### THE SCHOOL DISTRICT OF PHILADELPHIA Office of Capital Programs 440 North Broad Street, 3<sup>rd.</sup> Floor – Suite 371 Philadelphia, PA 19130

TELEPHONE: (215) 400-4730

#### ADDENDUM No. 03

 
 Subject:
 Wright Elementary School – Major HVAC Renovation SDP Contract No.

 GC: B-089(c) OF 2018/2019

 MC: B-079(c) OF 2018/2019

 PC: B-090(c) OF 2018/2019

 EC: B-080(c) OF 2018/2019

Location: 2201-51 N. 28TH ST, PHILADELPHIA, PA 19132

This ADDENDUM dated 1/26/2022 shall modify and become part of the Contract Documents for the work of this project. Any items not mentioned herein, or affected by, shall be performed strictly in accordance with the original documents, unless modified by prior addenda, if any.

### 1. ARTICLE CC-4.15 CLEANING UP: DELETE General Conditions GC-4.15.4, 4.15.6 and 4.15.11. They have been superseded by Section 01 1750 PROJECT CLEANLINESS

#### 2. RFI'S AND RESPONSES

Question #1:

Does the Expansion tank need a new concrete pad?

#### Response:

Yes. General Contractor is to provide a new 4" high concrete pad that extends 6" (on all sides) past the equipment footprint is required. See attached A401.

Question #2:

Does the air compressor need a new concrete pad?

#### **Response:**

There is no air compressor within this project scope.

Question #3:

Does the AHU need a new concrete pad?

#### **Response:**

Yes. General Contractor is to provide AHU-4 with a new 4" high concrete pad that extends 6" (on all sides) past the equipment footprint is required. See attached A401. Other AHUs are supported from supplemental steel above the roof.

#### Question #4:

Drawing AD 101 & MD 401 do not agree with reference to the louvers. Please clarify.

#### **Response:**

### Architectural plans take precedence. General Contractor to provide louvers per architectural drawings. See schedule on attached A501 as amended.

#### Question #5:

Is there a louver schedule? Please clarify.

#### **Response:**

#### Yes. See attached A501 as amended.

#### Question #6:

Drawing AD 101 Note 1 indicates patch and repair exterior wall at new equipment but there are no details for this work. Please clarify.

#### **Response:**

Any finishes damaged as a result of the work related to the HVAC equipment replacement shall be patched and repaired to match existing by the General Contractor per Keynote 1 of AD101.

#### Question #7:

Are elevations of the exterior of the building available for the contractors use?

#### **Response:**

Architectural building elevations are not available.

#### Question #8:

Drawing AD 103 & 104 show ceilings to be removed. Are all other rooms without ceilings since there is ductwork or piping to be removed from the room showing no ceiling removal. Please clarify.

#### **Response:**

Not all spaces have a finished ceiling (some are exposed). General Contractor is to remove and replace all ceiling tiles as indicated. See attached AD103, AD104, A103, and A104 as amended.

#### Question #9:

Drawing A103, A104 – Keynote #2: "Provide new 2'x4' lay-in"

Drawing E101, E102 – Keynote #4 "Re-install existing lights

- a) Are we purchasing new light fixtures for these areas
- b) Can you provide a lighting drawing with locations?
- c) Can you provide a model number and any required controls?

#### Response:

a) The Electrical Contractor shall remove existing lighting and provide new lighting throughout the facility. See attached EL drawings.

- b) See attached EL drawings.
- c) See attached EL drawings.

#### Question #10:

Drawing E101, E102 – Keynotes 4&5: Can you provide a drawing showing quantity of light fixtures, fire alarm devices, CCTV, speakers, etc. to be removed and re-installed on new ceilings?

#### Response:

#### See attached ED101 and ED102.

#### Question #11:

Which Prime is responsible for temporary lighting and power in these areas?

#### **Response:**

### Electrical Contractor is to provide temporary lighting as EC is responsible for disabling lighting during demolition scope.

#### Question #12:

Drawing ED103-AHU Demolition: Duct Detectors. Existing AHU's 1, 2, & 3 have existing duct detectors, test switches and modules in the supply and return ductwork installed during the 2017 fire alarm replacement.

- a) Do these six detectors, test switches, and modules get removed and deleted from the fire alarm programming?
- b) School District of Philadelphia does the annual fire alarm certification and maintenance on the existing fire alarm. Can you supply the name and number of the "Vendor" and will we be furnished with passwords and access to the programming?

#### **Response:**

- a.) Electrical Contractor is to remove and furnish to SDP existing detectors, test switches, and modules per ED103. Electrical Contractor is to provide new smoke detector for new exterior air handling units per E103 keynote 3.
- b.) Electrical contractor is responsible for certifying the modified system. SDP will provide as needed to mofify and certify the modified system.

#### Question #13

Drawing P401 note 9 describes electrical work, please confirm this is on the electrical contractor.

#### **Response:**

Existing High Voltage Conduit indicated on P401 (as well as MD401 and M401) as a safety precaution to all trades.

#### Question #14

Water treatment spec section 232500 indicates a glycol feeder, however we don't see this equipment on the drawings anywhere. Will there be any glycol in this system? If so, what type and concentration?

#### **Response:**

No glycol feeder will be provided for this system. The dual temperature water system will not contain any glycol.

#### Question #15

P401 note 8 says Water softener provided by Tustin and to set on concrete pad, however this equipment appears to be a division 23 Mechanical spec. Who is responsible for the water treatment equipment? Tustin or the MC?

#### **Response:**

The plumbing contractor shall procure Tustin as a subcontractor to provide water treatment

#### system per P401 keynote 8 and specification section 23 2500.

#### Question #16

What is the height of the Boiler Room ceiling?

#### Response:

Boiler Room Ceiling is approximately 12'-6" above finished floor.

#### Question #17

Is there a crawl space under the Boiler Room?

### Response:

No.

#### Question #18

Were drawings attached to Addendum #1?

#### **Response:**

No drawings were attached to Addendum #1. See edits to select Architectural drawings and new Electrical Lighting drawings attached to this addendum.

#### Question #19

The summary of work states that the PC is to furnish and install the new water softener. The Note on the plumbing drawings has the WS1 being provided by the Tustin Group. Should the PC carry an allowance for this other than the install?

#### **Response:**

Yes. The plumbing contractor shall procure Tustin as a subcontractor to provide water treatment system per P401 keynote 8 and specification section 23 2500.

#### Question #20

Electrical note 5 on Plans E102 & E103 notes that all Light Fixtures in given rooms will be removed and reinstalled in new drop ceiling. However, when referencing the Architectural RCPs A103 & A104, these notes indicate that the some of the 2x4 lay in fixtures and exit signs are to be replaced with new. Which is correct?

#### **Response:**

Lighting scope has been amended per new EL Drawings. Electrical Contractor shall remove all existing and provide all new lighting fixtures throughout the building. See attached EL Drawings for new general lighting scope.

#### Question #21

Will a door and louver schedule be provided?

#### Response:

#### Yes. See attached A501 as amended.

#### Question #22

Drawing A 401 indicates details for the Chiller pad is on the structural drawings, but none are.

#### Response: See revised S001 attached.

#### Question #23

Are each contractor responsible for their own dumpsters?

#### Response:

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#### Yes. See Section 01 1750 PROJECT CLEANLINESS for detailed requirements

#### Question #24

There is no specification for the repair of the flooring at the UV removal?

#### Response:

No specification will be provided for this work. Provide flooring repair around unit ventilators per keynote #1 of A101 and A102 to match existing finishes.

#### Question #25

Which contract is responsible for the removal & reinstallation of the ceiling for duct & pipe work?

#### Response:

The General Contractor is responsible for removal of existing ceilings and installation of new ceilings. See attached edited AD103, AD104, A103, and A104.

#### Question #26

Please advise if mechanical and electrical equipment are to be brought in and out of the boiler room through the wall opening that will exist due to that exterior door being replaced.

#### **Response:**

Per GC-4.3, each contractor is solely responsible for all construction means, methods, techniques, sequences, and procedures for coordination all portions of the work under the contract.

#### Question #27

A spec page is out of place. Page 783 of the Bid documents (Its in between the last page of the plumbing spec and the first of the mechanical. )The page is Interior Painting 09 9123 page 6 of 6.

#### **Response:**

09 9123-6 should be located as page 552 of 935 of the contract documents.

#### Question #28

Drawing S-001 & detail 13 on M502 show duct supports. Are these supports by the mechanical contractor?

#### Response:

The General Contractor is responsible for providing baseplates and bolts to the structure per S001 Details.

The Mechanical Contractor is responsible for providing duct support members on roof per M502/13.

#### Question #29

Acoustical ceiling spec does not match up to the data sheet. Calling for a 2x4 tile, the tile specified tile only comes in 2x2. This is also a higher price tier tile and may cause issues with future replacement work.

#### Response:

See attached Specification Section 09 5100 Acoustical Ceilings.

#### Drawings

- 1. EDIT the following sheets as attached:
  - AD102 Architectural Second Floor Demolition Plan

- AD103 Architectural First Floor Demolition Reflected Ceiling Plan
- AD104 Architectural Second Floor Demolition Reflected Ceiling Plan
- A101 Architectural First Floor Plan
- A102 Architectural Second Floor Plan
- A103 Architectural First Floor Reflected Ceiling Plan
- A104 Architectural Second Floor Reflected Ceiling Plan
- A401 Architectural Enlarged Floor Plans
- A501 Architectural Details
- S001 Structural General Notes
- 2. ADD the following sheets as attached:
  - EL001 Electrical Lighting General Notes, Legends, and Abbreviations
  - EL101 Electrical Lighting First Floor Demolition Plan
  - EL102 Electrical Lighting Second Floor Demolition Plan
  - EL103 Electrical Lighting First Floor New Work
  - EL104 Electrical Lighting Second Floor New Work
- 3. All Drawings
  - EDIT total sheet count from 64 to 69.

#### 4. <u>G001</u>

- EDIT the Drawing List to add the following:
  - o 65 EL001 Electrical Lighting General Notes, Legends, and Abbreviations
  - o 66 EL101 Electrical Lighting First Floor Demolition Plan
  - 67 EL102 Electrical Lighting Second Floor Demolition Plan
  - o 68 EL103 Electrical Lighting First Floor New Work
  - 69 EL104 Electrical Lighting Second Floor New Work

#### 5. <u>ED101</u>

• DELETE references to general lighting scope. This scope has been defined on new drawing EL101.

#### 6. <u>ED102</u>

• DELETE reference to general lighting scope. This scope has been defined on new drawing EL102.

#### 7. <u>E101</u>

- DELETE references to general lighting scope. This scope has been defined on new drawing EL103.
- Exit Signage scope to remain defined on E101.
- 8. <u>E102</u>
  - DELETE references to general lighting scope. This scope has been defined on new drawing EL104.
  - Exit Signage scope to remain defined on E102.
- 9. <u>E401</u>
  - DELETE *Electrical New Work Enlarged Boiler Room Plan Lighting*. This scope has been defined on new drawing EL103.
  - DELETE keynotes 3,4,5,6, and 7.

#### Specifications

1. ADD Specification Section 26 0923 Light Control Systems as attached.

- 2. EDIT Specification Section 09 5100 as attached.
- 3. SECTION 23 3100

ADD the following:

Section 2.05 Duct Cleaning

A. Mechanical Contractor shall submit a Duct Cleaning Plan prior to startup and any Testing and Balancing work. The plan shall include but is not limited to:

1. Scope of Work identifying HVAC components are to be cleaned, as well as those components not to be cleaned.

2. Itemize specific environmental engineering controls required for workspace, and special work requirements.

3. Detail cleaning work means and methods.

4. Name, contact information, and functional tasks performed by each representative of each firm and contractor involved with the work.

B. All Existing to remain ductwork shall be cleaned. This includes supply, return, exhaust/relief, and outside air ductwork.

#### C. HVAC SYSTEM PREPARATION

1. Service Openings:

a. Access duct cleaning work through existing or new service openings, allowing safe access and thorough cleaning throughout specified components.

b. Work through service openings sized to allow mechanical tool entry and visual inspection, as required for cleaning activities.

c. Where possible, work through existing service openings.

d. Where new service openings are required, install openings as follows:

1. Do not degrade structural, thermal, or functional system integrity, and comply with applicable SMACNA duct construction methods.

2. Install service openings complying with UL and NFPA standards, federal, state, and local code requirements, and requirements of Authorities Having Jurisdiction.

3. Where required, install duct access doors complying with UL Standard 181, and fabricated with materials classified for flammability and smoke developed.

4. Where required, install tapes complying with UL 181A.

5. Where required, install closure panels fabricated from equivalent material and same or heavier gage.

6. Mechanically fasten closure panels over service openings with screws or rivets at perimeter, maximum 4 inches spacing.

7. Fabricate closure panel to overlap duct opening perimeter, minimum 1 inch .

8. Insulate closure panels to match adjacent duct interior and exterior surfaces.
 9. Seal rigid fibrous glass duct systems in accordance with NAIMA recommended practices.

a) Install closure techniques: UL Standard 181 or UL Standard 181A. 10. Close service openings installed in rigid fibrous glass ductwork and metal ductwork with fibrous glass liner with no exposed fibrous glass edges exposed to airstream.

e. Install service openings that can be reopened for future inspection or remediation.

1. Mark outside of duct and report service opening locations to Owner in project closeout documents.

f. Do not cut service openings into flexible duct.

- 1. Disconnect flexible duct at both ends as required for inspection and cleaning.
- 2. Reconnect flexible duct ends in accordance with SMACNA standards.

#### D. CLEANING - GENERAL

1. Perform HVAC system cleaning in accordance with ACR, The NADCA Standard.

2. Remove visible non-adhered particulates.

a. Clean HVAC components employing agitation device to dislodge contaminants frombHVAC component surface, and then capturing contaminants with vacuum collection device.

1. Acceptable methods include those that do not damage integrity of ductwork and other system components and does not damage porous surface materials including internal insulation and duct lining.

b. Clean HVAC components using source removal mechanical cleaning methods designed to extract contaminants from within HVAC system and safely remove contaminants from facility.

c. Select source removal methods rendering HVAC system visibly clean and capable of passing cleanliness verification methods as described in ACR, The NADCA Standard. d. Do not employ cleaning method, or combination of methods, that can damage HVAC system components or negatively alter system integrity.

e. Do not damage HVAC system and components with wet cleaning, power washing, steam cleaning and other wet process cleaning.

3. Apply cleaning materials in accordance with manufacturer's instructions.

a. Do not apply cleaning agents or water to electrical, fibrous glass or other porous HVAC system components.

4. Capture removed contamination and cleaning materials and legally dispose.

5. Verify HVAC system surface and component cleanliness in accordance NADCA Standard.

6. Particulate Collection:

a. Employ contaminant removal methods incorporating vacuum collection devices operated

continuously during cleaning.

1. Connect vacuum collection device to component being cleaned through service opening.

2. Employ vacuum collection device of sufficient capacity to maintain areas being cleaned under negative pressure, containing debris is contained and preventing contaminant migration to adjacent areas.

b. When possible, discharge ducted exhaust air from vacuum collection devices outdoors, keeping discharge air clear of outdoor air intakes, operable windows, and other locations allowing outdoor air entry.

1. Do not violate outdoor environmental standards, codes or regulations.

2. Do not discharge unfiltered air from vacuum collection devices outdoors. c. When necessary to exhaust vacuum collection devices indoors, including hand-held and wet-vacuum machines, keep discharge air in work area, and provide machine air discharge HEPA filtration, rated at 99.97 percent collection efficiency for 0.3 micron particles and larger.

#### E. AIR DUCT SYSTEMS:

1. Clean air ducts to remove non-adhered substances.

2. Access air duct interiors through service openings in system that are large enough to accommodate mechanical cleaning procedures and allow for cleanliness verification.

3. Use mechanical agitation methods to remove particulate, debris, and non-adhered particulate.

4. Capture dislodged substances with vacuum collection device.

5. Do not employ cleaning methods that damage HVAC components.

6. Mark position of dampers and air-directional mechanical devices inside HVAC system prior to cleaning.

7. When cleaning is complete, restore dampers and devices to their marked positions.

8. After cleaning, verify cleanliness of HVAC system surfaces and components in accordance ACR, The NADCA Standard.

1. Operate HEPA-filtered negative air machines that discharge continuously during cleaning process.

2. Mechanically remove adhered dirt and contaminants in accordance with ACR, The NADCA Standard.

### F. INTERNALLY INSULATED DUCT SYSTEM COMPONENTS AND SOUND ATTENUATORS

 Employ cleaning methods that do not damage internal insulation or sound attenuating components, and that render system capable of passing cleanliness verification tests.
 Clean fibrous glass duct liner or duct board present in equipment or air ducts employing mechanical agitation methods to remove particulate, debris, and non-adhered particulate.

3. Do not create abrasions, breaks, or tears to fibrous glass liner or duct board surfaces.

4. Maintain HVAC system under constant negative pressure when cleaning internal insulation components.

5. Do not wet insulation components.

6. Identify for replacement fibrous glass materials with evidence of damage, deterioration, delaminating, friable materials, biological growth, or moisture that cannot be restored by cleaning or resurfacing.

7. When required, remediate exposed, damaged insulation exposed to HVAC system air stream.

a. Scrape insulation and adhesive residue from metal duct system surfaces that have undergone degraded insulation removal.

b. Remove loose, visible debris prior to installation of new insulation.

c. When replacement insulation installation is complete, verify that new fibrous glass surfaces are capable of compliance with NADCA cleanliness verification requirements.

#### G. SPECIAL TECHNIQUES

1. Engineering Controls:

a. Employ engineering controls to maintain worker and building occupant safety, and prevent contaminating surfaces outside work area.

1. Comply with government regulations, and industry standards and guidelines relevant to working in the facility environment in which the work is located.

2. Control odors, mists, and aromatic vapors during cleaning process.

b. Controlling Product Emissions:

1. Apply cleaning agents and other chemicals in accordance with manufacturer's recommended procedures and product application instructions, including exhaust ventilation.

#### 2. Negative Duct Pressurization:

a. Throughout cleaning process, keep HVAC system and associated air ducts at negative differential pressure, relative to indoor non-work area.

b. Maintain negative pressure differential between portion of HVAC duct system being cleaned and surrounding indoor occupant spaces.

c. Continuously monitor and verify correct pressure differential.

d. When performing vacuum collection, employ negative air machine drawing air from equipment being cleaned.

e. When negative air machine is not fitted with HEPA filtration, duct exhaust air from negative air machine to outdoor location, keeping discharge air clear of outdoor air intakes, operable windows, and other locations where outdoor air enters building.

1. Do not violate outdoor environmental standards, codes or regulations by releasing debris.

2. Do not discharge unfiltered air from vacuum collection devices outdoors.

3. Microbial Agents:

a. Apply antimicrobial agents only when active biological growth is reasonably suspected, or where unacceptable levels of biological contamination have been verified through testing.

b. Apply antimicrobial agents after removal of surface deposits and debris.

c. Apply antimicrobial agents in accordance with antimicrobial agent manufacturer's written recommendations and associated EPA registration listing.

#### H. FIELD QUALITY CONTROL

1. Inspect work to verify cleanliness immediately after HVAC system component cleaning and prior to placing system in operation.

2. Do not apply treatment, coating, or antimicrobial agent to cleaned HVAC system or components until the work has been inspected and determined to be acceptable.

3. Visual Inspection:

a. When cleaning is complete, perform final inspection in presence of Owner.

b. Perform visual inspection of porous and non-porous HVAC system component surfaces. Verify HVAC system is visibly clean as defined in ACR, The NADCA Standard. c. If no contaminants are evident through visual inspection, HVAC is considered clean and acceptable.

d. If contaminants are evident through visual inspection, repeat cleaning system areas where contaminants are visible.

1. Notify Owner to schedule cleanliness re-inspection.

4. Surface Comparison Test for Porous Surfaces Only:

a. If visual inspection is inconclusive or disputed, then perform Surface Comparison Test in accordance with ACR, The NADCA Standard.

1. Attach vacuum brush to operating contact vacuum.

2. Employ contact vacuum with HEPA-filtered discharge, capable of achieving minimum 80 inches w.g. static lift and fitted with 2.5-inch diameter round nylon brush attached to 1.5-inch diameter vacuum hose.

3. Pass brush over surface test area four times.

4. Visually compare tested and untested surfaces to determine whether visible surface characteristics are detectable.

b. When surface comparison test is complete, HVAC component surface is considered acceptably clean if there is no visually detectable difference between tested and untested surface characteristics.

#### I. DISPOSAL OF JOB SITE DUCT CLEANING WASTE

1. Seal HVAC system debris and removed contaminated materials in containers before removal from work area.

2. Handle materials classified as hazardous by governmental agencies in accordance with applicable federal, state, and local, regulations and codes.

3. Dispose of debris removed from HVAC System in accordance with applicable federal, state, and local requirements.

#### End of Addendum

#### SECTION 09 5100 – REVISED 01/25/2022 ACOUSTICAL CEILINGS

#### PART 1 GENERAL

#### **1.01 SECTION INCLUDES**

- A. Suspended metal grid ceiling systems.
- B. Acoustical and nonacoustical units.
- C. Wall angles and shadow moldings.
- D. Special trims and accessories.

#### 1.02 REFERENCE STANDARDS

- A. ASCE 7 Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.
- B. ASTM A641/A641M Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2019.
- C. ASTM C635/C635M Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings 2017.
- D. ASTM C636/C636M Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels 2019.
- E. ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials 2020.
- F. ASTM E580/E580M Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions 2020.
- G. ASTM E1264 Standard Classification for Acoustical Ceiling Products 2019.

#### **1.03 ADMINISTRATIVE REQUIREMENTS**

- A. Sequence work to ensure acoustical ceilings are not installed until dust generating activities have terminated and overhead work is completed, tested, and approved.
- B. Do not install acoustical units until after interior wet work is dry.

#### 1.04 SUBMITTALS

- A. Shop Drawings: Indicate the relationship to mechanical and electrical work and other items penetrating or connected to the ceiling. Indicate framing and support details for the ceiling work.
- B. Product Data: Provide data on suspension system components and acoustical units.
- C. Samples: Submit two samples \_6\_by\_6\_ inch (\_152\_ by\_152\_ mm) in size illustrating material and finish of acoustical units.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

#### 1.05 QUALITY ASSURANCE

- A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Acoustic Tiles/Panels:
  - 1. Armstrong World Industries, Inc: www.armstrong.com/#sle.

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- 2. CertainTeed Corporation: www.certainteed.com/#sle.
- 3. USG Corporation: www.usg.com/#sle.
- B. Suspension Systems:
  - 1. Same as for acoustical units.

### 2.02 ACOUSTICAL UNITS

- A. Acoustical Units General: ASTM E1264, Class A.
- B. Acoustical Panels: Painted mineral fiber,ASTM E1264 Type III, with the following characteristics:
  - 1. Size: As indicated in the drawings, 24 by 24 inches (600 by 600 mm) or 24 by 48 inches (600 by 1200 mm).
  - 2. Thickness: 3/4 inches (19 mm).
  - 3. Light Reflectance: Not less than 85 percent, determined in accordance with ASTM E1264.
  - 4. NRC Range: 0.7 to 0.8, determined in accordance with ASTM E1264.
  - 5. Ceiling Attenuation Class (CAC): Minimum 35, determined in accordance with ASTM E1264.
  - 6. Edge: Square.
  - 7. Surface Color: White.
  - 8. Surface Pattern: Smooth Textured.
  - 9. Products: Armstrong Ultima or approved equal.

### 2.03 SUSPENSION SYSTEM(S)

- A. Metal Suspension Systems General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down clips, stabilizer bars, clips, and splices as required.
- B. Exposed Steel Suspension System: Formed steel, commercial quality cold rolled; intermediateduty.
  - 1. Profile: Tee; 15/16 inch (24 mm) wide face.
  - 2. Construction: Double web.
  - 3. Finish: White painted.
  - 4. Products: Armstrong Prelude XL or approved equal.

### 2.04 CEILING PERFORMANCE REQUIREMENTS

- A. Design for maximum deflection of 1/360 of span.
- B. Seismic Performance: Ceiling systems designed to withstand the effects of earthquake motions determined according to ASCE 7 for Seismic Design Category D, E, or F and complying with the following:
  - 1. Local authorities having jurisdiction.

### 2.05 CEILING COMPONENT PRODUCTS

- A. Moldings and Trim:
  - 1. Perimeter Wall Moldings: Same metal and finish as grid.
    - a. Size: As required for installation conditions.
    - b. Acoustical Sealant For Perimeter Moldings: Nonhardening, nonskinning, for use in conjunction with suspended ceiling system.
  - 2. Trim Accessories: Manufacturer's standard clips, cleats splice plates, extension plates, closure plates, corner pieces, and similar accessories required for a complete installation.

#### 2.06 ACCESSORIES

A. Support Channels, Carriers, and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.

- B. Suspension Wire: Size and type as required for application, seismic requirements, and ceiling system flatness requirement specified.
  - 1. Concealed Suspension:
    - a. Suspension Wire: Steel, annealed, galvanized finish, 12 gauge, 0.0808 diameter, complying with ASTM A641/A641M.
- C. Seismic Clips: Manufacturer's standard clips for seismic conditions and to suit application.
- D. Touch-Up Paint for Exposed Surfaces: Type and color to match acoustical units and suspension system grid and trim elements.
- E. Touch-Up Paint For Concealed Items: Zinc rich type, as recommended by ceiling system manufacturer.

### PART 3 EXECUTION

#### 3.01 EXAMINATION

- A. Verify existing conditions before starting work. Contractor to document existing ceiling layout, including light fixture arrangement, mechanical grilles, and other electrical devices, prior to removal and replacement of ceiling tile and grids.
- B. Verify that layout of hangers will not interfere with other work.
- C. Verify that field measurements are as indicated on shop drawings.
- D. Start of installation constitutes acceptance of project conditions.

#### 3.02 PREPARATION

- A. Coordinate the location of hangers with other work.
- B. Install ceiling system after major above-ceiling work is complete.

#### 3.03 INSTALLATION - SUSPENSION SYSTEM

- A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
- B. Install hangers and inserts coordinated with overhead work. Provide additional hangers and supports as required.
- C. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
- D. Seismic Suspension System, Seismic Design Categories D, E, F: Hang suspension system with grid ends attached to the perimeter molding on two adjacent walls; on opposite walls, maintain a 3/4 inch clearance between grid ends and wall.
- E. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
- G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
- H. Support fixture loads using supplementary hangers located within 6 inches (152 mm) of each corner, or support components independently.
- I. Do not eccentrically load system or induce rotation of runners.
- J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.

#### 3.04 INSTALLATION - ACOUSTICAL UNITS

A. Install acoustical units in accordance with manufacturer's instructions.

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- B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
- C. Fit border trim neatly against abutting surfaces.
- D. Install units after above-ceiling work is complete.
- E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
- F. Cutting Acoustical Units:
  - 1. Cut to fit irregular grid and perimeter edge trim.
  - 2. Make field cut edges of same profile as factory edges.
  - 3. Double cut and field paint exposed reveal edges.

#### 3.05 TOLERANCES

- A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3 m).
- B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

#### 3.06 CLEANING

A. Clean and touch up minor finish damage. Remove and replace components that cannot be successfully cleaned and repaired.

#### END OF SECTION

#### SECTION 26 09 23

#### LIGHTING CONTROL SYSTEMS

#### PART 1 GENERAL

#### 1.01 SUMMARY

- A. Section Includes:
  - 1. Digital Lighting Controls
  - 2. Emergency Lighting Control.

#### 1.02 REFERENCES

- A. In this Article, list only references that are used within other portions of this Section. Use the full title of the standard. If paragraphs containing these references are deleted in the text of the edited section, delete references here accordingly.
- B. American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) <http://www.ansi.org>
- C. International Organization for Standardization (ISO) <http://www.iso.ch>
- D. National Electrical Manufacturers Association (NEMA) <http://www.nema.org>
   1. WD1 (R2005) General Color Requirements for Wiring Devices.
- E. Underwriters Laboratories, Inc. (UL) < http://www.ul.com>
   924 Emergency Lighting.
- 1.03 SYSTEM DESCRIPTION AND OPERATION
  - A. The Lighting Control and Automation system as defined under this section covers the following equipment:
    - 1. Digital Occupancy Sensors Self-configuring, digitally addressable and calibrated occupancy sensors with LCD display and two-way active infrared (IR) communications.
    - 2. Digital Switches Self-configuring, digitally addressable pushbutton on/off, dimming, and scene switches with two-way active infrared (IR) communications.
    - 3. Digital Room Controllers Self-configuring, digitally addressable one, two or three relay plenum-rated controllers for on/off control. Selected models include 0-10 volt or line voltage forward phase control dimming outputs and integral current monitoring capabilities.
    - 4. Digital Lighting Management (DLM) local network Free topology, plug-in wiring system (Cat 5e) for power and data to room devices.
    - 5. Emergency Lighting Control Unit (ELCU) allows a standard lighting control device to control emergency lighting in conjunction with normal lighting in any area within a building.

### 1.04 SUBMITTALS

- A. Submittals Package: Submit the shop drawings, and the product data specified below at the same time as a package.
- B. Shop Drawings:
  - 1. Composite wiring and/or schematic diagram of each control circuit as proposed to be installed.

- 2. Show exact location of all digital devices, including at minimum sensors, room controllers, and switches for each area on plans. Plans shall show detection coverage patterns.
- 3. Provide room/area details including products and sequence of operation for each room or area. Illustrate typical acceptable room/area connection topologies.
- C. Product Data: Catalog sheets, specifications, and installation instructions.
- D. Include data for each device which:
  - 1. Indicates where sensor is proposed to be installed.
  - 2. Prove that the sensor is suitable for the proposed application.

#### 1.05 QUALITY ASSURNACE

A. Manufacturer: Minimum ten years (10yrs.) experience in manufacture of lighting controls.

#### 1.06 PROJECT CONDITIONS

- A. Do not install equipment until following conditions can be maintained in spaces to receive equipment:
  - 1. Ambient temperature: 0° to 40° C (32° to 104° F)
  - 2. Relative humidity: Maximum 90 percent, non-condensing.

#### 1.07 WARRANTY

A. Provide a five-year (5yr.) limited manufacturer's warranty on all room control devices.

#### PART 2 PRODUCTS

#### 2.01 MANUFACTURERS

- A. Basis of design product: WattStopper Digital Lighting Management (DLM) or, subject to compliance and prior approval with specified requirements of this section, one of the following:
  - 1. Lutron
  - 2. Leviton
  - 3. Hubbell
  - 4. nLight.
- B. Digital Lighting Controls:
  - 1. Furnish the Company's system which accommodates the square-footage coverage requirements for each area controlled, utilizing room controllers, digital occupancy sensors, switches, daylighting sensors and accessories which suit the lighting and electrical system parameters.

#### 2.02 DIGITAL WALL OR CEILING MOUNTED OCCUPANCY SENSOR

- A. Wall or ceiling mounted (to suit installation) passive infrared (PIR), ultrasonic or dual technology digital (passive infrared and ultrasonic) occupancy sensor.
- B. Digital Occupancy Sensors shall provide graphic LCD display for digital calibration and electronic documentation. Features include the following:
  - 1. Digital calibration and pushbutton configuration for the following variables:
    - a. Sensitivity 0 to 100%, in 10% increments
    - b. Time delay 1 to 30 minutes, in 1-minute increments
    - c. Test mode Five second time delay
    - d. Detection technology PIR, Ultrasonic, or Dual Technology activation and/or reactivation.
    - e. Walk-through mode
    - f. Load parameters including Auto/Manual-ON, blink warning, and daylight enable/disable when photosensors are included in the DLM local network.
  - 2. Programmable control functionality including:
    - a. Each sensor may be programmed to control specific loads within a local network.
    - b. Sensor shall be capable of activating one of 16 user-definable lighting scenes.
    - c. Adjustable retrigger time period for manual-on loads. Load will retrigger (turn on) automatically within a configurable period of time (default 10 seconds) after turning off.
    - d. On dual technology sensors, independently configurable trigger modes are available for both Normal (NH) and After Hours (AH) time periods. The retrigger mode can be programmed to use the following technologies:
      - 1) Ultrasonic and Passive Infrared
      - 2) Ultrasonic or Passive Infrared
      - 3) Ultrasonic only
      - 4) Passive Infrared only
    - e. Independently configurable sensitivity settings for passive infrared and ultrasonic technologies (on dual technology sensors) for both Normal (NH) and After Hour (AH) time periods.
    - f. One or two RJ-45 port(s) for connection to DLM local network.
    - g. Two-way infrared (IR) transceiver to allow remote programming through handheld commissioning tool and control by remote personal controls.
    - h. Device Status LEDs, which may be disabled for selected applications, including:
      - 1) PIR detection
      - 2) Ultrasonic detection
      - 3) Configuration mode
      - 4) Load binding.
    - i. Assignment of occupancy sensor to a specific load within the room without wiring or special tools.
    - j. Manual override of controlled loads.

- k. All digital parameter data programmed into an individual occupancy sensor shall be retained in non-volatile FLASH memory within the sensor itself. Memory shall have an expected life of no less than 10 years.
- 3. BACnet object information shall be available for the following objects:
  - a. Detection state
  - b. Occupancy sensor time delay
  - c. Occupancy sensor sensitivity, PIR and Ultrasonic
- 4. Units shall not have any dip switches or potentiometers for field settings.
- 5. Multiple occupancy sensors may be installed in a room by simply connecting them to the free topology DLM local network. No additional configuration will be required.
- 6. WattStopper product numbers: LMPX, LMDX, LMPC, LMUC, LMDC

#### 2.03 DIGITAL WALL SWITCHES

- A. Low voltage momentary pushbutton switches in 1, 2, 3, 4, 5 and 8 button configuration. Wall switches shall include the following features:
  - 1. Two-way infrared (IR) transceiver for use with personal and configuration remote controls.
  - 2. Removable buttons for field replacement with engraved buttons and/or alternate color buttons. Button replacement may be completed without removing the switch from the wall.
  - 3. Configuration LED on each switch that blinks to indicate data transmission.
  - 4. Load/Scene Status LED on each switch button with the following characteristics:
    - a. Bi-level LED
    - b. Dim locator level indicates power to switch

- c. Bright status level indicates that load or scene is active
- 5. Dimming switches shall include seven bi-level LEDs to indicate load levels using 14 steps.
- 6. Programmable control functionality including:
  - a. Button priority may be configured to any BACnet priority level, from 1-16, corresponding to networked operation allowing local actions to utilize life safety priority
  - b. Scene patterns may be saved to any button other than dimming rockers. Once set, buttons may be digitally locked to prevent overwriting of the preset levels.
- 7. All digital parameter data programmed into an individual wall switch shall be retained in non-volatile FLASH memory within the wall switch itself. Memory shall have an expected life of no less than 10 years.
- 8. BACnet object information shall be available for the following objects:
  - a. Button state
  - b. Switch lock control
  - c. Switch lock status
- 9. Two RJ-45 ports for connection to DLM local network.
- B. Multiple digital wall switches may be installed in a room by simply connecting them to the free topology DLM local network. No additional configuration shall be required to achieve multi-way switching.
- C. The following switch attributes may be changed or selected using a wireless configuration tool:
  - 1. Load and Scene button function may be reconfigured for individual buttons (from Load to Scene, and vice versa).
  - 2. Individual button function may be configured to Toggle, On only or Off only.
  - 3. Individual scenes may be locked to prevent unauthorized change.
  - 4. Fade Up and Fade Down times for individual scenes may be adjusted from 0 seconds to 18 hours.
  - 5. Ramp rate may be adjusted for each dimmer switch.
  - 6. Switch buttons may be bound to any load on a room controller and are not load type dependent; each button may be bound to multiple loads.
- D. WattStopper product numbers: LMSW-100 Series wall switch, LMDM-101.

#### 2.04 DIGITAL ROOM CONTROLLERS

- A. Digital controllers for lighting automatically bind the room loads to the connected devices in the space without commissioning or the use of any tools. Room controllers shall be provided to match the room lighting control requirements. The controllers will be simple to install, and will not have dip switches or potentiometers, or require special configuration for standard Plug n' Go applications. The control units will include the following features:
  - 1. Automatic room configuration to the most energy-efficient sequence of operation based upon the devices in the room.
  - 2. Simple replacement Using the default automatic configuration capabilities, a room controller may be replaced with an off-the-shelf.
  - 3. Device Status LEDs to indicate:
    - a. Data transmission
    - b. Device has power
    - c. Status for each load
    - d. Configuration status
  - 4. Quick installation features including:
    - a. Standard junction box mounting
    - b. Quick low voltage connections using standard RJ-45 patch cable

- 5. Based on individual configuration, each load shall be capable of the following behavior on power up following the loss of normal power:
  - a. Turn on to 100%
  - b. Remain off
  - c. Turn on to last level
- 6. Each load shall be configurable to operate in the following sequences based on occupancy:
  - a. Auto-on/Auto-off (Follow on and off)
  - b. Manual-on/Auto-off (Follow off only)
- 7. The polarity of each load output shall be reversible, via digital configuration, so that on is off and off is on.
- 8. BACnet object information shall be available for the following objects:
  - a. Load status
  - b. Electrical current
  - c. Total watts per controller
  - d. Schedule state normal or after-hours
  - e. Demand response control and cap level
  - f. Room occupancy status
  - g. Total room lighting and plug loads watts
  - h. Total room watts/sq ft
  - i. Force on/off all loads
- 9. UL 2043 plenum rated
- 10. Manual override and LED indication for each load
- 11. Dual voltage (120/277 VAC, 60 Hz) or 347 VAC, 60 Hz (selected models only). 120/277volt models rated for 20A total load, derating to 16A required for some dimmed loads (forward phase dimming); 347 volt models rated for 15A total load; plug load controllers carry application-specific UL 20 rating for receptacle control.
- 12. Zero cross circuitry for each load
- 13. All digital parameter data programmed into an individual room controller or plug load controller shall be retained in non-volatile FLASH memory within the controller itself. Memory shall have an expected life of no less than 10 years.
- B. On/Off Room Controllers shall include:
  - 1. One or two relay configuration
  - 2. Efficient 150 mÅ switching power supply
  - 3. Three RJ-45 DLM local network ports with integral strain relief and dust cover
  - 4. WattStopper product numbers: LMRC-102.
- C. On/Off/Dimming enhanced Room Controllers shall include:
  - 1. Real time current monitoring
  - 2. Multiple relay configurations:
    - a. One, two or three relays (LMRC-21x series)
    - b. One or two relays (LMRC-22x series)
  - 3. Efficient 250 mA switching power supply
  - 4. Four RJ-45 DLM local network ports with integral strain relief and dust cover
  - 5. One dimming output per relay:
    - a. 0-10V Dimming Where indicated, one 0-10 volt analog output per relay for control of compatible ballasts and LED drivers. The 0-10 volt output shall automatically open upon loss of power to the Room Controller to assure full light output from the controlled lighting. (LMRC-21x series)
    - b. Line Voltage, Forward Phase Dimming Where indicated, one forward phase control line voltage dimming output per relay for control of compatible two-wire or three-wire ballasts, LED drivers, MLV, forward phase compatible ELV, neon/cold cathode and incandescent loads. (LMRC-22x series)

- c. Each dimming output channel shall have an independently configurable minimum and maximum calibration trim level to set the dimming range to match the true dynamic range of the connected ballast or driver.
- d. The LED level indicators on bound dimming switches shall utilize this new maximum and minimum trim.
- e. Each dimming output channel shall have an independently configurable minimum and maximum trim level to set the dynamic range of the output within the new 0-100% dimming range defined by the minimum and maximum calibration trim.
- f. Calibration and trim levels must be set per output channel.
- g. Devices that set calibration or trim levels per controller are not acceptable.
- h. All configuration shall be digital. Devices that set calibration or trim levels per output channel via trim pots or dip switches are not acceptable.
- 6. Each load shall have an independently configurable preset on level for Normal Hours and After-Hours events to allow different dimmed levels to be established at the start of both Normal Hours and After-Hours events.
- 7. Fade rates for dimming loads shall be specific to bound switch buttons, and the load shall maintain a default value for any bound buttons that do not specify a unique value.
- 8. The following dimming attributes may be changed or selected using a wireless configuration tool:
  - a. Establish preset level for each load from 0-100%
  - b. Set high and low trim for each load
  - c. Set lamp burn in time for each load up to 100 hours.
- 9. Override button for each load provides the following functions:
  - a. Press and release for on/off control
  - b. Press and hold for dimming control.
- 10. WattStopper product numbers: LMRC-210 Series.

### 2.05 DLM LOCAL NETWORK (ROOM NETWORK)

- A. The DLM local network is a free topology lighting control physical connection and communication protocol designed to control a small area of a building.
- B. Features of the DLM local network include:
  - 1. Plug n' Go® automatic configuration and binding of occupancy sensors, switches and lighting loads to the most energy-efficient sequence of operation based upon the device attached.
  - 2. Simple replacement of any device in the network with a standard off the shelf unit without requiring commissioning, configuration, or setup.
  - 3. Push n' Learn® configuration to change the automatic configuration, including binding and load parameters without tools, using only the buttons on the digital devices in the local network.
  - 4. Two-way infrared communications for control by handheld remotes, and configuration by a handheld tool including adjusting load parameters, sensor configuration and binding, within a line of sight of up to 30 feet from a sensor, wall switch or IR receiver.
- C. Digital room devices connect to the local network using pre-terminated Cat 5e cables with RJ-45 connectors, which provide both data and power to room devices. Systems that utilize RJ-45 patch cords but do not provide serial communication data from individual end devices are not acceptable.
- D. If manufacturer's pre-terminated Cat 5e cables are not used for the installation, the contractor is responsible for testing each cable following installation and supplying manufacturer with test results.
- E. WattStopper Product Number: LMRJ-Series.

#### 2.06 EMERGENCY LIGHTING CONTROL DEVICES

- A. Emergency Lighting Control Unit A UL 924 listed device that monitors a switched circuit providing normal lighting to an area. The unit provides normal ON/OFF control of emergency lighting along with the normal lighting. Upon normal power failure the emergency lighting circuit will close, forcing the emergency lighting ON until normal power is restored. Features include:
  - 1. 120/277 volts, 50/60 Hz, 20-amp ballast rating
  - 2. Push to test button
  - 3. Auxiliary contact for remote test or fire alarm system interface
- B. WattStopper Product Numbers: ELCU-200.

### PART 3 EXECUTION

#### 3.01 PRE-INSTALLATION MEETING

- A. A factory authorized manufacturer's representative shall provide the electrical contractor a functional overview of the lighting control system prior to installation. The contractor shall schedule the pre-installation site visit after receipt of approved submittals to review the following:
  - 1. Confirm the location and mounting of all digital devices, with special attention to placement of occupancy and daylighting sensors.
  - 2. Review the specifications for low voltage control wiring and termination.
  - 3. Discuss the functionality and configuration of all products, including sequences of operation, per design requirements.
  - 4. Discuss requirements for integration with other trades.

#### 3.02 CONTRACTOR INSTALLATION AND SERVICES

- A. Contractor to install all devices and wiring in a professional manner. All line voltage connections to be tagged to indicate circuit and switched legs.
- B. Contractor to install all room/area devices using manufacturer's factory-tested Cat 5e cable with pre-terminated RJ-45 connectors.
  - 1. If pre-terminated cable is not used for room/area wiring, the contractor is responsible for testing each field-terminated cable following installation and shall supply the lighting controls manufacturer with test results.
  - 2. Low voltage wiring topology must comply with manufacturer's specifications.
- C. Install the work of this Section in accordance with manufacturer's printed instructions unless otherwise indicated. Before start-up, contractor shall test all devices to ensure proper communication.
- D. Calibrate all sensor time delays and sensitivity to guarantee proper detection of occupants and energy savings.
- E. Adjust time delay so that controlled area remains lighted while occupied.
- F. Provide written or computer-generated documentation on the configuration of the system including room by room description including:
- G. Sensor parameters, time delays, sensitivities, and daylighting setpoints.

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- H. Sequence of operation, (e.g. manual ON, Auto OFF. etc.)
- I. Load Parameters (e.g. blink warning, etc.)
- J. Post Start-up Tuning: After 30 days from occupancy contractor shall adjust sensor time delays and sensitivities to meet the Owner's requirements. Provide a detailed report to the Owner of post start-up activity.

#### 3.03 FACTORY SERVICES

- A. Upon completion of the installation, the manufacturer's factory authorized representative shall start up and verify a complete fully functional system.
- B. The electrical contractor shall provide both the manufacturer and the electrical engineer with three weeks written notice of the system start up and adjustment date.

#### 3.04 USER TRAINING

- A. Training: Train University's personnel on operation, adjustment, and maintenance of lighting control system and devices.
  - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
  - 2. Provide minimum of two hours of training.
  - 3. Instructor: Manufacturer's factory authorized representative.
  - 4. Location: At project site.

END OF SECTION







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# BID SUBMISSION 21 DEC 2021

3	01/25/22	ADDENDUM 3
NO	DATE	revision
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SCHOOL & LOCATION **RICHARD R. WRIGHT ELEMENTARY** SCHOOL

2700 W DAUPHIN ST. PHILADELPHIA, PA 19132 PROJECT TITLE

MAJOR HVAC RENOVATION

DRAWING NAME ARCHITECTURAL FIRST FLOOR **DEMOLITION REFLECTED CEILING PLAN** 

DRAWING SCALE As indicated LOCATION NO. 4470 DRAWN BY

DRAWING NO.

JFB

ENGINEER'S PROJECT # 068625.009 CHECKED BY

GC: B-089(c) OF 2018/2019 MC: B-079(c) OF 2018/2019 PC: B-090(c) OF 2018/2019 EC: B-080(c) OF 2018/2019

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3	01/25/22	ADDENDUM 3			
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RICHARD R. WRIGHT ELEMENTARY SCHOOL					

2700 W DAUPHIN ST. PHILADELPHIA, PA 19132 PROJECT TITLE

MAJOR HVAC RENOVATION

DRAWING NAME ARCHITECTURAL SECOND FLOOR DEMOLITION **REFLECTED CEILING PLAN** 

DRAWING SCALE As indicated LOCATION NO. 4470 DRAWN BY

DRAWING NO.

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ENGINEER'S PROJECT # 068625.009 CHECKED BY

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BID SUBMISSION 21 DEC 2021

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RI	RICHARD R. WRIGHT ELEMENTARY SCHOOL					
700						

2700 W DAUPHIN ST. PHILADELPHIA, PA 19132

PROJECT TITLE

MAJOR HVAC RENOVATION

DRAWING NAME

**ARCHITECTURAL SECOND** FLOOR PLAN

DRAWING SCALE As indicated LOCATION NO. 4470 DRAWN BY

DRAWING NO.

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ENGINEER'S PROJECT # 068625.009 CHECKED BY

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	2. ALL WORK THAT IS IMPLIED OR F CONTRACTOR. THE CONTRACTO COMPLETE SET. THE INCLUSION	REASONABLY INFERRED BY THE DRAW OR'S ATTENTION IS DIRECTED TO INCL N OF ANY AND ALL WORK BY MENTION,	VINGS IS THE RESPONSIBILITY OF THE UDE ALL DRAWINGS COMPRISING THE NOTATION, DETAIL ITEMIZATION, OR	B. FLOOI a. BA	R LIVE LOADS:* ASEMENT:	
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	OBTAINED PRIOR TO WORK BEIN TO BE INCORRECT OR INCONSIS CORRECTED BY THE CONTRACT	ING PERFORMED. ANY OR ALL WORK PI ISTENT WITH THE INTENDED RESULT SHOT OF ALL WORK PI	ROCEEDING OTHERWISE AND THEN FOUND HALL BE REMOVED, REPLACED AND/OR	c. SL i)	OPED ROOF SNOW LOAD, Ps = ROOF SLOPE FACTOR, Cs =	
4. 5.	CONTRACTOR IS RESPONSIBLE CONTRACTOR SHALL VERIFY AL CONTRACTOR TO VERIFY ALL DI	E FOR FINAL FIT, FINISH, APPEARANCE A LL DIMENSIONS AT WORK SITE PRIOR T	AND PERFORMANCE OF ALL WORK. TO THE COMMENCEMENT OF WORK.	E. WIND a. BA b. IM	LOADS:* ASIC WIND SPEED, V = PORTNACE FACTOR L=	
6.	WORK WITH CONDITIONS ENCO ALL MATERIALS AND EQUIPMEN MANUFACTURER'S PRINTED LITE	DUNTERED IN THE FIELD AND MAKE ALL NT SHALL BE APPLIED, INSTALLED OR UT TERATURE ALL LABOR FOUIPMENT & M	NECESSARY ADJUSTMENTS ACCORDINGLY TILIZED IN ACCORDANCE WITH THE	i) c. EX d. AF	OCCUPANCY CATEGORY = (POSURE CATEGORY = )	
7.	PROJECT SPECIFICATIONS. ALL WORK SHALL BE PERFORME SURFACES SO AS TO AFFORD A	IED IN A FIRST CLASS WORKMANLIKE M A NEAT FINISHED APPEARANCE, CONTR	IANNER, MATCHING AND ALIGNING ALL RACTOR SHALL CLEAN ALL SURFACES FREE	i) e. R( f. LC	MEAN ROOF HEIGHT = DOF ANGLE = DAD CASE =	
C A P	OF DIRT, REFUSE AND DEBRIS R PPEARED PRIOR TO COMMENC ROTECTION OF ALL ADJACENT	RESULTANT FROM THE WORK. ALL ADJ ICEMENT OF THE WORK. CONTRACTOR T EXISTING SURFACES TO REMAIN TO E	ACENT SURFACES SHALL BE LEFT AS THEY IS RESPONSIBLE TO PROVIDE ADEQUATE ENSURE AGAINST DAMAGE FROM	F. LATEF a. UI	RIAL SOIL LOADS:* NIFIED SOIL CLASSIFICATION =	
CONS THOR 8. CONT	TRUCTION OPERATIONS. A OUGHLY CLEANED TO THE RACTOR IS RESPONSIBLE	AT CONCLUSION OF THE WORK, ALL FI E SATISFACTION OF THE OWNER. E FOR DAMAGE AT ALL TIMES REGARDL	NISHED EXPOSED SURFACES SHALL BE ESS OF THE STAGE OF COMPLETION.	b. AC c. AT	CTIVE PRESSURE = -REST PRESSURE =	
C A A	CONTRACTOR IS SOLELY RESPONSED OF AFFECTING OR AFFECTED BY THAND SHALL PROVIDE ALL FENCE	ONSIBLE FOR SAFETY AT ALL TIMES, IN THE WORK. CONTRACTOR SHALL ADHEF ES, BARRICADES, GUARDRAILS, PARTIT	I ALL PLACES AND UNDER ALL CONDITIONS RE TO ALL ACCEPTED SAFETY PRACTICES FIONS, ETC. AS MAY BE NECESSARY IN	G. EARTI a. SE b. O	HQUAKE LOADS:* EISMIC IMPORTANCE FACTOR, I = CCUPANCY CATEGORY =	
•	ORDER TO PROTECT LIFE AND F AUTHORITIES HAVING JURISDIC ARISING FROM OR ASSOCIATED	PROPERTY FROM INJURY OR DAMAGE CTION. CONTRACTOR SHALL REPAIR AN D WITH WORK SITE OPERATIONS AND/C	AND AS MAY BE REQUIRED BY ANY AND ALL IY AND ALL DAMAGE TO THE PREMISES OR ACTIVITIES CONNECTED TO WORK.	c. M/ d. Si e. SF	APPED SPECTRAL RESPONSE ACCEI TE CLASS = PECTRAL RESPONSE COEFF =	LERATIONS =
5 1	<ol> <li>CONTRACTOR TO PERFORM ALL ONGOING OPERATIONS.</li> <li>CONTRACTOR IS RESPONSIBLE ELEMENTS AFFECTIVE THE MENT</li> </ol>		HALL EXISTING CONDITIONS. EXISTING	f. SE g. BA h. SE	ASIC SEISMIC-FORCE RESISTING SYS ASIC SEISMIC-FORCE RESISTING SYS EISMIC RESPONSE COEFFICIENTS =	STEM =
	THE DOCUMENTS. 11. DESIGN AND PROVIDE NECESSA WHICH THE STRUCTURE OF STRUCTURE	ARY BRACING, TEMPORARY SUPPORTS	S, AND SHORING TO RESIST ALL FORCES TO	i. De j. Re k. An	ESPONSE MODIFICATION FACTOR, R NALYSIS PROCEDURE USED =	=
	LATERAL LOADS, EQUIPMENT, A 12. REPRODUCTION OF STRUCTURA SHOP DRAMINOS MULICITY	AND OPERATION OF THE SAME. AND OPERATION OF THE SAME. RAL CONTRACT DRAWINGS FOR USE AS	S SHOP DRAWINGS IS STRICTLY PROHIBITED.	* BUILDING ST		D FOR CODE
	REVIEW. 13. CONTRACTOR IS RESPONSIBLE CONSTRUCTION OF THE MODE		HODS REQUIRED FOR FACILITATING	LOADING. LOA	WURK ON NEW WURK ON	ν∟Ι.
1	<ul> <li>4. DETAILS, SECTIONS AND NOTES</li> <li>TO SIMILAR CONDITIONS ELSEW</li> </ul>	 S SHOWN ON THESE DRAWINGS ARE IN WHERE UNLESS NOTED OTHERWISE.	ITENDED TO BE TYPICAL AND SHALL APPLY			
	<u>. STRUCTURAL S</u>	TEEL:		СК NIC ОН ТУР	NOT IN CONTRACT OPPOSITE HAND TYPICAI	
1	1. STRUCTURAL STEEL WIDE FLAN CONFORM TO ASTM A572 GRAD	NGE BEAMS, COLUMNS, AND MISCELLA DE 50 OR A992 GRADE 50.	NEOUS FRAMING MEMBERS SHALL			
2 3	. CHANNELS, PLATES, BARS, AND . HOLLOW STRUCTURAL STEEL R GRADE C.	D ANGLES SHALL CONFORM TO ASTM A RECTANGULAR/SQUARE/ROUND MEMBI	A36 UNLESS NOTED OTHERWISE. ERS SHALL CONFORM TO ASTM A500,			
4 5	<ol> <li>STRUCTURAL PIPE MEMBERS SI</li> <li>DESIGN, FABRICATION AND ERE "SPECIFICATION FOR STRUCTUR</li> </ol>	SHALL CONFORM TO ASTM A53, GRADE ECTION OF STRUCTURAL STEEL SHALL IRAL STEEL BUILDINGS", AND AISC 303-1	B. BE IN ACCORDANCE WITH AISC 360-10, 10 "CODE OF STANDARD PRACTICE FOR			
6 7	STEEL BUILDINGS AND BRIDGES SHOP CONNECTIONS SHALL BE CONNECTIONS SHALL BE MADE	S". AISC PROVISIONS FOR ALLOWABLE MADE WITH HIGH-STRENGTH BOLTS O WITH HIGH-STRENGTH BOLTS, EXCEP	STRENGTH OR BY WELDING. FIELD T WHERE WELDING IS INDICATED ON THE			
	DRAWINGS. HIGH-STRENGTH BC WITH THREADS INCLUDED IN SH UNLESS NOTED OTHERWISE.	OLTS SHALL CONFORM TO ASTM DESIG HEAR PLANE UNLESS NOTED OTHERWI	GNATION A325 BEARING TYPE CONNECTION ISE. ALL BOLTS SHALL BE 3/4" DIAMETER		TESTING REFERENCE SCHEDU	
8 9	ALL WELD SIZES, NOT INDICATED SHALL COMPLY WITH THE LATES ALL STEEL ANCHOR RODS SHAL	LU OR THOSE TO BE DESIGNED FOR ME EST A.W.S. D1.1 BUT IN NO CASE SHALL LL CONFORM TO ASTM F1554 GRADE 36	EMBER LOADS GIVEN ON THE DRAWINGS, WELD SIZE BE LESS THAN 3/16 INCH. 6 UNLESS NOTED OTHERWISE.	SPECIAL INSPECTIC	N TABLE SPECIFICATION DIVIS (TESTING REQUIREME	BION REI
1u 1	J. USE NON-SHRINK, NON-METALLI 1. NATURAL MILL CAMBER OF BEAI	LIC GROUT UNDER BASE PLATES. AMS SHALL BE PLACED UP. NOT DESIGNED FOR USE AS LIFT BEAM		01 45 33-01	05	
1	2. THE STRUCTURAL BEAMS ARE N			01 45 33-05	03/05	
	<ol> <li>12. THE STRUCTURAL BEAMS ARE N</li> <li>13. ADEQUATE TEMPORARY BRACIN</li> <li>14. MINIMUM THICKNESS OF STRUC</li> <li>15. EXPOSED STRUCTURAL STEEL I</li> </ol>	ING SHALL BE PROVIDED DURING CONS CTURAL STEEL SHALL BE 1/4 INCH. IS TO BE GALVANIZED.	IS. STRUCTION.	01 45 33-05	03/05	<u> </u>
	<ol> <li>THE STRUCTURAL BEAMS ARE N</li> <li>ADEQUATE TEMPORARY BRACIN</li> <li>MINIMUM THICKNESS OF STRUC</li> <li>EXPOSED STRUCTURAL STEEL I</li> </ol>	ING SHALL BE PROVIDED DURING CONS CTURAL STEEL SHALL BE 1/4 INCH. IS TO BE GALVANIZED.	IS. STRUCTION.	01 45 33-05 TABLE 01 45 33-05	5 REQUIRED VERIFICATION/INSPE	
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	<ol> <li>THE STRUCTURAL BEAMS ARE M</li> <li>ADEQUATE TEMPORARY BRACM</li> <li>MINIMUM THICKNESS OF STRUCTIC</li> <li>EXPOSED STRUCTURAL STEEL I</li> <li>CONCRETE FOR STRUCTUR STRENGTH OF 4000 PSI AT 28 DA</li> <li>REINFORCEMENT BARS SHALLE</li> <li>CONCRETE DESIGN IS IN CONFC (ACI 318-14).</li> <li>DETAIL, FABRICATE AND ERECT ACCORDANCE WITH "ACI DETAIL</li> </ol>	ING SHALL BE PROVIDED DURING CONS CTURAL STEEL SHALL BE 1/4 INCH. IS TO BE GALVANIZED. RES SHALL BE AIR ENTRAINED CONCRE AYS EXCEPT AS NOTED. BE NEW BILLET STEEL CONFORMING T ORMANCE WITH "BUILDING CODE REQU I REINFORCEMENT BARS, INCLUDING B ILING MANUAL - 2004 (SP-66(04)).	IS. STRUCTION.	TABLE 01 45 33-01 VERIFICATION/ INSPECTION ITEMS POST-INSTALLED ANCHORS	CONTROL CONTROL OF CONTROL O	CTION OF PC INSPEC FREQU (TABLE NO CONTIN CONTIN CONTIN CONTIN CONTIN CONTIN CONTIN CONTIN CONTIN CONTIN PERIC

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# ESIGN CRITERIA:

3			
AD LOADS	SELF WEIGHT		
OOR LIVE LOADS:* BASEMENT: FIRST FLOOR: SECOND FLOOR: THIRD FLOOR: ATTIC:	<u>UNIFORM (PSF)</u> = 80 = 100 = 80 = 80 = 80	<u>CONCENTRATED (PSF)</u> = 1000 = 1000 = 1000 = 1000 = 1000	
OOF LIVE LOADS:*	= 20 PSF		
IOW LOADS:* GROUND SNOW LOAD, Pg = FLAT-ROOF SNOW LOAD, Pf = i) EXPOSURE FACTOR, Ce = ii) THERMAL FACTOR, Ct = iii) IMPORTANCE FACTOR, I = SLOPED ROOF SNOW LOAD, Ps = i) ROOF SLOPE FACTOR, Cs =	= 25 PSF = 20 PSF = 0.9 = 1.0 = 1.0 = 15.75 = 1.0		
ND LOADS:* BASIC WIND SPEED, V = IMPORTNACE FACTOR, I = i) OCCUPANCY CATEGORY = EXPOSURE CATEGORY = ADJUSTMENT COEFF, $\lambda$ = i) MEAN ROOF HEIGHT = ROOF ANGLE = LOAD CASE =	= 115 MPH, (3 SEC GUS = 1.0 = II = C = N/A = 34'-10" = 0 = N/A	ST)	
TERIAL SOIL LOADS:* UNIFIED SOIL CLASSIFICATION = ACTIVE PRESSURE = AT-REST PRESSURE =	= N/A = N/A = N/A		
RTHQUAKE LOADS:* SEISMIC IMPORTANCE FACTOR, I = OCCUPANCY CATEGORY = MAPPED SPECTRAL RESPONSE ACCELERATIONS = SITE CLASS = SPECTRAL RESPONSE COEFF = SEISMIC DESIGN CATEGORY = BASIC SEISMIC-FORCE RESISTING SYSTEM = SEISMIC RESPONSE COEFFICIENTS = DESIGN BASE SHEAR = RESPONSE MODIFICATION FACTOR, R = ANALYSIS PROCEDURE USED =	= 1.0 = II Ss = .205 (20.5% g) = D Sds = .218 (21.8% g) = B ORDINARY REINFORC = .04 = N/A = 3 = N/A	S1 = .06 (6% g) Sd1 = .097 (9.7% g) ED CONCRETE MOMENT FRAMES	
	AD LOADS OOR LIVE LOADS:* BASEMENT: FIRST FLOOR: SECOND FLOOR: THIRD FLOOR: ATTIC: OF LIVE LOADS:* OW LOADS:* GROUND SNOW LOAD, Pg = FLAT-ROOF SNOW LOAD, Pf = i) EXPOSURE FACTOR, Ce = ii) THERMAL FACTOR, Ct = iii) THERMAL FACTOR, Ct = iii) IMPORTANCE FACTOR, I = SLOPED ROOF SNOW LOAD, Ps = ) ROOF SLOPE FACTOR, Cs = ND LOADS:* BASIC WIND SPEED, V = IMPORTNACE FACTOR, I = ) OCCUPANCY CATEGORY = EXPOSURE CATEGORY = ADJUSTMENT COEFF, $\lambda$ = i) MEAN ROOF HEIGHT = ROOF ANGLE = LOAD CASE = TERIAL SOIL LOADS:* UNIFIED SOIL CLASSIFICATION = ACTIVE PRESSURE = AT-REST PRESSURE = RTHQUAKE LOADS:* SEISMIC IMPORTANCE FACTOR, I = OCCUPANCY CATEGORY = MAPPED SPECTRAL RESPONSE ACCELERATIONS = SITE CLASS = SPECTRAL RESPONSE COEFF = SEISMIC DESIGN CATEGORY = BASIC SEISMIC-FORCE RESISTING SYSTEM = SEISMIC RESPONSE COEFF	AD LOADSSELF WEIGHTOOR LIVE LOADS:*UNIFORM (PSF)BASEMENT:= 80FIRST FLOOR:= 100SECOND FLOOR:= 80ATTIC:= 80ATTIC:= 80OOF LIVE LOADS:*= 20 PSFIOW LOADS:*= 20 PSFIOW LOADS:*= 0.9GROUND SNOW LOAD, Pg == 25 PSFFLAT-ROOF SNOW LOAD, Pf == 20 PSFi) THERMAL FACTOR, Ce == 0.9i) THERMAL FACTOR, Ce == 1.0ii) THERMAL FACTOR, Ce == 1.0SLOPED ROOF SNOW LOAD, Ps == 15.75i) ROOF SLOPE FACTOR, Cs == 1.0ND LOADS:*= 115 MPH, (3 SEC GUSBASIC WIND SPEED, V == 115 MPH, (3 SEC GUSIMPORTNACE FACTOR, 1== 1.0I) OCCUPANCY CATEGORY == 11EXPOSURE CATEGORY == 11EXPOSURE CATEGORY == 11EXPOSURE CATEGORY == 10I) MEAN ROOF HEIGHT == 34'-10"ROOF ANGLE == N/ALOAD CASE == N/ARTHQUAKE LOADS:*= N/ASEISMIC IMPORTANCE FACTOR, 1== 1.0OCCUPANCY CATEGORY == 11MAPPED SPECTRAL RESPONSE ACCELERATIONS =Ss = .205 (20.5% g)SITE CLASS == 0DOCCUPANCY CATEGORY == 10MAPPED SPECTRAL RESPONSE COEFFICIENTS == 04DESIGNIC DESIGN CATEGORY == 8BASIC SEISMIC FORCE RESISTING SYSTEM =ORDINARY REINFORCSEISMIC DESIGN CATEGORY == 0BASIC SEISMIC FORCE RESISTING SYSTEM =ORDIN	

![](_page_32_Figure_8.jpeg)

![](_page_32_Figure_10.jpeg)

# SCALE: NTS

TESTING REFERENCE SCHEDULE				
SPECTION TABLE SPECIFICATION DIVISION (TESTING REQUIREMENTS)		2018 IBC REFERENCE		
1 45 33-01	05	1705.2		
1 45 33-05	03/05	-		

15 33-05 REQUIRED VERIFICATION/INSPECTION OF POST-INSTALLED ANCHORS					
ION/ ITEMS	VERIFICATION/ INSPECTION TASK (TABLE NOTES 6)	INSPECTION FREQUENCY (TABLE NOTES 1,2,3)	COMMENTS (TABLE NOTES)		
	VERIFY DRILL BIT TYPE AND SIZE.	CONTINUOUS	-		
	VERIFY HOLE DEPTH AND CLEANLINESS.	CONTINUOUS	-		
	VERIFY PRODUCT DESCRIPTION INCLUDING NAME, ROD TYPE, DIAMETER, AND LENGTH.	CONTINUOUS	-		
	VERIFY ADHESIVE EXPIRATION DATE.	CONTINUOUS	-		
	VERIFY PROPER INSTALLATION TECHNIQUE.	PERIODIC	-		
	VERIFY FASTENER EMBEDMENT, SPACING, AND EDGE/END DISTANCE.	CONTINUOUS	-		

01 45 33-1 REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION					
ICATION/ TON ITEMS	VERIFICATION/ INSPECTION TASK (TABLE NOTES 6)	INSPECTION FREQUENCY (TABLE NOTES 1,2,3)	COMMENTS (TABLE NOTES)		
VERIFICATION TRENGTH TS AND	IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS	PERIODIC	_		
	MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	PERIODIC	-		
N OF NGTH	SNUG-TIGHT JOINTS	PERIODIC	-		
	PRE-TENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OF-NUT WITH MATCHMARKING, TWIST-OFF BOLT, OR DIRECT TENSION INDICATOR METHODS OF INSTALLATION	PERIODIC	-		
	PRE-TENSIONED AND SLIP-CRITICAL JOINTS USING TURN-OF-NUT WITHOUT MATCHMARKING OR CALIBRATED WRENCH METHODS OF INSTALLATION	CONTINUOUS	-		
VERIFICATION TURAL STEEL, MED STEEL	FOR STRUCTURAL STEEL, IDENTIFICATION MARKINGS TO CONFORM TO AISC 360.	PERIODIC	-		
FORMED K:	FOR OTHER STEEL, IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARDS SPECIFIED IN THE APPROVED CONSTRUCTION DOCUMENTS.	PERIODIC	-		
	MANUFACTURER'S CERTIFIED TEST REPORTS.	PERIODIC	-		
ON ILLER 3:	IDENTIFICATION MARKINGS TO CONFORM TO AWS SPECIFICATION IN THE APPROVED CONSTRUCTION DOCUMENTS.	PERIODIC	-		
	MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	PERIODIC	-		
N OF WELDING: TURAL STEEL, FORMED STEEL	COMPLETE AND PARTIAL JOINT PENETRATION GROOVE WELDS.	CONTINUOUS	-		
DLD-FORMED DECK.	MULTI-PASS FILLET WELDS.	CONTINUOUS	-		
	SINGLE-PASS FILLET WELDS > 5/16 INCH.	CONTINUOUS	-		
	PLUG AND SLOT WELDS.	CONTINUOUS	-		
	SINGLE-PASS FILLET WELDS $\leq$ 5/16 INCH.	PERIODIC	-		

![](_page_32_Figure_16.jpeg)

**SECTION** 

![](_page_32_Picture_17.jpeg)

![](_page_32_Figure_18.jpeg)

![](_page_32_Figure_19.jpeg)

![](_page_32_Figure_20.jpeg)

FIXED HANDRAIL CONNECTION DETAIL

SCALE: NTS

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LADDER DETAILS

ELEVATION

	OGRAMS				
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www.philasd.o	brg				
Gary Garbacik PA PE049751E	DATE MM/DD/YY				
ENGINEER OF RECORD: <u>MECHANICAL/PLUMBING/STRI ENGINEER:</u> GANNETT FLEMING, INC. 1010 ADAMS AVENUE VALLEY FORGE, PA 19403 Phone: 610.783.3862 Email: BWEISSER@GFNET.COM Attn: BRIAN WEISSER, PE	<u>JCTURAL</u>				
ELECTRICAL ENGINEER:					
232 CECELIA ACRES DRIVE IVYLAND, PA 18974 Phone: 215.354.9161 Fax: 215.354.9163 Attn: GRAZYNA PLICHTA, PE	IG, INC.				
ARCHITECT					
GANNETT FLEMING ARCHITEC 1010 ADAMS AVENUE VALLEY FORGE, PA 19403 Phone: 610.783.3862 Email: BWEISSER@GFNET.COM	TS				
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3 01/25/22 ADDENDUM 3 NO DATE REV	3 /ISION				
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3       01/25/22       ADDENDUM 3         NO       DATE       REV         SCHOOL & LOCATION       RICHARD R. WRIGHT E         SCHOOL & LOCATION       RICHARD R. WRIGHT E         PROJECT TITLE       MAJOR HVAC REN         DRAWING NAME       GENERAL NO         DRAWING SCALE       As indicated         LOCATION NO.       ENGIN         4470       06863         DRAWN BY       CHEO         Author       Cheo	ACCER'S PROJECT # 25.009 CKED BY Cker				
3       01/25/22       ADDENDUM 3         NO       DATE       REV         SCHOOL & LOCATION       RICHARD R. WRIGHT E         SCHOOL & LOCATION       RICHARD R. WRIGHT E         SCHOOL & LOCATION       RICHARD R. WRIGHT E         PROJECT TITLE       MAJOR HVAC REN         DRAWING NAME       GENERAL NO         DRAWING SCALE       As indicated         LOCATION NO.       ENGIN         4470       0686         DRAWN BY       CHEO         Author       Cheo         GC: B-089(c) OF 20         PC: B-090(c) OF 20         PC: B-090(c) OF 20         EC: B-080(c) OF 20         EC: B-080(c) OF 20	B       B         3       //SION         IEMENTARY       B         DELPHIA, PA 1913       B         IOVATION       B         DTES       B         EER'S PROJECT #       25.009         CKED BY       Sker         18/2019       18/2019         18/2019       18/2019         18/2019       18/2019				
3       01/25/22       ADDENDUM 3         NO       DATE       REV         SCHOOL & LOCATION       RICHARD R. WRIGHT E         SCHOOL & LOCATION       RICHARD R. WRIGHT E         SCHOOL & LOCATION       SCHOOL         2700 W DAUPHIN ST. PHILAE       PROJECT TITLE         MAJOR HVAC REN       DRAWING NAME         DRAWING SCALE       As indicated         LOCATION NO.       ENGIN         4470       0686         DRAWN BY       CHEC         Author       Chec         GC: B-089(c) OF 20       PC: B-079(c) OF 20         EC: B-080(c) OF 20       EC: B-080(c) OF 20         DRAWING NO.       S-000	A Context and the second secon				

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		GEN
(NOTE: CAPITAL L LOWER CASE LET	ETTER @ SYMBOL DENOTES FIXTURE TYPE, TTER DENOTES CONTROL DEVICE.)	
	CEILING MOUNT 2x2 LED FIXTURE	
	CEILING MOUNT 2x4 LED FIXTURE	
	4' CEILING MOUNT LED FIXTURE	
	8' CEILING MOUNT LED FIXTURE	8-
	WALL MOUNT LED FIXTURE	
0	CEILING MOUNT LED FIXTURE	
HO	WALL MOUNT LED FIXTURE	
	LED SPOT/FLOOD LIGHT FIXTURE	
H HQ	WALL MOUNT LED SPOT/FLOOD LIGHT FIXTURE	
	LED LIGHT FIXTURE DEDICATED FOR UNSWITCHED	
•	POLE STANDARD LIGHT FIXTURE (ONE LUMINAIRE INDICATED)	
$\mathbf{i}$	EXIT SIGN FIXTURE (SINGLE FACE UNIVERSAL MOUNT INDICATED)	
	EXIT SIGN FIXTURE W/DIRECTIONAL ARROWS (DOUBLE FACE UNIVERSAL MOUNT INDICATED)	
S	SWITCH, SINGLE POLE	
s <sub>3</sub>	SWITCH, 3-WAY	
s <sub>4</sub>	SWITCH, 4-WAY	
s <sub>D</sub>	SWITCH, DIMMER	<u>_B10_</u>
	DIRECTIONAL MOTION DETECTOR LIGHT CONTROL	
	MULTI-DIRECTIONAL MOTION DETECTOR LIGHT CONTROL	
S	SPECIAL PURPOSE LIGHT SWITCH; DESCRIPTION OF SWITCH WILL BE AS NOTED ON DRAWINGS	
<b>E</b>	PHOTOELECTRIC CONTROL	
	LIGHTING CONTACTOR:	
LC1	REPRESENTS LIGHTING CONTACTOR IDENTIFICATION	
	LIGHTING CONTACTOR REMOTE CONTROL:	
	REPRESENTS LIGHTING CONTACTOR TO BE CONTROLLED	
OS#	2 - ULTRASONIC OCCUPANCY SENSOR CEILING MOUNT 3 - DUAL TECH OCCUPANCY SENSOR CEILING MOUNT	
OS#	1 - PIR OCCUPANCY SENSOR WALL MOUNT 2 - ULTRASONIC OCCUPANCY SENSOR WALL MOUNT 3 - DUAL TECH OCCUPANCY SENSOR WALL MOUNT	
VS#	1 - PIR VACANCY SENSOR WALL MOUNT 2 - ULTRASONIC VACANCY SENSOR WALL MOUNT 3 - DUAL TECH VACANCY SENSOR WALL MOUNT	
DT	DIGITAL TIME SWITCH WALL MOUNT	

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## EMERGENCY LIGHTING

	LUMINAIRE PROVIDING EMERGENCY ILLUMINATION
	EMERGENCY BATTERY PACK
EXIT	EMERGENCY EXIT SIGN
<b>.</b>	REMOTE TWIN HEADS

s S

GENER	AL POWER
C	DENOTES MOUNTED 6" ABOVE COUNTER TOP
-0	SINGLE RECEPTACLE
-	DUPLEX RECEPTACLE, NEMA 5-20R
GF	RECEPTACLE WIRED TO GROUND FAULT CIRCUIT BREAKER
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
S - SWITC	CHED ISOLATED GROUND
S	SWITCHED
TR	
WP	WEATHER RESISTANT RECEPTACLE W/IN-USE COVER (WET LOCATION)
WR	WEATHER RESISTANT RECEPTACLE W/NON-IN-USE COVER (DAMP LOCATION)
=⊖ TV-	DUPLEX RECEPTACLE, NEMA 5-20R
#	DOUBLE DUPLEX RECEPTACLE
=	DUPLEX RECEPTACLE DEDICATED FOR UPS POWER
н	SPECIAL PURPOSE RECEPTACLE (AMPACITY AS NOTED)
	A - 30A, 2 POLE + GROUND, 208VAC, 1-PHASE, NEMA 4X, 1P66/IP67 B - 30A, 1POLE + NEUTRAL + GROUND, 125VAC, NEMA 4X, IP66/IP67 C - 30A, 3 POLE + GROUND, 208VAC, 3-PHASE, NEMA 4X, IP66/IP67 D - 60A, 3 POLE + GROUND, 208VAC, 3-PHASE, NEMA 4X, IP66/IP67 E - 30A, 2 POLE + GROUND, 250VAC, 1-PHASE, TWISTLOCK F - 30A, 1 POLE + NEUTRAL + GROUND, 125VAC, TWISTLOCK
$\square$	DUPLEX RECEPTACLE FLOOR MOUNTED
	SPECIAL PURPOSE RECEPTACLE FLOOR MOUNTED (AMPACITY AS NOTED)
<u>B10</u>	SURFACE MOUNTED RACEWAY LETTER INDICATES TYPE (SEE E600) NUMBER INDICATES LENGTH
L	JUNCTION BOX
	NON FUSED DISCONNECT SWITCH
 [F]]	FUSED DISCONNECT SWITCH
	MOTOR STARTER
	COMBINATION MOTOR STARTER
	CONTACTOR
TS	TIME CLOCK SWITCH CONTROL
s <sub>T</sub>	TIME SWITCH
s <sub>M</sub>	MANUAL MOTOR STARTER SWITCH WITHOUT OVERLOADS
s <sub>MT</sub>	MANUAL MOTOR STARTER SWITCH WITH THERMAL OVERLOADS
s <sub>MF</sub>	MANUAL MOTOR STARTER SWITCH WITHOUT OVERLOADS WITH PILOT LIGHT
	PANELBOARD
PB	PUSHBUTTON STATION TYPE AS NOTED
$(\Box)$	MUSHROOM SWITCH
$\diamond$	MOTOR (HORSEPOWER INDICATED ON PLANS)
Т	TRANSFORMER
$\bigcirc$	GENERATOR
MOD	MOTOR OPERATED DAMPER
T	THERMOSTAT
UPS	UNINTERRUPTIBLE POWER SUPPLY
SPD	SURGE PROTECTION DEVICE

6

# VFD VARIABLE FREQUENCY DRIVE

## COMMUNICATION

S	CEILING SPEAKER
s	WALL MOUNTED SPEAKER
s	WALL MOUNTED DOUBLE SPEAKER
•S	POLE MOUNTED SPEAKER
	POLE MOUNTED DOUBLE SPEAKER
$\triangleright$	DATA OUTLET
	TELEPHONE OUTLET
P	PAY TELEPHONE OUTLET
$\square$	TELEPHONE / DATA OUTLET
	USB RECEPTACLE
TTC	TELEPHONE TERMINAL CABINET
D	DESKTOP HAND SET
	WALL MOUNTED HAND SET
TV	TV OUTLET

## **GENERAL NOTES**

- 1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NFPA-70) AS ADOPTED AND AMMENDED BY PHILADELPHIA ELECTRICAL CODE AND THE THE COMMONWEALTH OF PENNSYLVANIA.
- 2. ALL ELECTRICAL WORK SHALL BE PROPERLY GROUNDED AND SHALL MEET ALL REQUIREMENTS OF THE APPLICABLE SECTION OF THE NATIONAL ELECTRICAL CODE (NEC) AND ANY AUTHORITIES HAVING JURISDICTION.
- 3. DRAWINGS ARE DIAGRAMMATIC IN NATURE, THE CONTRACTOR SHALL VERIFY DIMENSIONS PRIOR TO INSTALLATION. CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER DIVISIONS TRADES TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM. CONTRACTOR SHALL COORDINATE LOCATION OF FIXTURES, DEVICES, ETC WITH OTHER TRADES IN ORDER TO AVOID INTERFERENCES.
- 4. ARCHITECTURAL FEATURES SHOWN ON THESE DRAWINGS ARE FOR BACKGROUND INFORMATION ONLY. REFER TO THE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ACTUAL BUILDING CONSTRUCTION WALLS AND CURBS. REFER TO EQUIPMENT DRAWINGS FOR ACTUAL LOCATION OF EQUIPMENT.
- 5. EXACT CONDUIT STUB-UP LOCATIONS ARE TO BE DETERMINED BY THE ELECTRICAL CONTRACTOR BASED ON THE CERTIFIED MANUFACTURER'S DRAWINGS OF RESPECTIVE EQUIPMENT. CONDUITS SHALL BE INSTALLED TO AGREE WITH EQUIPMENT FURNISHED.
- 6. WALL AND FLOOR PENETRATIONS SHALL BE BY THE ELECTRICAL CONTRACTOR. PROVIDE
- FIRESTOP AS REQUIRED FOR ALL PENETRATIONS MADE FOR ELECTRICAL WORK. 7. COORDINATE THE COLORS OF WIRING DEVICES AND FACEPLATES WITH THE ARCHITECT.
- 8. EQUIPMENT AND DEVICES SHALL MATCH THE BUILDING STANDARD.

## WIRING METHODS

- 1. UNDERGROUND A. UNLESS OTHERWISE NOTED ON THE DRAWINGS CONCRETE ENCASED AND DIRECT BURIED CONDUIT SHALL BE SCHEDULE 40 PVC. WHERE CONDUITS PASS THROUGH GRADE, THROUGH CONCRETE PADS, OR THROUGH BUILDING FOUNDATION WALLS OR FLOOR SLABS CONDUIT SHALL BE PVC COATED.
- 2. INDOORS A. IN FINISHED AREAS ALL RACEWAY AND WIRING SHALL BE CONCEALED AND BOXES RECESSES. WIRING INSTALLED IN MASONRY WALLS SHALL BE EMT OR GALVANIZED RIGID STEEL. WIRING INSTALLED IN STUD WALL CAVITIES OR ABOVE HUNG CEILINGS MAY BE
- TYPE MC CABLE OR EMT. B. IN UNFINISHED AREAS SUCH AS MECHANICAL AND ELECTRICAL ROOMS WIRING SHALL BE
- INSTALLED IN EMT. C. WIRING IN THE CRAWLSPACE SHALL BE INSTALLED IN RIGID METAL CONDUIT.

## LINES & REFERENCE SYMBOLS

	NEW WORK LINEWEIGHT		
	DEMOLITION WORK LINEWEIGHT		
	EXISTING WORK LINEWEIGHT		
	FUTURE WORK LINEWEIGHT		
$\bigotimes$	POINT OF CONNECTION		
$\bigcirc$	TERMINATION POINT OF DEMOLITION		
	POINT OF FUTURE CONNECTION		
<b>#</b>	SHEET NOTE REFERENCE		
<b>#</b>	REVISION REFERENCE		
E-1	EQUIPMENT TAG		
	NORTH ARROW INDICATES PLAN/DETAIL NUMBER PLAN/DETAIL TITLE		
	TITLE		
- SCALE:	SCALE (AS REQUIRED)		
1 (M301)			
	INDICATES DRAWING ON WHICH DRAWING SECTION APPEARS		

### **CONDUIT FEEDERS & BRANCH CIRCUITS**

![](_page_33_Figure_29.jpeg)

![](_page_33_Picture_30.jpeg)

SHEET 65 OF 69

![](_page_34_Figure_0.jpeg)

# **GENERAL DEMOLITION NOTES**

- 1. ELECTRICAL CONTRACTOR SHALL VERIFY DESIGNATION AND CIRCUIT NUMBER FOR EACH DEVICE TO BE REMOVED.
- 2. ALL SYMBOLS SHOWN LIGHTLY SOLID ARE EXISTING ELECTRICAL DEVICES/EQUIPMENT TO REMAIN.
- TO ITS POINT OF ORIGIN AND CIRCUIT BREAKER TO BECOME SPARE.
- DEMOLITION AND NEW WORK SHALL HAVE THE PANEL SCHEDULES REVISED. 5. ELECTRICAL CONTRACTOR SHALL NOT DISCONNECT ANY
- RENOVATED AREA WITHOUT PRIOR NOTIFICATION AND PERMISSION FROM MAINTENANCE AND ENGINEERING DEPARTMENT. EXTREME CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO SURROUNDING AREAS.
- 6. VERIFY ALL EXISTING CONDITIONS AT JOB SITE.

## **# DEMO SHEET KEYNOTES**

- . DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES. MAINTAIN EXISTING CIRCUITS/WIRING ASSOCIATED WITH LIGHTING FIXTURES. FIELD VERIFY QUANTITY AND LOCATION OF ALL EXISTING FIXTURES.
- . DISCONNECT AND REMOVE EXISTING EXIT SIGNS. MAINTAIN EXISTING CIRCUITS/WIRING ASSOCIATED WITH EXIT SIGNS. FIELD VERIFY QUANTITY AND LOCATION OF ALL EXISTING FIXTURES.
- DISCONNECT, REMOVE AND MAKE SAFE FOR REUSE EXISTING SMOKE DETECTORS. MAINTAIN EXISTING ASSOCIATED CIRCUITS/WIRING . FIELD VERIFY QUANTITY AND LOCATIONS.
- 4. DISCONNECT, REMOVE AND MAKE SAFE FOR REUSE EXISTING RECESSED SPEAKERS. MAINTAIN EXISTING ASSOCIATED CIRCUITS/WIRING . FIELD VERIFY QUANTITY AND LOCATIONS.
- DISCONNECT, REMOVE AND MAKE SAFE FOR REUSE EXISTING SECURITY CAMERA AT VESTIBULE 100A. MAINTAIN EXISTING ASSOCIATED CIRCUIT/WIRING

![](_page_34_Figure_14.jpeg)

![](_page_35_Figure_0.jpeg)

# **GENERAL DEMOLITION NOTES**

- 1. ELECTRICAL CONTRACTOR SHALL VERIFY DESIGNATION AND CIRCUIT NUMBER FOR EACH DEVICE TO BE REMOVED.
- 2. ALL SYMBOLS SHOWN LIGHTLY SOLID ARE EXISTING ELECTRICAL DEVICES/EQUIPMENT TO REMAIN.
- 3. ALL WIRING/CONDUIT LEFT UNUSED SHALL BE REMOVED TO ITS POINT OF ORIGIN AND CIRCUIT BREAKER TO BECOME SPARE.
- 4. PANELBOARDS WHICH ARE AFFECTED BY THE DEMOLITION AND NEW WORK SHALL HAVE THE PANEL SCHEDULES REVISED.
- EQUIPMENT, OR ELECTRICAL CIRCUITS IN THE RENOVATED AREA WITHOUT PRIOR NOTIFICATION AND PERMISSION FROM MAINTENANCE AND ENGINEERING DEPARTMENT. EXTREME CARE SHALL BE TAKEN TO MINIMIZE DISTURBANCE TO SURROUNDING AREAS.
- 6. VERIFY ALL EXISTING CONDITIONS AT JOB SITE.

### **# DEMO SHEET KEYNOTES**

- DISCONNECT AND REMOVE EXISTING LIGHT FIXTURES. MAINTAIN EXISTING CIRCUITS/WIRING ASSOCIATED WITH LIGHTING FIXTURES. FIELD VERIFY QUANTITY AND LOCATION OF ALL EXISTING FIXTURES.
- DISCONNECT AND REMOVE EXISTING EXIT SIGNS. MAINTAIN EXISTING CIRCUITS/WIRING ASSOCIATED WITH EXIT SIGNS. FIELD VERIFY QUANTITY AND LOCATION OF ALL EXISTING FIXTURES.
- DISCONNECT, REMOVE AND MAKE SAFE FOR REUSE EXISTING SMOKE DETECTORS. MAINTAIN EXISTING ASSOCIATED CIRCUITS/WIRING . FIELD VERIFY QUANTITY AND LOCATIONS.
- DISCONNECT, REMOVE AND MAKE SAFE FOR REUSE EXISTING RECESSED SPEAKERS. MAINTAIN EXISTING ASSOCIATED CIRCUITS/WIRING . FIELD VERIFY QUANTITY AND LOCATIONS.
- DISCONNECT, REMOVE AND MAKE SAFE FOR REUSE EXISTING SECURITY CAMERA AT VESTIBULE 100A. MAINTAIN EXISTING ASSOCIATED CIRCUIT/WIRING

![](_page_35_Figure_14.jpeg)

![](_page_36_Figure_0.jpeg)

	LIGHI				
	BASIS OF DESIGN				
TYPE	DESCRIPTION	MANUFACTURER			
L1	2x4 LED RECESSED TROFFER - GTL SERIES	LITHONIA			
L2	2x2 LED RECESSED TROFFER - GTL SERIES	LITHONIA			
L3	1x4 LED RECESSED TROFFER - GTL SERIES	LITHONIA			
L4	1x4 LED SUSPENDED	LITHONIA			
L5	2x4 T SERIES SURFACE MOUNT	LITHONIA	2T		
L6	1x4 T SERIES SURFACE MOUNT	LITHONIA	Т		
L7	4' LED STRIP LIGHT	LITHONIA	C		
L8	LED DAMP RATED HIGH BAY	LITHONIA	JCBL 12000LM A		
L9	DOWNLIGHT (NEW CONSTRUCTION)	LITHONIA	LBR8 ALO2 S		
L10	FEM LED LOW PROFILE	LITHONIA	FEM L48 4000		
L11	FEM LED LOW PROFILE/EMERGENCY CIRCUIT	LITHONIA	FEM L48 4000		

![](_page_37_Figure_0.jpeg)

## **GENERAL NOTES**

- 1. SEE ELECTRICAL DRAWING E001 FOR GENERAL NOTES AND PROJECT INFORMATION.
- REFER TO DETAIL SHEETS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION.

### SHEET KEYNOTES

- EXISTING CIRCUITS/WIRING. REFER TO ARCHITECTURAL DRAWINGS FOR THE LIMIT OF THE CEILING REPLACEMENT/SCOPE OF WORK. FIELD VERIFY QUANTITY AND LOCATION OF ALL DEVICES. EXTEND WIRING/CONDUIT AS NEEDED. EC SHALL ASSURE THAT ALL SYSTEMS ARE FULLY OPERATIONAL AFTER INSTALLATION.
- VOLTAGE OCCUPANCY SENSOR, LEVITON PROVOLT MODEL # ODC15-IDW, OR APPROVED EQUAL. INSTALL AND WIRE PER MANUFACTURER'S RECOMMENDATIONS.
- LINE VOLTAGE MANUAL-ON VACANCY SENSOR/SWITCH, LEVITON MODEL #DVS05-1LZ, OR APPROVED EQUAL.
- (PIR) OCCUPANCY SENSORS, LEVITON MODEL #OSC15-IOW OR APPROVED EQUAL, QTY AS SHOWN, WITH (1) #OSP20-RDH POWER PACK, CONNECTED FOR CONTROL OF LIGHTS IN THIS ROOM AREA.
- AND AT THE ENTRANCE TO THE ROOF. PROVIDE NEW EXIT SIGN. CONNECT TO EXISTING
- SIGNS IS COMPLETED. FIELD VERIFY CIRCUIT NUMBER.
- PREVIOUSLY SERVING THIS AREA.
- SERVING THIS AREA. 9. NOTE NOT USED.
- 10. PROVIDE A LOW VOLTAGE LIGHTING CONTROL SYSTEM FOR THIS SPACE CONSISTING OF A LOCAL ROOM LIGHTING CONTROLLER: WITH VACANCY SENSING OCCUPANT DERECTOR(S), DAYLIGHT SENOR(S) AND LOW VOLTAGE ON/OFF/DIM CONTROL SWITCH(S), AS SHOWN. (NOTE, DAYLIGHT SENSORS MAY NOT BE REQUIRED IN ALL SPACES.) REFER TO
- 1. PROVIDE BI-LEVEL SWITCHING IN THIS SPACE TO ALLOW FOR MANUAL (+/-) 50% LIGHT LEVEL REDUCTION.
- 12. PROVIDE A LOW VOLTAGE LIGHTING CONTROL SYSTEM FOR THIS SPACE CONSISTING OF A LOCAL ROOM LIGHTING CONTROLLER: WITH VACANCY SENSING OCCUPANT DETECTOR(S) AND LOW REFER TO SPECIFICATIONS, SECTION 26 09 23.

![](_page_37_Figure_18.jpeg)