Engineer shall be the sole judge.
- D. This Contractor shall provide and erect all sheds for the storage of his materials and provide temporary office for plans, details, records, etc. He shall furnish all scaffolding and equipment required for the installation of his work.
- E. Where no specified kind or quality of material is given, a first class standard article as approved by the Engineer shall be furnished. The drawings and specifications do not undertake to illustrate or set every item necessary for the work, as it is assumed that the Contractor is expert in the several lines of the work and is capable of interpreting them.
- F. Small details not usually shown or specified but necessary for a proper installation and finishing shall be included in the Contractor's estimate, the same as if hereby specified or shown.
- G. This Contractor assumes the responsibility to fit his equipment into every space regardless of discrepancies in the plans and/or specifications unless he notified the Engineer in writing, prior to the acceptance of his bid, of these discrepancies.

#### 1.03 WORK INCLUDED

- A. These specifications and the accompanying drawings are intended to include the furnishings of all labor, materials, tools, hoists, transportation, equipment apparatus, and all required appurtenances and incidental auxiliaries necessary for the installation of the electrical work in a safe, substantial, workmanlike manner, complete in every detail, tested, programmed and ready for satisfactory operation.

- B. Any equipment called for in these specifications and not shown on the drawings and vice versa shall be furnished and installed complete as would any equipment both specified and shown. Generally, the work under Division 16 shall include, but shall not necessarily be limited to, the following items. Omission of specific items shall not be construed as being omitted from Division 16.

#### 1.04 CODES, PERMITS, AND CERTIFICATES

- A. All work, material, and equipment under Division 16 shall comply with the current applicable requirements of an approved electrical construction agency serving the locale of the project, the service utility company, all State and Municipal agencies having jurisdiction, UL label equipment requirement, and to the 2017 edition of the National Electrical Code / NFPA 70.
- B. Before submitting his bid, the Division 16 Contractor shall familiarize himself with the rules of all herein before mentioned Boards, Departments, Agencies, etc. having jurisdiction, and he shall notify the Engineer with his bid, if in his opinion any work or materials specified is contrary to any such rules. Otherwise, the Division 16 Contractor shall be responsible for the approval of all work or materials and in case the use of any material specified is not permitted, a substitute approved by the authorities and by the Engineer shall be furnished and installed without additional cost to the Owner.
- C. The Division 16 Contractor shall procure and pay for all necessary drawings, permits, and certificates required by the various governing agencies having jurisdiction and shall turn over to the Engineer all permits for construction before starting work and certificates of test, inspection, and approval before requesting payment.

#### 1.05 TESTS

- A. All tests required by the National Electrical Code, approved Electrical Inspection Agencies, State and Local Authorities, the servicing Utility Company, and the Engineer shall be executed by or paid for by the Division 16 Contractor. Furnish all labor, material, and instruments for each test. All major tests shall be witnessed by the Engineer and/or the Authority having jurisdiction, all of whom shall be given a minimum of one week's written notice prior to such tests.
- B. During the course of work and prior to final acceptance, all such tests shall be made as specified above and as to the Engineer deems necessary to insure that the Electrical Work meets with the intent of these specifications and is approved by the Authority having jurisdiction. Should the tests show that any of the material, apparatus, or workmanship is not first class or not in compliance with these requirements, the Division 16 Contractor, on notice from the Engineer shall remove same and promptly replace them with other materials and apparatus in conformity to the requirements.

- C. All circuit work, throughout, on all systems shall be tested for grounds and short circuits, prior to being energized, and all work shall be left in first class operating condition when energized. All other tests shall be as specified above and/or specified elsewhere herein.
- D. Tests of electrical work shall be made as equipment is installed.
- E. Provide complete functional testing and documentation of installed lighting controls in accordance with NYECC Section C408.3.

1.06 DEMONSTRATION OF THE COMPLETED ELECTRICAL WORK

A. Instruction Demonstration:

- 1. The Division 16 Contractor shall be fully responsible for the instructing of the Owner's designated personnel in the operation and maintenance of the all equipment furnished by him. All costs required for such instruction and demonstration shall be paid for by the Division 16 Contractor. Such instruction shall take place in the presence of the Engineer's representative, upon completion of the work, when the Division 16 Contractor and his equipment manufacturers and/or vendors shall arrange a demonstration of all electrical systems and equipment for the Owner's design representatives and shall furnish for their use, Engineer approved, printed and bound copies of all operation and maintenance construction manuals. Included in these manuals shall be one (1) copy of all previously submitted and Engineer "Approved" or "Approved as Noted" shop drawings ("Approved as Noted" shop drawings must first be permanently corrected). Informal or non-Engineer witnessed instructions or instructions to non-designed Owner personnel shall not be recognized as fulfilling these requirements.

B. Final:

- 1. The Division 16 Contractor shall, before payment is received, clean the installed electrical equipment; he shall assure that all guarantees and record drawings, have been prepared and approved; that all instructions have been given and that all demonstrations have taken place.

**END OF SECTION**

**GENERAL CONSTRUCTION NOTES:**

- GENERAL CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS PRIOR TO BIDDING & PROCEEDING WITH WORK. NOTIFY ARCHITECT OF ANY DISCREPANCIES IN WRITING PRIOR TO START OF WORK.
- IN ACCORDANCE WITH STATE AND LOCAL CODES, THE REQUIRED EXITS IN THE EXISTING BUILDING MUST BE KEPT CLEAR, MAINTAINED AND PROTECTED DURING THE CONSTRUCTION PERIOD.
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS REQUIRED FOR ESTIMATING.
- ALL WORK AND MATERIAL OF THIS PROJECT AND ADJACENT SURFACES SHALL BE PROTECTED FROM DAMAGE. IN THE EVENT OF DAMAGE, THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REPAIRS AND REPLACEMENT NECESSARY TO THE APPROVAL OF THE ARCHITECT AND OWNER AND AT NO ADDITIONAL COST TO OWNER.
- CONTRACTOR SHALL PROTECT ALL AREAS OF WORK FROM INCLEMENT WEATHER DURING AND AT THE END OF DAILY WORK OPERATIONS.
- ALL PROJECT WASTE MATERIAL AND RUBBISH SHALL BE DISPOSED IN CONTAINERS PROVIDED BY THE CONTRACTOR FOR SUBSEQUENT LEGAL OFF-SITE DISPOSAL. CONTAINER LOCATION TO BE COORDINATED WITH THE OWNER & CONSTRUCTION MANAGER. OFF-SITE DISPOSAL TO BE ON A REGULAR BASIS.
- ALL INTERIOR SURFACES DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED AND/OR REPLACED TO MATCH EXISTING CONDITIONS TO THE APPROVAL OF THE ARCHITECT AND OWNER.
- ALL DEBRIS, DUST AND DIRT CAUSED BY WORK OF THIS CONTRACT SHALL BE REMOVED FROM SITE BY APPROPRIATE MEANS. RESTORE ALL CONDITIONS TO THE STATE OF CLEANLINESS THAT EXISTED PRIOR TO COMMENCEMENT OF WORK.
- ALL DEMOLITION AND CONSTRUCTION WORK TO BE PERFORMED WITHOUT INTERRUPTION OF OWNER OPERATIONS. IF INTERRUPTION IS NECESSARY, WORK MUST NOT PROCEED UNTIL WRITTEN APPROVAL HAS BEEN OBTAINED FROM OWNER.
- ALL CONTRACTORS ARE TO COORDINATE INSTALLATION OF THEIR WORK WITH EACH OTHER AND WITH THE WORK BEING PERFORMED UNDER SEPARATE CONTRACTS BY OTHERS.

**CODE COMPLIANCE NOTES:**

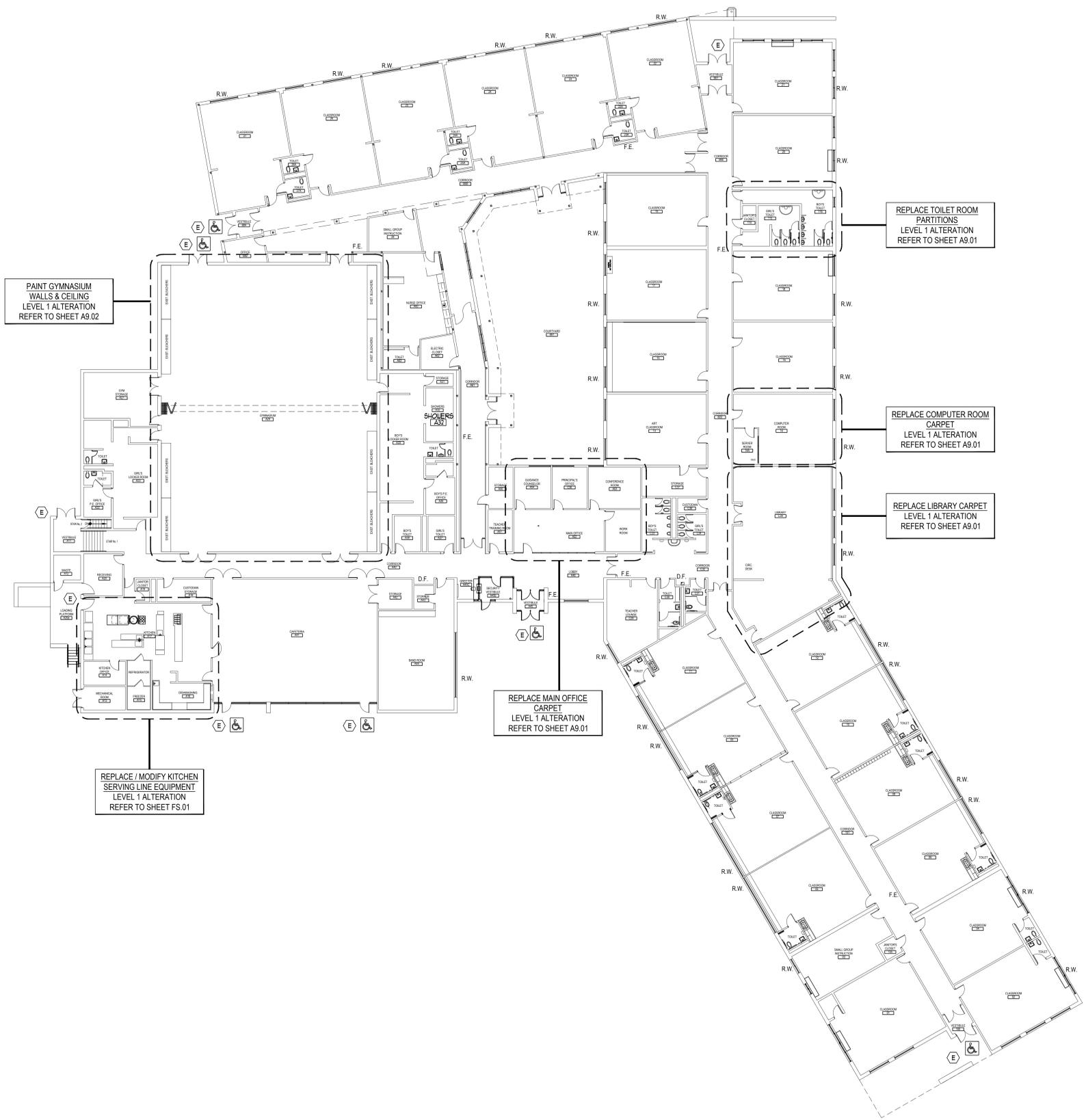
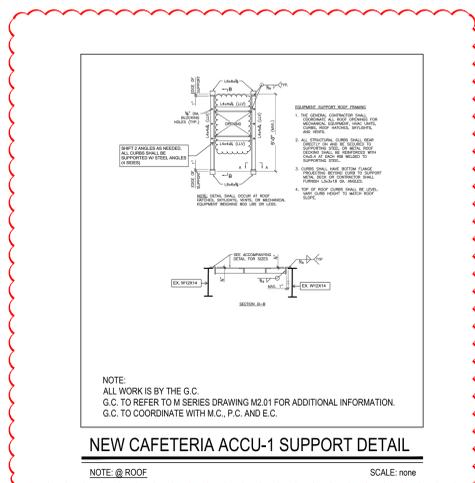
- BUILDING OCCUPANCY CLASSIFICATION: GROUP E
- CONSTRUCTION CLASSIFICATION - EXISTING: TYPE 2B
- CONSTRUCTION CLASSIFICATION - NEW: TYPE 2B
- HEIGHT IN STORES:  
EXISTING: 1  
NEW: N.A.
- NEW FINISHES SHALL BE CLASS 'A'.

**LEGEND:**

F.E. EXISTING FIRE EXTINGUISHER  
 D.F. EXISTING DRINKING FOUNTAIN  
 R.W. EXISTING RESCUE WINDOW  
 ACCESSIBLE ENTRANCE / EXIT  
 INDICATES BUILDING EXIT

**CONTRACTORS NOTE**

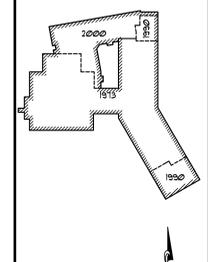
ALL CONTRACTORS SHALL REFER TO ALL DRAWINGS FOR ANY ADDITIONAL WORK SCOPE NOT INDICATED ON THIS DRAWING



REV.	DATE	ITEM
01	03/30/21	BID ADD. NO. 01

**NOTICE**

THESE DRAWINGS ARE BASED ON CONSTRUCTION DRAWINGS NOT PREPARED BY BBS ARCHITECTS, LANDSCAPE ARCHITECTS AND ENGINEERS, P.C. AND THEREFORE, MAY NOT REPRESENT THE CONDITIONS AS CONSTRUCTED AT THE TIME. ALL EXISTING INFORMATION AS THEY HAVE NOT BEEN BUILT AND DETAIL PER THE ORIGINAL DOCUMENTS OR PER THE OWNER'S INFORMATION.



KEY PLAN  
NOT TO SCALE

PROJECT: FLORIDA UNION FREE SCHOOL DISTRICT  
 BOND PHASE 2  
 GOLDEN HILL ELEMENTARY SCHOOL  
 ORANGE COUNTY, TOWN OF WARWICK, VILLAGE OF FLORIDA, NEW YORK 10321

DWG TITLE: OVERALL KEY PLAN

DRAWING BY: PJG  
 CHECK BY: KGS

**NOTICE**

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SED No: 44-21-15-02-0-004-013  
 DISTRICT: FLORIDA U.F.S.D. GOLDEN HILL E.S.  
 PROJECT: BOND PHASE 2  
 DWG TITLE: OVERALL KEY PLAN  
 SCALE: AS NOTED  
 DATE: DECEMBER 1, 2020  
 BID PICK-UP: March 15, 2021  
 FILE No: 20-176A

A0.01 OF ---

NOTE:  
MC IS RESPONSIBLE TO REMOVE AND RE-INSTALL EXISTING DROP CLG. IN ORDER TO PERFORM NEW WORK

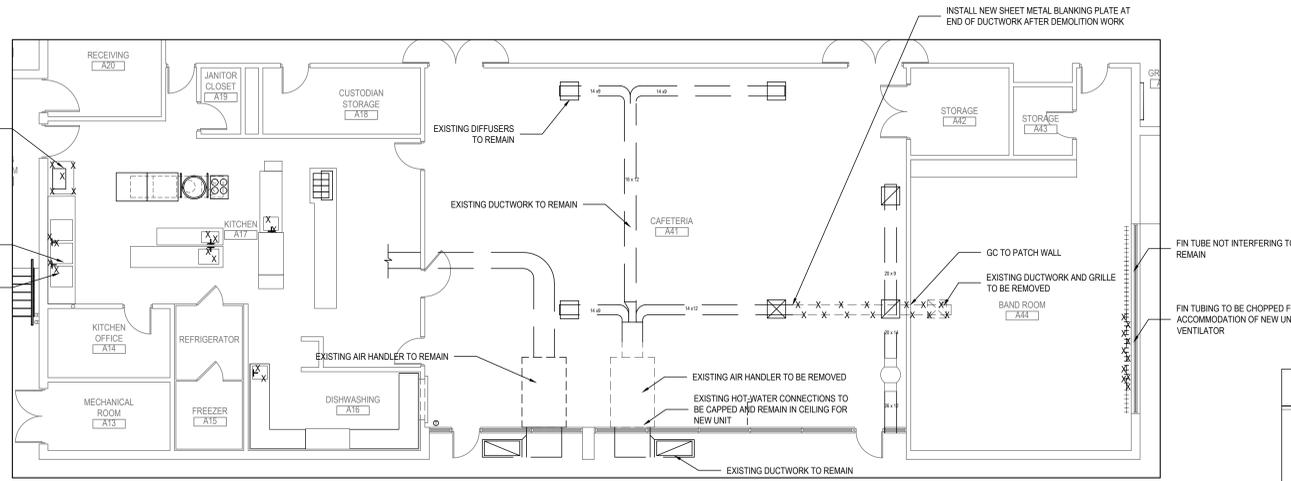
**CAFETERIA DUCTWORK WORK SCOPE NOTES:**

1. MC TO REFER TO PROJECT MANUAL SPECIFICATIONS SECTION FOR DETAILS OF DUCT CLEANING PROCEDURES, METHODS, CERTIFICATIONS ETC.
2. EXISTING DUCTWORK LOCATED IN THE CAFETERIA IS WITHIN 1ST FLOOR CLG. APPROX. 12'-0" A.F.F.
3. MC SHALL BE RESPONSIBLE TO CLEAN ALL DUCTWORK SHOWN ON THE PLANS ON THIS DRAWING UNLESS OTHERWISE NOTED.
4. MC SHALL PROVIDE NEW TESTING & BALANCING REPORTS TO ENGINEER OF RECORD AFTER CLEANING OF ALL DUCTWORK.

GC TO REMOVE EXISTING GREASE TRAP

GC TO REMOVE ONLY FAUCETS AT SPECIFIED LOCATIONS TYP. 6

EXISTING STUB-UPS TO REMAIN



**CAFETERIA AND BAND DEMO WORK**

NOTE: @ 1ST FLOOR

SCALE: 1/8" = 1'-0"

THERE IS AN ENERGY SERVICES CONTRACTOR (ESCO) IMPLEMENTING AN EPC THROUGHOUT THE FLORIDA UFSD. THE MECHANICAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING ALL WORK WITH THE ESCO. INCLUDED IN THE EPC IS CONTROLS WORK. THE BMS WILL BE A JOHNSON FX SYSTEM. THE ESCO WILL BE TYING IN EQUIPMENT INSTALLED UNDER THIS PROJECT TO THE BMS. ALL CONTROLS PROVIDED UNDER THIS BOND PROJECT SHALL BE CAPABLE OF BEING SEAMLESSLY INTEGRATED TO THE JOHNSON SYSTEM.

**General Notes**

1. REMOVAL & RELOCATION OF CERTAIN EXISTING WORK SHALL BE NECESSARY FOR THE PERFORMANCE OF THE NEW WORK SHOWN HEREIN. ALL EXISTING CONDITIONS ARE NOT COMPLETELY DETAILED ON THE DRAWINGS. THE CONTRACTOR SHALL SURVEY THE SITE & MAKE ALL NECESSARY CHANGES BASED ON EXISTING CONDITIONS AS REQUIRED FOR PROPER DEMOLITION OF EXISTING WORK & SHALL INCLUDE ALL MATERIALS & LABOR FOR SAME IN HIS BID PRICE. NO ALLOWANCE WILL BE MADE FOR FAILURE TO DO SO.
2. PRIOR TO SUBMITTING A BID, THE CONTRACTOR SHALL VISIT THE PREMISES OF THE PROPOSED WORK & SHALL CAREFULLY EXAMINE THE ENGINEERING DRAWINGS, EXISTING CONDITIONS & LIMITATIONS THEREOF. VERIFY ACTUAL CONDITIONS WHERE THE NEW PIPING WILL BE ROUTED, COORDINATE WITH NEW & EXISTING WORK & PROVIDE CLEARANCE IN BUILDING STRUCTURE, OTHER SERVICES, ETC. THE CONTRACTOR SHALL INCLUDE ALL COSTS WHATSOEVER WHICH ARE INCURRED AS A RESULT OF LIMITATIONS OF THE EXISTING & NEW CONDITIONS. LATER CLAIMS FOR EXTRA LABOR, EQUIPMENT, MATERIALS, ETC. REQUIRED DUE TO DIFFICULTIES WHICH COULD HAVE BEEN FORESEEN WILL NOT BE CONSIDERED AS EXTRA WORK.
3. INSTALL WORK SO AS TO BE READILY ACCESSIBLE FOR OPERATING, MAINTENANCE & REPAIR. MINOR DEVIATIONS FROM DRAWINGS MAY BE MADE TO ACCOMPLISH THIS, BUT CHANGES OF MAGNITUDE WHICH INVOLVE EXTRA COST SHALL NOT BE MADE WITHOUT APPROVAL.
4. INVESTIGATE EACH SPACE THROUGH WHICH EQUIPMENT MUST BE MOVED. WHEN NECESSARY, EQUIPMENT SHALL BE SHIPPED FROM MANUFACTURER IN CRATED SECTIONS OF SIZE SUITABLE FOR MOVING THROUGH AREAS AVAILABLE. ASCERTAIN FROM BUILDING OWNER AT WHAT TIMES OF DAY EQUIPMENT MAY BE MOVED THROUGH THE BUILDING.
5. COORDINATE THE EXACT SIZE & LOCATION OF NEW OPENINGS WITH EXISTING STRUCTURE. PATCH / INSULATE AS REQUIRED. CONTRACTOR SHALL FRESTOP ALL PENETRATIONS FROM NEW PIPING, CONDUIT, DUCTWORK, ETC. THROUGH EXISTING OR NEW FIRE SMOKE BARRIERS. REFER TO SPECIFICATION SECTION 15111 FOR FURTHER DETAILS.
6. IT IS THE INTENT OF THIS CONTRACT FOR REMAINING SYSTEMS TO BE LEFT IN GOOD WORKING ORDER, READY FOR OPERATION. COORDINATE ANY REQUIRED SYSTEM SHUTDOWNS WITH OWNER 48 HOURS IN ADVANCE. EXISTING SYSTEM SHUTDOWNS WILL NOT BE PERMITTED IF THEY INTERFERE WITH THE DAILY OPERATIONS OF THE BUILDING. CONTRACTOR WILL BE REQUIRED TO TAKE PROPER PRECAUTIONS AGAINST DAMAGING OR DISRUPTING BUILDING SYSTEMS, WIRING, PIPING OR CONTROL TUBING. ANY DAMAGE TO THESE ITEMS SHALL BE REPAIRED AT THE CONTRACTOR'S COST AS A PART OF THIS CONTRACT.
7. THE CONTRACTOR SHALL REPAIR / RESTORE TO ORIGINAL CONDITION ANY EXISTING EQUIPMENT OR MATERIALS DAMAGED IN THE PROCESS OF INSTALLATION, OR DEMOLITION TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE. CONTRACTOR SHALL MAKE REPAIRS USING THE SAME OR EQUIVALENT MATERIALS. WORK WILL BE PERFORMED AT THE CONTRACTOR'S COST.
8. CONTRACTOR SHALL INCUR ANY COSTS OR BURDENS ASSOCIATED WITH LOST OR STOLEN EQUIPMENT / MATERIALS.
9. DURING THE LIFE OF THE CONTRACT PERIOD, CONTRACTOR SHALL REMOVE ALL RUBBISH / EXCESS MATERIAL ACCUMULATED AS A RESULT OF HIS OPERATIONS ON A DAILY BASIS. ALL AREAS / EQUIPMENT AFFECTED UNDER THIS CONTRACT SHALL BE KEPT CLEAN OF DUST / DEBRIS. ALL AREAS SHALL RECEIVE A FINAL CLEANING PRIOR TO FINAL ACCEPTANCE BY THE OWNER.
10. PROVIDE FOR LEGAL REMOVAL / DISPOSAL OF ALL RUBBISH / DEBRIS FROM THE BUILDING & SITE. PROTECT ALL WORK NOT SLATED FOR DEMOLITION.
11. THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO SCHEDULING THE WORK. WORK SHALL BE PERFORMED IN PROPER SEQUENCE, AS AGREED TO BY ALL TRADES. ANY COSTS INCURRED BY THE OWNER DUE TO IMPROPER SEQUENCING OF WORK WILL BE PAID FOR BY THIS CONTRACTOR.
12. CONTRACTOR SHALL OBTAIN ALL PERMITS, PAY ALL FEES, CONNECTION CHARGES, ETC. ASSOCIATED WITH THE WORK UNDER THIS CONTRACT.
13. PAINT / TOUCH UP ALL SURFACES MARRED AS A RESULT OF THE PERFORMANCE OF THE CONTRACT WORK.
14. THE MECHANICAL CONTRACTOR SHALL REFER TO / REVIEW ALL OTHER TRADE DRAWINGS IN THE BID PACKAGE & SHALL BE RESPONSIBLE FOR / PERFORM ALL WORK INDICATED AS (M.C.) MECHANICAL WORK AS A PART OF THE BASE BID UNLESS SPECIFICALLY NOTED OTHERWISE.
15. SUBSTITUTED EQUIPMENT OF GREATER OR LARGER POWER, DIMENSIONS, CAPACITIES & RATINGS MAY BE FURNISHED PROVIDED THAT SAID EQUIPMENT IS APPROVED IN WRITING PRIOR TO ORDER. ANY CONNECTING MECHANICAL SERVICES, ELECTRICAL SERVICES, BASES, STRUCTURAL APPURTENANCES, ETC. REQUIRED TO BE INCREASED DUE TO THE USE OF SAID EQUIPMENT WILL BE PAID FOR IN FULL BY THE MECHANICAL CONTRACTOR, INCLUDING ANY ADDITIONAL REQUIRED ENGINEERING FEES.

**Testing + Balancing Notes**

MECHANICAL CONTRACTOR WILL BE REQUIRED TO PERFORM ALL EQUIPMENT & SYSTEM TESTING / BALANCING REQUIRED UNDER THIS CONTRACT. PROVIDE A FULL REPORT DETAILING ALL DESIGN & ACTUAL CONDITIONS FOR ALL AIR & HYDRONIC SYSTEMS SHOWN ON THE DRAWINGS. REFER TO SPECIFICATION SECTIONS 15998 & 15997 FOR FURTHER DETAILS.

UPON NOTICE OF COMPLETION OF WORK BY THE CONTRACTOR, OWNER WILL OBTAIN THE SERVICES OF AN INDEPENDENT TESTING & BALANCING CONTRACTOR TO VERIFY THE RESULTS OF THE TESTING & BALANCING REPORT SUBMISSION. INDEPENDENT TESTING AGENCY SHALL SELECT A RANDOM NUMBER OF MEASUREMENTS TO BE CHECKED. MEASUREMENTS WILL BE CHECKED IN THE SAME MANNER AS ORIGINALLY MEASURED. NUMBER OF VERIFICATION MEASUREMENTS SHALL BE APPROXIMATELY 25% OF THE TOTAL MEASUREMENTS FOR THE PROJECT.

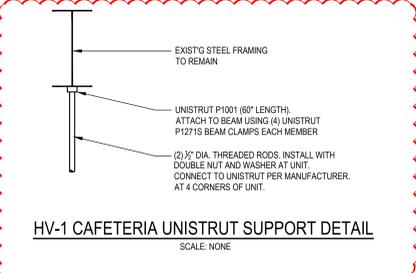
IF MORE THAN 10% OF THE VERIFICATION TESTING SHOWS DEVIATIONS OF 10% OR MORE / SOUND LEVEL OF 2dB DIFFERENT THAN THAT ORIGINALLY MEASURED, THE ORIGINAL REPORT WILL BE REJECTED. ALL SYSTEMS WILL THEN BE REQUIRED TO BE COMPLETELY RE-TESTED WITH A SECOND REPORT SUBMITTED. IN THE EVENT THAT THE ORIGINAL REPORT IS REJECTED, ALL SYSTEMS SHALL BE RE-TESTED A TESTED, NEW CERTIFIED REPORTS SUBMITTED, AND NEW VERIFICATION TESTS MADE, AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL COSTS INVOLVED WITH THE VERIFICATION TESTS.

**Firestopping Notes**

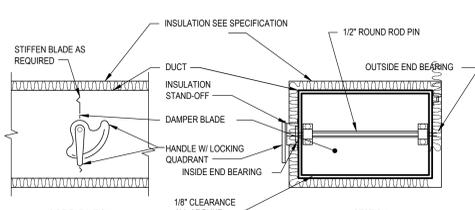
1. ALL PENETRATIONS RELATED TO MECHANICAL WORK THROUGH FIRE RATED WALLS, FLOORS OR OTHER STRUCTURES SHALL BE FIRE STOPPED AS REQUIRED TO MAINTAIN THE RATING OF THE WALL BY MECHANICAL CONTRACTOR. IT IS ASSUMED THAT ALL WALLS IN THE CONSTRUCTION CARRY A MINIMUM FIRE RATING OF 1 HR. IT SHOULD BE ASSUMED THAT ALL MACHINE ROOM WALLS / BOILER ROOM WALLS / ELECTRIC ROOM WALLS CARRY A RATING OF 2 HR. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR A COMPLETE REVIEW OF THE ARCHITECTURAL DRAWINGS IN ORDER TO DETERMINE FIRE RATINGS OF ALL WALLS / PARTITIONS RELATED TO WORK UNDER THIS CONTRACT.
2. MECHANICAL CONTRACTOR SHALL REVIEW THE COMPLETE ARCHITECTURAL SET OF DRAWINGS IN ORDER TO DETERMINE WHERE DUCT PENETRATIONS THROUGH RATED BARRIERS. DUCTS PENETRATING SAID RATED BARRIERS SHALL BE EQUIPPED WITH A UL LISTED FIBRILE LINK TYPE FIRE DAMPER, RATED FOR SERVICE FOR WHICH IT IS BEING USED. FIRE DAMPERS SHALL BE PROVIDED & INSTALLED BY THE MECHANICAL CONTRACTOR, COMPLETE W/ DUCT ACCESS DOORS DIRECTLY ADJACENT TO THE DAMPER, POSITIONED FOR EASY REPLACEMENT OF THE LINK.
3. MECHANICAL CONTRACTOR SHALL REVIEW THE COMPLETE ARCHITECTURAL SET OF DRAWINGS IN ORDER TO DETERMINE WHERE DUCT PENETRATIONS THROUGH RATED BARRIERS OCCUR BETWEEN SEPARATE SMOKE ZONES. DUCTS PENETRATING SAID FIRE / SMOKE BARRIERS SHALL BE EQUIPPED WITH A UL LISTED COMBINATION FIRE / SMOKE DAMPER, RATED FOR SERVICE FOR WHICH IT IS BEING USED. FIRE / SMOKE DAMPERS SHALL BE PROVIDED & INSTALLED BY THE MECHANICAL CONTRACTOR, COMPLETE W/ DUCT ACCESS DOORS DIRECTLY ADJACENT TO THE DAMPER. DAMPER ACTUATOR & RELATED WIRING SHALL BE PROVIDED & INSTALLED BY THE ELECTRICAL CONTRACTOR. COORDINATE DAMPER INSTALLATIONS W/ E.C. TO VERIFY PROPER CLEARANCES TO ASSURE PROPER DAMPER OPERATION.
4. MECHANICAL CONTRACTOR SHALL PROVIDE A FULL SET OF AS-BUILT DRAWINGS, SHOWING EACH DAMPER LOCATION, TYPE OF DAMPER, ACCESS DOOR LOCATIONS, ETC. CONTRACTOR SHALL REFER TO SPECIFICATION SECTION 15111 FOR FURTHER DETAILS REGARDING FIRESTOPPING MATERIALS & METHODS.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF PRODUCTS TO BE USED. FIRESTOP MATERIALS OTHER THAN THE PRODUCTS SPECIFIED SHALL INCLUDE FULL TECHNICAL DATA WITH SHOP DRAWINGS TO DEMONSTRATE EQUALITY WITH THE SPECIFIED FIRESTOPPING MATERIALS.

**General Instrumentation**

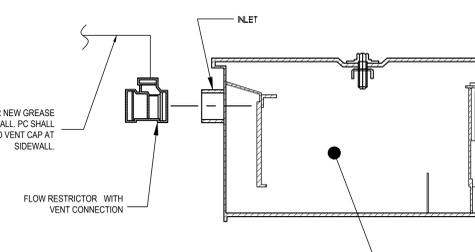
1. AT A MINIMUM, PROVIDE THERMOMETERS / WELLS AT THE FOLLOWING LOCATIONS:
  1. AT INLETS & OUTLET OF EACH THREE WAY VALVE (UNIT VENTILATORS / CABINET UNIT HEATER INSTALLATIONS EXCEPTED).
  2. AT INLET & OUTLET OF EACH HYDRONIC BOILER, CHILLER OR COOLING TOWER.
  3. AT INLET & OUTLET OF EACH HYDRONIC COIL IN AIR HANDLING UNITS & BUILT-UP CENTRAL SYSTEMS.
2. AT A MINIMUM, PROVIDE LIQUID FILLED PRESSURE GAUGES / WELLS AT THE FOLLOWING LOCATIONS:
  1. AT SUCTION & DISCHARGE OF EACH PUMP.
  2. FOR EACH MAKEUP WATER LINE.
  3. BEFORE & AFTER ALL PRESSURE REDUCING VALVES.
  4. AT ACCESSIBLE HIGH POINT OF ALL HYDRONIC PIPING SYSTEMS.
  5. AT ALL EXPANSION / COMPRESSION TANKS.



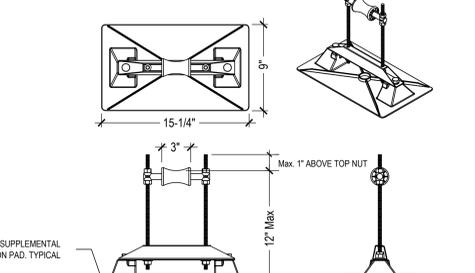
**HV-1 CAFETERIA UNISTRUT SUPPORT DETAIL**  
SCALE: NONE



**TYPICAL VOLUME DAMPER INSTALLATION DETAIL**  
SCALE: NONE



**GREASE TRAP DETAIL (GT-1)**  
NOT TO SCALE



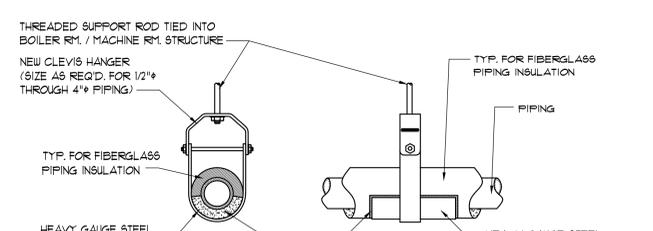
**ROOF PIPING PENETRATION DETAIL**  
NOT TO SCALE

**ROOF MTD. PIPING SUPPORT**

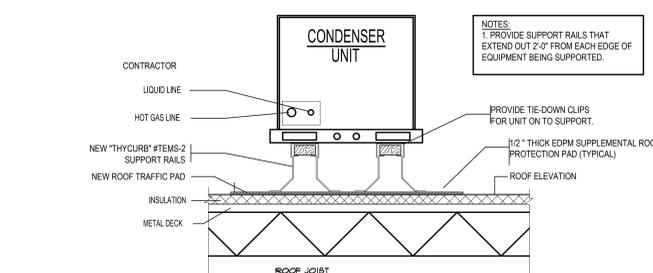
NOT TO SCALE

**ROOF WORK NOTE**

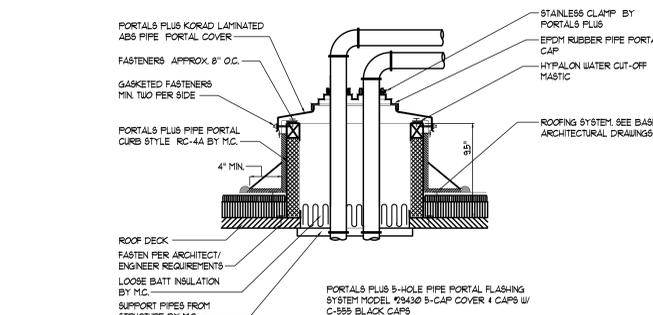
M.C. TO VERIFY WITH OWNER THE EXISTENCE OF EXISTING ROOF WARRANTY. M.C. TO HIRE A ROOF INSTALLER CERTIFIED TO INSTALL & PATCH THE EXISTING ROOF SYSTEM. M.C. SHALL CONTACT THE ROOF SYSTEM MANUFACTURER AND PROVIDE A LETTER STATING THAT THE REPAIRS HAVE BEEN MADE IN ACCORDANCE WITH MANUFACTURER REQUIREMENTS AND HAVE NOT VOIDED ANY EXISTING WARRANTIES. CONTRACTOR SHALL PROVIDE CERTIFICATE STATING THAT THE ROOF HAS BEEN INSPECTED BY A REPRESENTATIVE OF THE WARRANTY ISSUER.



**CLEVIS HANGER PIPING SUPPORT DETAIL**  
SCALE: NONE



**CONDENSING UNIT SUPPORT DETAIL**  
NOT TO SCALE



**ROOF PIPING PENETRATION DETAIL**  
NOT TO SCALE

**PLUMBING GENERAL NOTES**

1. PLUMBING CONTRACTOR SHALL VISIT THE SITE PRIOR TO SUBMITTING HIS BID AND PERFORM ALL INVESTIGATION WORK BEFORE SUBMITTING A BID ON THE PLUMBING WORK.
2. CONNECT ALL HOT WATER, COLD WATER, VENT, AND WASTE PIPING AS REQUIRED INCLUDING PIPING, VALVES, TAPS, ESCUTOCHONS, SLEEVES, ACCESS DOORS, CLEANOUTS, PIPE HANGERS, INSULATION, ETC.
3. PROVIDE AND INSTALL PLUMBING FIXTURES INCLUDING ALL CUTTING AND PATCHING AS REQUIRED INCLUDING WASTE, VENT, AND WATER SUPPLY CONNECTIONS AND FITTINGS (ALL TRAPS TO HAVE CLEANOUTS).
4. ALL WORK SHALL BE IN ACCORDANCE WITH STATE AND LOCAL BUILDING CODES. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND PAYING RELATED FEES.
5. PLUMBING CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES PRIOR TO CONSTRUCTION.
6. INTERIOR DOMESTIC WATER PIPING SHALL BE TYPE "L" COPPER. UNDERGROUND DOMESTIC WATER PIPING SHALL BE TYPE "K" COPPER FOR UP TO 2" AND DUCTILE IRON OVER 2". WASTE PIPING SHALL BE SERVICE WEIGHT CAST IRON SOIL PIPE, HUB AND SPOUT, UNDERGROUND, AND NO HUB INSIDE BUILDING. STORM DRAIN PIPING SHALL BE NO HUB CAST IRON SOIL PIPE INSIDE BUILDING. VENT PIPING SHALL BE NO HUB CAST IRON.
7. ALL WORK SHALL BE PROPERLY TESTED AND CLEANED. PROVIDE ONE YEAR WARRANTY FROM DATE OF ACCEPTED COMPLETION ON ALL PARTS AND LABOR.
8. ALL EXPOSED METALWORK ON PLUMBING FIXTURES SHALL BE CHROME PLATED.
9. PROVIDE SHUTOFF VALVE ON WATER SUPPLY BRANCH TO EACH INDIVIDUAL FIXTURE IN AN ACCESSIBLE LOCATION.
10. ALL WORK SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
11. WHERE DISSIMILAR METALS ARE CONNECTED, PROVIDE AN APPROVED MAKE OF NON-GALVANIC ISOLATOR, DIELECTRIC UNION OR FLANGES.
12. P.C. SHALL PROVIDE AND INSTALL PIPE INSULATION ON ALL DOMESTIC COLD WATER SUPPLY, HOT WATER SUPPLY, HOT WATER SUPPLY (RECIRCULATION LINE) AND ROOF DRAIN PIPING THAT IS EXPOSED ABOVE CEILING OR IN CRAWL SPACE AND PIPE CHASES.

NOTE: BIDDING CONTRACTORS ARE RESPONSIBLE FOR ALL WORK SHOWN ON ALL DRAWINGS THAT ARE DESCRIBED AS WORK UNDER THEIR CONTRACT. REVIEW ALL TRADE DRAWINGS PRIOR TO SUBMITTING A BID.

**PLUMBING DEMO & NEW WORK NOTES**

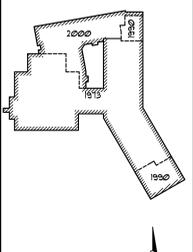
- DEMOLITION**
1. GENERAL CONTRACTOR SHALL DISCONNECT AND COMPLETELY REMOVE AND DISCARD EXISTING TOILETS, URINALS & LAVATORIES AS INDICATED.
  2. ALL WATER SUPPLY AND SANITARY PIPING TO EXISTING PLUMBING FIXTURES SHALL BE COMPLETELY REMOVED BACK TO CHASE WALL EXCEPT AT LOCATIONS WHERE FIXTURES ARE TO BE REPLACED WITH NEW. PLUMBING CONTRACTOR SHALL BE RESPONSIBLE TO REPLACE PIPE INSULATION.
- NEW WORK**
1. PLUMBING CONTRACTOR SHALL PROVIDE AND INSTALL NEW FIXTURES AS SHOWN IN PLUMBING FIXTURE SCHEDULE ON THIS DWG.
  2. CONNECT VENT PIPING TO EXISTING VENTS.
  3. SEE GENERAL NOTES AND PLUMBING SPECIFICATIONS SECTION 15A FOR MORE DETAIL.
  4. DEMOLITION AND RECONSTRUCTION OF PLUMBING WALLS BY GENERAL CONTRACTOR. PLUMBING CONTRACTOR TO COORDINATE WITH GENERAL CONTRACTOR.
  5. IN ALL INSTANCES WHERE NEW FIXTURES ARE PROPOSED THE GENERAL CONTRACTOR SHALL PERFORM ALL DEMOLITION REQUIRED FOR REMOVAL OF EXISTING FIXTURE CARRIERS AND INSTALL NEW FIXTURE CARRIERS. GENERAL CONTRACTOR SHALL THEN BUILD/PATCH MASONRY WALLS AS REQUIRED INCLUDING NEW TILE FINISHES. UPON COMPLETION OF MASONRY/TILE THE PLUMBING CONTRACTOR SHALL INSTALL NEW FIXTURES PER SPECIFICATIONS.
  6. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONAL LOCATIONS OF NEW PLUMBING FIXTURES.

**EPA 67.4 NOTE:**

1. THE PLUMBING CONTRACTOR SHALL PROVIDE AND INSTALL NEW AND/OR REPLACEMENT PLUMBING FIXTURES. THE RESPECTIVE FIXTURES MUST ADHERE TO THE "LEAD-FREE" DIVISION 15A SPECIFICATIONS OUTLINING THE INSTALLATION MEANS AND METHODS AS WELL AS THE FIXTURE ITSELF BEING "LEAD FREE". THE CONTRACTOR SHALL PROVIDE THE REQUIRED SUBMITTALS FOR ALL FIXTURES AND BUILDING MATERIALS PRIOR TO THE FIXTURE INSTALLATION, AND CONFIRM ON THE JOBSITE THAT THE FIXTURE ADHERES TO "LEAD-FREE" REGULATIONS.
  - a. FOLLOWING THE POTABLE FIXTURE INSTALLATION, THE P.C. SHALL REMOVE ALL FILTERS AND STRAINERS AND FLUSH THE FIXTURE OF DEBRIS FROM THE SYSTEM.
2. FOLLOWING THE COMPLETION OF THE P.C. WORK SCOPE, THE OWNER SHALL HAVE THE WATER CONDITIONS TESTED FOR LEAD CONTAMINANTS BY A THIRD-PARTY TESTING FIRM TO REGULATION 67.4 OF THE DEPARTMENT OF HEALTH REGULATIONS AS PART OF SECTION 1417 OF THE FEDERAL SAFE WATER ACT TO DETERMINE THEM AS "LEAD-FREE" COMPLIANT.
3. IF A FIXTURE DOES NOT COMPLY WITH SUB-PART REGULATION 67.4 OF THE DQH SECTION 1417 OF THE FEDERAL SAFE WATER ACT, THE P.C. SHALL PROVIDE A REPLACEMENT FIXTURE AT NO ADDITIONAL COST. TO THEN REPEAT THE INSTALLATION AND TESTING REQUIREMENTS. THE P.C. SHALL ABSORB THE FEE FOR THE FIRST LEAD TEST PROCEDURE AS WELL AS THE FOLLOWING CONFIRMATION PROCEDURES AT NO ADDITIONAL COST TO THE OWNER.

REV.	DATE	ITEM
01	03/30/21	BID ADD. NO. 01

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**KEY PLAN**  
NOT TO SCALE

FLORIDA UNION FREE SCHOOL DISTRICT  
BOND PHASE 2  
GOLDEN HILL ELEMENTARY SCHOOL  
ORANGE COUNTY, TOWN OF WARWICK, VILLAGE OF FLORIDA, NEW YORK 10821

**MECHANICAL & PLUMBING DEMOLITION PLANS, NOTES & DETAILS**

DRAWING BY: GWT  
CHECK BY: ---

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SEB NO: 44-215-02-0-00-013

DISTRICT: FLORIDA U.F.S.D.  
GOLDEN HILL E.S.

PROJECT: BOND PHASE 2

DWG TITLE: DEMO PLANS, NOTES & DETAILS

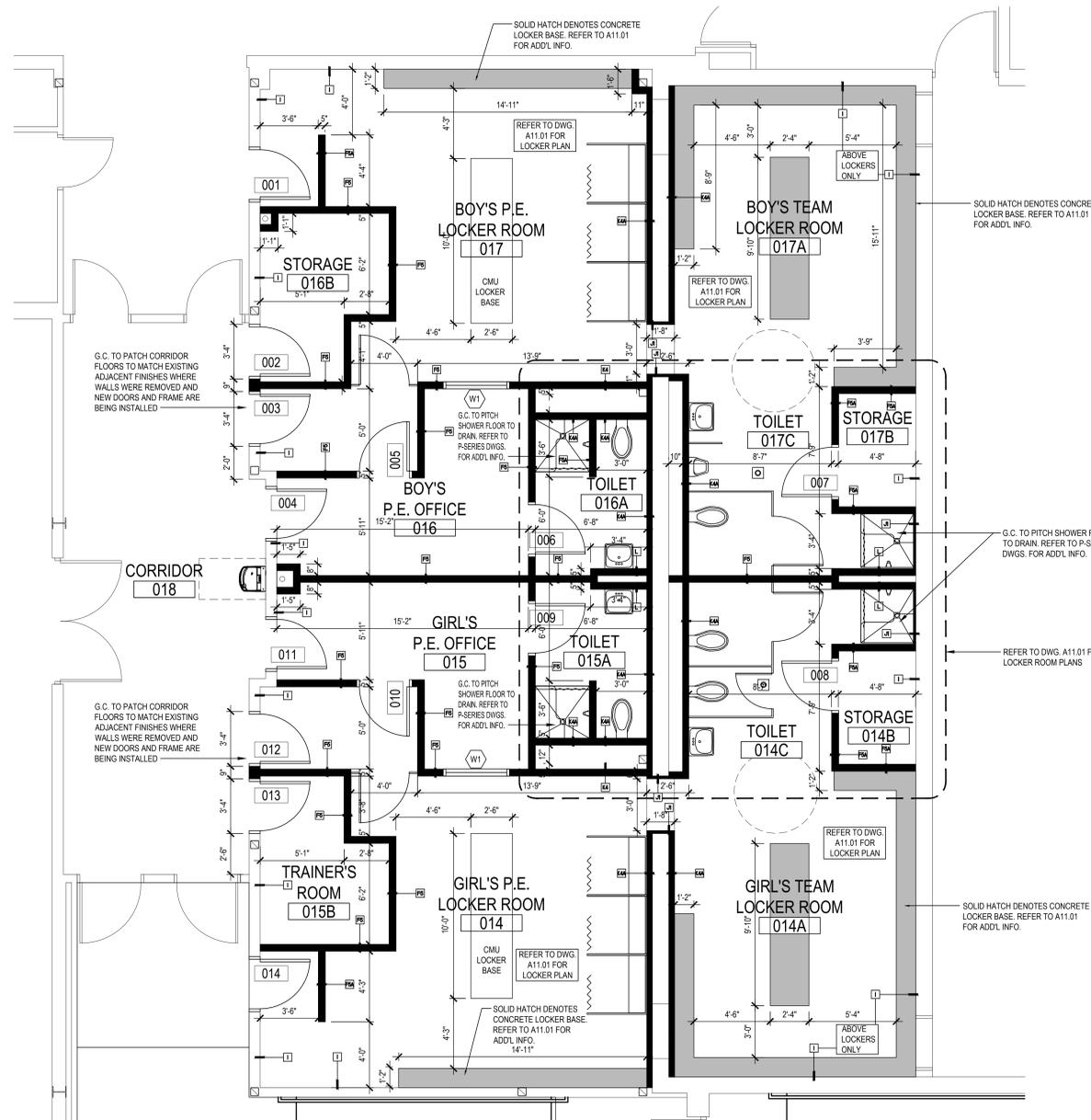
SCALE: AS NOTED

DATE: DECEMBER 1, 2020

BID PICK-UP: March 15, 2021

FILE NO: 20-176A

**MP1.01** of ---

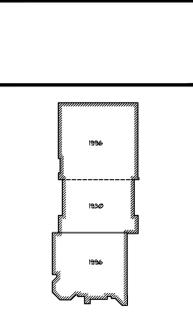


LOCKER ROOM PROPOSED PLAN  
SCALE: 1/4" = 1'-0"

ARCHITECTURAL SYMBOL LEGEND	
SYMBOL	DESCRIPTION
	KEYED NOTE
	DOOR NUMBER
	WINDOW DESIGNATION
	ROOM TAG ROOM NAME ROOM NUMBER ROOM AREA
	ELEVATION DATUM
	DETAIL TAG DETAIL NUMBER DRAWING NUMBER
	SECTION/ELEVATION TAG DETAIL NUMBER DRAWING NUMBER
	DENOTES INTERIOR PARTITION TYPE - REFER TO PARTITION TYPES FOR ADDITIONAL INFORMATION.
	DENOTES ACCESSIBLE ENTRANCE/EXIT, FIXTURE, ACCESSORY, DEVICE, OR PARTICIPATION AREA.
	REVISION CLOUD AND KEYED DESIGNATION. REFER TO DRAWING TITLEBLOCK FOR ADDITIONAL INFORMATION.

REV.	DATE	ITEM
01	03/29/21	BID ADD. NO. 01

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KEY PLAN  
NOT TO SCALE

PROJECT  
FLORIDA UNION FREE SCHOOL DISTRICT  
BOND PHASE 2  
S.S. SEWARD INSTITUTE  
ORANGE COUNTY, TOWN OF WARRICK, VILLAGE OF FLORIDA, NEW YORK 1921

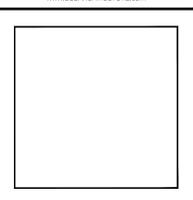
DWG TITLE  
PROPOSED LOCKER ROOM PLANS

DRAWING BY: PJG  
CHECK BY: KGS

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SED No. 44-21-15-02-0-001-015  
DISTRICT FLORIDA U.F.S.D.  
PROJECT BOND PHASE 2  
DWG TITLE PROPOSED LOCKER ROOM PLANS  
SCALE: AS NOTED  
DATE: DECEMBER 1, 2020  
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