

**THE SCHOOL DISTRICT OF PHILADELPHIA
Office of Capital Programs
440 North Broad Street, 3rd Floor – Suite 371
Philadelphia, PA 19130**

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Addendum No. 3

Subject: Delaplaine McDaniel Elementary School
2022 Classroom Modernization
SDP Contract Nos. 2022-009-G, 2022-009-E

Location: Delaplaine McDaniel Elementary School
1801 South 22nd Street
Philadelphia PA 19145

This Addendum No. 3, dated FEBRUARY 18, 2022, shall modify and become part of the proposed Contract Documents of the work of this project. Any items not mentioned herein, or affected by, shall be performed strictly in accordance with the original Contract Documents, unless modified by prior addenda.

Specifications

1. Added Specifications (4 total) 260505 Selective Demolition for Electrical
260923 Lighting Control Systems
271300 Communications Systems
275313 2-Wire Clock System
2. Revised Specifications (1 total) 260563 Acceptance Electrical Testing
3. Removed Specifications (1 total) 024119 Selective Electrical Demolition

Clarifications

1. General Construction Contractor is not responsible for Selective Electrical Demolition or Minor Electrical Demolition. The Electrical Contractor is responsible for Selective Electrical Demolition and Minor Electrical Demolition.

Questions and Answers

1. **Question:** As of now, six (6) of the nine (9) Classroom Modernization projects bid on the same date. It is not feasible for the small pool of approved GC bidders to prepare six (6) bids along with all of the required M/WBE paperwork and hand-deliver them to the SDP building all on the same day. Please consider changing the bid due dates so that a maximum of 2-3 classroom modernization projects bid on the same date.

Response: The bid date has been extended per Addendum #1 to February 24, 2022

2. **Question:** Regarding AWI QCP Certification requirements for all nine (9) of the Classroom Modernization projects: Please make a blanket determination for all 9 schools as to whether this requirement will be waived or not and issue an addendum.

Response: SDP to waive the AWI QCP millwork certification requirement.

3. **Question:** Please confirm that Catharine Elementary School is the only Classroom Modernization project that requires Room Signage. The bid documents for all the other projects include a specification section for signage however Catharine ES is the only project that shows signage on the drawings.

Response: Room signage is not required at McDaniel ES, specification section has been removed from McDaniel ES per Addendum 2.

4. **Question:** The spec calls for Greenscreen Revive 5% shade fabric, but the plans call for blackout shades. Which is correct?

Response: Provide Revive 5% shade fabric.

5. **Question:** Ref: Drawings E100, E101, E102, E103 SHEET KEYNOTE #3 - How do we bid "Provide new data outlets & Cat 6 cabling as needed"?

Response: Refer to sheet keynote 3 on revised E101 and E102 attached.

6. **Question:** Ref: Drawings E100, E101, E102, E103 SHEET KEYNOTE #3 - Does each classroom have the Cat 6 cabling required for the quantity of drops?

Response: Refer to sheet keynote 3 on revised E101 and E102 attached.

7. **Question:** Ref: Drawings E100, E101, E102, E103 SHEET KEYNOTE #3 - What is the location in the buildings for the MDF?

Response: Refer to locations shown on revised E101 and E102 attached.

8. **Question:** Ref: Drawings E100, E101, E102, E103 SHEET KEYNOTE #3 - Do we need to provide additional patch panels or other equipment?

Response: No.

9. **Question:** Ref: Drawings E100, E101, E102, E103 SHEET KEYNOTE #7 - "Provide new clock if existing is in working condition." Should we bid to replace clock only if it is in working condition?

Response: Provide new clock - refer to keynote 8 on revised E101 and E102 attached.

10. **Question:** Ref: Drawings E100, E101, E102, E103 SHEET KEYNOTE #7 - What type clock (battery, 120 volt, 24 volt) & quantity should we bid to replace? Are you requiring a systems clock (Sapling) or an off the shelf unit?

Response: Clocks are to be Sapling, hardwired. Refer to specification section 275313 attached.

11. **Question:** Drawings E201, E202 keynote #1 calls for dimming lighting controls in the classrooms but the note has very little detail on design requirements. The floor plans show nothing in terms of design for the lighting controls (control layout, zoning, basis of design part numbers etc.). The floor plans conflict with keynote #1 and show single pole switches which do not dim. Why was a design not provided with basis of design control part numbers like all other typical SDP projects? If no design will be provided, please answer questions below.

Response: Refer to revised E201 and E201 drawings attached.

12. **Question:**

- a. Are the dimming controls in the classroom supposed to be low voltage digital (room controller type)?

Response: Refer to locations, keynotes, and wiring diagram shown on revised E201 and E202 drawings attached.

- b. Is there supposed to be 2 control zones, (1) for the row of lighting adjacent to the window and (1) for the other (2) rows of lights? Or are there 3 control zones for each of the 3 rows?

Response: Refer to locations and keynotes shown on revised E201 and E202 attached.

- c. Are the storage closets associated with each classroom supposed to have some sort of analog automatic control (e.g. PIR wall mounted line voltage occ sensors)? If so please specify requirements as toggle switches are currently shown.

Response: Refer to locations and keynotes shown on revised E201 and E202 attached.

13. **Question:** Fixture type A3 is specified on drawing E201, but there are no instances of type A3 shown in plan. Please confirm type A3 is not in scope. If type A3 is in scope, please clarify the following:

Response: Fixture type A3 is removed from the schedule on revised E201 attached.

- a. The specified catalog number does not indicate the minimum dimming level. Please confirm this is correct and that dimming is not required for this fixture.

Response: Fixture type A3 is removed from the schedule on revised E201 attached.

- b. If type A3 is shown as multiple 4' sections in a continuous row, please clarify if we are to provide individual 4' instances or a continuous row configuration. If continuous row configuration, can we provide any combination of standard lengths to meet the overall length? Or must we use combinations of only 4' lengths to meet the overall length?

Response: Fixture type A3 is removed from the schedule on revised E201 attached.

14. **Question:** Regarding spec 260500-3.11, please confirm all touch up paint will be provided by the general contract.

Response: Touch-up painting related to electrical work is the responsibility of EC.

15. **Question:** Spec 260533-3.01A states all exposed circuits, including feeders, shall be provided in rigid conduit. This statement conflicts with the wiring methods described on E001, which allows EMT. Please confirm EMT is approved for exposed branch circuits and exposed feeders.

Response: EMT is permitted for exposed branch circuits and feeders.

16. **Question:** Division 27 specs were not provided. Please confirm CAT6 cable should be provided for new voice drops, new data drops, and new WAP drops. Please confirm CAT6 should be run on j-hooks above drop ceilings, and in EMT when exposed.

Response: Existing wiring to be reused in new conduit and outlets. Refer to keynotes 1, 2, 3 on revised E101 and E102 attached. Provide CAT6 for all new work, refer to spec section 271300 Communications Systems attached.

17. **Question:** Keynote 2 on drawing ED101/ED102 and keynote 3 on drawing E101E/102 state that all data/telephone/coaxial outlets within this room are to remain. However, these devices are shown with dashed lines in the demo plans, and bold lines in the new work plans, which indicates that we are to demolish and provide new devices. These dashed & bold lines conflict with the direction stated in the keynotes. Please clarify we are to provide new devices, and if we are to provide new CAT6.

18. **Response: Refer to keynote 1 on revised ED101 and ED102 and keynote 3 on revised E101 and E102 attached.**

19. **Question:** Please provide basis of design for new clocks mentioned in drawings ED101/ED102 keynote 5 and drawings E101/E102 new work keynote 8. Please confirm head end clock system is existing.

Response: Refer to spec section 275313 Clock Systems attached. Existing head end clock system is existing to remain.

20. **Question:** Keynote 2 on ED201/ED202 states to provide new ceiling tiles as needed to accept new lighting layout. Please confirm new ceiling tiles are to be provided by the GC contract.

Response: Refer to keynote 2 on revised ED201 and ED202 attached.

21. **Question:** Spec section 260563 Acceptance Electrical Testing was included in the bidding documents. Multiple different NETA testing requirements are listed in section 3.02 to be performed by the contractor. Please provide clarification on which tests are applicable to the project. See notes below.

a. There are no adjustable trip breakers in the scope.

Response: No adjustable trip breakers in scope - no testing required.

b. There are no new feeders for megger (insulation) testing.

Response: No testing required.

c. There are no new panelboards for thermographic inspection. Confirm thermographic insulation testing is not required for existing panelboards.

Response: No testing required.

d. There are no new motor/starters in scope.

Response: No new motor / starters in scope - no testing required.

e. GFCI receptacles are factory tested. Does SDP want to spend extra money for a testing agency to also test them?

Response: No testing required.

f. For the circuit breaker tests, are we to test only the new 20A-1P circuit breakers that we add for the project? or all the existing ones inside the panelboards associated with the scope of work?

Response: No testing required.

Attachments:

Specification – 260505 Selective Demolition for Electrical

- 260563 Acceptance Electrical Testing
- 260923 Lighting Controls Systems
- 271300 Communications Systems
- 275313 2-Wire Clock System

Drawings

E001, ED101, ED102, ED201, ED202, E101, E102, E201, E202

End of Addendum 3

SECTION 26 0505 - SELECTIVE DEMOLITION FOR ELECTRICAL

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: The work specified in this Section consists of material for demolition and salvaging existing electrical systems, wiring, raceways, supports, equipment, and minor repair of underlying structure.
- B. Related Sections:
 - 1. Division 1 – General Requirements

1.02 REFERENCES

- A. National Fire Protection Association (NFPA):
 - 1. NFPA 70 National Electrical Code (NEC)

1.03 SUBMITTALS

- A. Submit demolition plan.

1.04 COORDINATION AND SEQUENCING

- A. Coordinate all power outages with Owner.
- B. Perform demolition in a manner not to delay or interfere with other operations of work in the Project and operations of the Owner.

1.05 SCHEDULING

- A. Schedule all work with the Owner through the Owner's designated representative. Start no work in an area until a schedule has been prepared, submitted, and approved.
- B. Coordinate the work schedule with the Owner, Engineer, and other Contractors. Coordinate the work so not to interfere or conflict with the performance of work by the Owner and the Owner's tenants.

1.06 PROJECT/SITE CONDITIONS

- A. Care shall be used so not to impede the ongoing operations of the Owner.
- B. Demolition work, as specified herein, is not intended to be performed as a wrecking operation but as work relative to the performance of the various construction operations of the Project.
- C. Existing Conditions:
 - 1. Demolition information shown or otherwise indicated on the Drawings is based on visual field examination and existing record documents. While the information provided is believed to be correct, no assurance is implied relative to its total completeness or accuracy. Report discrepancies to Construction Manager for disposition of the Engineer before disturbing existing installations.
 - 2. The Contractor hereby distinctly agrees that neither the Construction Manager, the Engineer nor the Owner is responsible for the correctness or sufficiency of the information given and after his own Site Investigation:

- a. That he must have no claim for delay or extra compensation or damage on account of the information given; and
 - b. That he must have no claim for relief from any obligation or responsibility under the Contract with respect to the above stated stipulations.
- D. Protection: Exercise care during demolition work to confine demolition operations to the areas as indicated on the Drawings. The physical means and methods used for protection are at the Contractor's option. However, the Contractor will be completely responsible for replacement and restitution work, of whatever nature, at no expense to the Owner.
- 1. Additionally, if public safety is endangered during the progress of the demolition work, provide adequate protective measures to protect public pedestrian and vehicular traffic on streets and walkways.
 - 2. Conform signs, signals and barricades to requirements of Federal, State and local laws, rules, regulations, precautions, orders and decrees.

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Basic Electrical Materials: Those products such as conduit, raceway, wire and cable, support devices, fasteners, and control devices as required for work of this Section are specified in other Sections.
- B. Equipment along with machinery and apparatus, motorized or otherwise, used to perform the demolition may be chosen at the Contractor's discretion. However, the chosen equipment shall perform the work within the limits of the Contract requirements.
- C. Patching Materials: Patching materials shall match, as nearly as practical, the existing material for each surface being patched.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that measurements and existing circuiting arrangements are as shown on Drawings.
- B. Equipment, machinery, and apparatus, motorized or otherwise, used to perform the demolition work may be used as chosen at the Contractor's discretion, but which will perform the work within the limits of the Contract requirements.
- C. Verify that abandoned wiring and electrical equipment serve only the abandoned facility.

3.02 DEMOLITION

- A. General: The means and methods of performing electrical demolition and removal operations are the sole responsibility of the Contractor, except as otherwise specified. However, equipment used, and methods of demolition and removal will be subject to approval of the Construction Manager and the Engineer.
 - 1. Remove, relocate, and extend existing installations to accommodate new construction as indicated and/or as required.
 - 2. Remove exposed abandoned conduit systems, including abandoned conduit systems above accessible ceiling systems.
 - 3. Remove wiring in abandoned conduit systems to source of power supply.
 - 4. Maintain access to existing electrical installations, which remain active. Modify installations and provide access panels or plates as appropriate.

5. Extend existing installations using materials and methods compatible with existing electrical installations, and as specified in other Sections of these Specifications.
 6. Wiring Devices:
 - a. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduits serving them is abandoned and removed. Provide blank covers for abandoned outlets, which are not removed.
 - b. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
 - c. Remove exposed wire mold system where so indicated on the Drawings.
 7. Lighting:
 - a. Disconnect and remove abandoned luminaires and poles, lighting fixtures and floodlighting units. Remove brackets, stems, hangers, and other accessories.
 - b. Disconnect and remove abandoned concrete luminaire pole bases.
 8. Equipment:
 - a. Disconnect and remove electrical equipment where so indicated on the Drawings.
 - b. Disconnect and remove abandoned distribution equipment, panelboards, disconnect switches and motor starters as indicated on the drawings or as otherwise required due to the removal of associated equipment.
 9. In exposed through-structure conduit locations, or where concealed conduits become exposed by penetrating a structural floor, wall or ceiling, the abandoned conduits must be cut below the finished structural surface in order to perform surface patching.
- B. System De-activation: Prior to demolition and removal work, de-activate existing electrical systems as indicated.
 - C. Use means and methods for permanent disconnection, which render the remaining electrical systems and apparatus in conformity with NFPA 70.
 - D. Provide temporary wiring and connections to maintain existing systems in service during construction.
 1. Conform temporary wiring to the requirements of NEC Article 305, General Requirements.
 2. Temporary electrical service work as specified in Division 1, General Requirements.
 - E. Remove all wiring from disconnected circuits, feeders, and equipment unless otherwise specified or indicated. Remove all exposed raceways and related supports. Cut all exposed raceways flush with floor and plug.
 - F. Coordinate electrical power outages with requirements in Section 26 05 00.
 - G. General: The means and methods of performing electrical demolition and removal operations are the sole responsibility of the Contractor except as otherwise specified. Use equipment and methods that do not damage items to remain or salvaged and areas adjacent to demolition operations. Use methods that do not interfere with Owner's operations and which do not cause excessive dust. Remove debris as it accumulates.
 - H. Cutting: Perform cutting work of existing structure materials by such methods as will prevent extensive damage beyond the immediate area of cutting.
 - I. Debris Removal: Dispose of demolition debris off site in a lawful manner. Containerize or otherwise store debris as work is in progress.
 - J. Patching: After demolition and removal work is performed patch the existing structure as required to match surrounding finish and appearance including the appropriate surface decoration.

- K. Abandoned Electrical Equipment and Apparatus: Existing electrical equipment and apparatus in or on the structures not claimed as salvage by the Owner shall become the property of the Contractor and may not be disposed of on the site but removed and disposed of in a lawful manner off-site.
- L. Salvage: The Owner shall have the right to claim as salvage any items and materials removed under the work of this Section. Should such right of salvage be exercised by the Owner, move, and neatly store removed items on the site in a location agreeable to the Owner and in a manner approved by the Engineer.

END OF SECTION

SECTION 26 0563 - ACCEPTANCE TESTING OF ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: The work specified in this Section consists of materials to performance test electrical systems and equipment.
 - 1. Items Supplied Under This Section:
 - a. Electrical System Testing
 - b. Ground System Testing
 - c. Equipment Testing
 - d. Performance Test
 - e. Test Procedure
 - f. Test Report
- B. Related Sections:
 - 1. Division 1 – General Requirements
 - 2. Division 26 Sections, As Applicable

1.02 REFERENCES

- A. Applicable Documents and Testing Requirements of:
 - 1. America National Standards Institute (ANSI): as applicable, including:
 - a. ANSI C2, National Electrical Safety Code.
 - b. ANSI Z244.1 American National Standards for Personnel Protection.
 - 2. National Electrical Manufacturer's Association (NEMA): as applicable, including:
 - a. NEMA ICS 2.3 - Instructions for the Handling, Installation, Operation and Maintenance of Motor Control Centers.
 - b. NEMA ICS 7.1 - Safety Standards for Construction and Guide for selection, Installation, and Operation of Adjustable Speed Drive Systems.
 - c. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
 - d. NEMA PB 2.1 - Proper Handling, Installation, Operation and Maintenance of Deadfront Switchboards Rated 600 Volts or Less.
 - 3. American Society for Testing and Materials (ASTM), as applicable.
 - 4. Institute of Electrical and Electronics Engineers (IEEE), as applicable, including:
 - a. IEEE C.57.13, IEEE Standard Requirements for Instrument Transformers.
 - 5. National Fire Protection Association (NFPA), as applicable, including:
 - a. NFPA 70 - National Electrical Code (NEC).
 - b. NFPA 70E - Electrical Safety Requirements for Employee Workplaces.
 - c. NFPA 72 - National Fire Alarm Code (NFAC).
 - 6. Insulated Cable Engineer's Association (ICEA), as applicable.
 - 7. State and Local Codes and Ordinances as applicable
 - 8. Occupational Safety and Health Administration (OSHA), as applicable, including: Title 29, Parts 1907, 1910 and 1936.
 - 9. International Electrical Testing Association (NETA) as applicable, including:
 - a. ATS-2013: Acceptance Testing Specifications for Electric Power Distribution Equipment and Systems.
 - b. MTS-2013: Maintenance Testing Specifications for Electric Power Distribution Equipment and Systems.

1.03 SUBMITTALS

- A. Submit documentation as required by this Section of the Contract to the Design Engineer in strict accordance with the provisions of Section 26 05 00 for review, comments, and subsequent approval.

- B. Submission to include the following:
 - 1. Field inspection report as required for each item of material and/or equipment outlined herein.
 - 2. Manufacturer's directions for use of ground megger with proposed method indicated.
- C. Test Reports:
 - 1. Each test report prepared by the respective testing firm(s) comply, where applicable, to all stipulations specified in Section 26 05 00 for Operation, Maintenance, and Installation Manuals with reference to preparation, paper requirements, indexing and binders. Include in each test report the following:
 - a. Summary of project.
 - b. Description of equipment tested.
 - c. Description of test.
 - d. Test results.
 - e. Conclusions and recommendations.
 - f. Appendix, including appropriate test forms.
 - g. Identification of test equipment used.
 - h. Signature of responsible test organization authority.
 - i. Furnish five copies of each completed report to the Design Electrical Engineer no later than 30 days after completion of each test. Assemble and certify the testing firm each final test report, which must be submitted to the Design Engineer for review, comments and subsequent approval.

1.04 GENERAL REQUIREMENTS

- A. Field Inspection:
 - 1. This Contractor is responsible for a complete inspection of all equipment, prior to testing and energizing to ascertain that it is free from any damage, scratches, or missing components and that all power connections are correct, and that they are tight in conformance with recommended standard practice. The inspection is to also include a check of control wiring, terminal connections and all bolts and nuts.
 - 2. Perform field inspection by this Contractor during a time when the Field Engineer and the Design Engineer are present to witness each inspection and its performance.
 - 3. Correct any deficiencies found during the inspection by this Contractor prior to the energizing and testing of the equipment.

1.05 SCHEDULING

- A. Schedule all testing with work of other contractors to ensure an orderly sequence of startup and completion of work.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 ELECTRICAL INSPECTIONS AND TESTS

- A. Perform, supervise, and furnish all test equipment needed to perform tests and provide safety measures, procedures and equipment required for each test.
- B. Schedule all testing with the Engineer. Perform testing in the presence of the Engineer except when the Engineer approves in writing conducting a specific test without the Engineer's presence.
- C. Notify all involved parties including the Engineer prior to tests, advising them of the test to be performed and the scheduled date and time.

- D. Coordinate the tests with others involved.
- E. Prepare written test procedures and forms used in the test reports and submit for approval prior to commencement of testing.
- F. Include in each test report the following information:
 - 1. Job title.
 - 2. Date of test.
 - 3. Equipment, system, or cable identification.
 - 4. Type of test.
 - 5. Description of test instrument and date of latest calibration.
 - 6. Section of specification defining test along with description of test and evaluations as reported by the testing company.
 - 7. Test results (correct all readings at 20 degrees C).
 - 8. Signature of person supervising test.
 - 9. Signature of Contractor.
 - 10. Space for Engineer's signature.
- G. Refer to individual tests and inspections hereinafter specified for any additional or specified requirements.
- H. Test Instrument Calibration:
 - 1. The testing firm is to have a calibration program, which assures that all applicable test instrumentation are maintained within rated accuracy.
 - 2. The accuracy is to be directly traceable to The National Institute of Standards and Technology.
 - 3. Instruments are to be calibrated in accordance with the following frequency schedule.
 - a. Field Instruments: Analog - 6 months maximum
 Digital - 12 months maximum
 - b. Laboratory Instruments: 12 months
 - c. Leased specialty equipment: 12 months
 - 4. Make dated calibration labels visible on all test equipment.
 - 5. Keep records up-to-date, which show date and results of instruments calibrated or tested.
 - 6. Maintain an up-to-date instrument calibration instruction and procedure for each test instrument.
 - 7. Calibrating standard is to be of higher accuracy than that of the instrument tested.
- I. Safety and Precautions:
 - 1. Safety practices are to include, but are not limited to, the following requirements:
 - a. Occupational Safety and Health Act of 1970-OSHA.
 - b. Accident Prevention Manual for Industrial Operations, National Safety Council, Chapter 4.
 - c. Applicable State and Local safety operating procedures.
 - d. IETA Safety/Accident Prevention Program.
 - e. Owner's safety practices.
 - f. National Fire Protection Association - NFPA 70E.
 - g. ANSI Z244.1 American National Standards for Personnel Protection.
 - 2. Perform all tests with apparatus de-energized except where otherwise specifically required.

3.02 TESTING TO BE PERFORMED BY THE CONTRACTOR

- A. The Contractor is required to obtain copies of NETA ATS-2013 and MTS-2013, and to keep at least one copy of each at the project site, to use as reference for testing requirements.
- B. Continuity Test: Make test for continuity and correctness of wiring and identification on all conductors installed.

- C. Wire and Cable:
 - 1. Test all wires and cables sized No. 2 and larger in accordance with NETA ATS-2013.
 - 2. Perform visual, mechanical, and electrical tests on all No. 4 and No. 6 power cables that operate at voltages exceeding 150 volts to ground in accordance with NETA ATS-2013.
 - 3. Perform visual, mechanical, and electrical tests on all other wires and cables in accordance with NETA ATS-2013.
 - 4. Replace any wires which have been damaged.
 - 5. Correct causes of all readings which do not meet the acceptable minimum insulation readings as stated in NETA ATS-2013. Exceed the nominal expected temperatures for the actual load.
 - 6. Retest items requiring correction.

- D. Ground Fault Circuit Interrupter (GFCI) Receptacles:
 - 1. Test all GFCI receptacles as specified in Section 26 27 26.

END OF SECTION 26 0563

SECTION 26 0923 - LIGHTING CONTROL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

- 1. Standalone daylight-harvesting switching and dimming controls.
- 2. Indoor occupancy and vacancy sensors.
- 3. Switchbox-mounted occupancy sensors.
- 4. Emergency shunt relays.

B. Related Requirements:

- 1. Division 26 Section "Wiring Devices" for wall-box dimmers, non-networkable wall-switch occupancy sensors, and manual light switches.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

B. Shop Drawings:

- 1. Show installation details for the following:
 - a. Occupancy sensors.
- 2. Interconnection diagrams showing field-installed wiring.
- 3. Include diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

- A. Coordination Drawings: Reflected ceiling plan(s) and elevations, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

- 1. Suspended ceiling components.

2. Structural members to which equipment will be attached.
3. Items penetrating finished ceiling, including the following:
 - a. Luminaires.
 - b. Air outlets and inlets.
 - c. Speakers.
 - d. Sprinklers.
 - e. Access panels.
 - f. Control modules.

- B. Field quality-control reports.
- C. Sample Warranty: For manufacturer's warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For each type of lighting control device to include in operation and maintenance manuals.
- B. Software and Firmware Operational Documentation:
 1. Software operating and upgrade manuals.
 2. Program Software Backup: On USB media. Provide names, versions, and website addresses for locations of installed software.
 3. Device address list.
 4. Printout of software application and graphic screens.

1.6 WARRANTY

- A. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace lighting control devices that fail(s) in materials or workmanship within specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Faulty operation of lighting control software.
 - b. Faulty operation of lighting control devices.
 2. Warranty Period: Two year(s) from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 DAYLIGHT-HARVESTING DIMMING CONTROLS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cooper Industries, Inc.
 2. Hubbell Building Automation, Inc.
 3. Leviton Manufacturing Co., Inc.
 4. Lithonia Lighting; Acuity Brands Lighting, Inc.
 5. WattStopper; a Legrand® Group brand.
- B. System Description: Sensing daylight and electrical lighting levels, the system adjusts the indoor electrical lighting levels. As daylight increases, the lights are dimmed.
1. Lighting control set point is based on two lighting conditions:
 - a. When no daylight is present (target level).
 - b. When significant daylight is present.
 2. System programming is done with two hand-held, remote-control tools.
 - a. Initial setup tool.
 - b. Tool for occupants to adjust the target levels by increasing the set point up to 25 percent, or by minimizing the electric lighting level.
- C. Ceiling-Mounted Dimming Controls: Solid-state, light-level sensor unit, with separate power pack mounted on luminaire, to detect changes in indoor lighting levels that are perceived by the eye.
- D. Electrical Components, Devices, and Accessories:
1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 2. Sensor Output: 0- to 10-V dc to operate luminaires. Sensor is powered by controller unit.
 3. Light-Level Sensor Set-Point Adjustment Range: 20 to 60 fc.

- E. Power Pack/Room Controller: As recommended by selected manufacturer.
- F. Room Low Voltage Controllers: On/Off, Raise/Lower. Cover plate shall be stainless steel.

2.2 INDOOR OCCUPANCY AND VACANCY SENSORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Cooper Industries, Inc.
 - 2. Hubbell Building Automation, Inc.
 - 3. Leviton Manufacturing Co., Inc.
 - 4. Lithonia Lighting; Acuity Brands Lighting, Inc.
 - 5. Lutron Electronics Co., Inc.
 - 6. Philips Lighting Controls.
 - 7. Sensor Switch, Inc.
 - 8. WattStopper; a Legrand® Group brand.
- B. General Requirements for Sensors:
 - 1. Ceiling-mounted, solid-state indoor occupancy and vacancy sensors.
 - 2. Dual technology.
 - 3. Integrated power pack.
 - 4. Hardwired connection to switch and BAS.
 - 5. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 6. Operation:
 - a. Occupancy Sensor: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn them off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
 - b. Vacancy Sensor: Unless otherwise indicated, lights are manually turned on and

sensor turns lights off when the room is unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.

- c. Combination Sensor: Unless otherwise indicated, sensor shall be programmed to turn lights on when coverage area is occupied and turn them off when unoccupied, or to turn off lights that have been manually turned on; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
7. Power: Line voltage.
 8. Power Pack: Dry contacts rated for 20-A LED load at 120- and 277-V ac, for 13-A tungsten at 120-V ac, and for 1 hp at 120-V ac. Sensor has 24-V dc, 150-mA, Class 2 power source, as defined by NFPA 70.
 9. Mounting:
 - a. Sensor: Suitable for mounting in any position on a standard outlet box.
 - b. Relay: Externally mounted through a 1/2-inch knockout in a standard electrical enclosure.
 - c. Time-Delay and Sensitivity Adjustments: Recessed and concealed behind hinged door.
 10. Indicator: Digital display, to show when motion is detected during testing and normal operation of sensor.
 11. Bypass Switch: Override the "on" function in case of sensor failure.
 12. Automatic Light-Level Sensor: Adjustable from 2 to 200 fc; turn lights off when selected lighting level is present.
- C. Dual-Technology Type: Ceiling mounted; detect occupants in coverage area using PIR and ultrasonic detection methods. The particular technology or combination of technologies that control on-off functions is selectable in the field by operating controls on unit.
1. Sensitivity Adjustment: Separate for each sensing technology.
 2. Detector Sensitivity: Detect occurrences of 6-inch-minimum movement of any portion of a human body that presents a target of not less than 36 sq. in., and detect a person of average size and weight moving not less than 12 inches in either a horizontal or a vertical manner at an approximate speed of 12 inches/s.
 3. Detection Coverage (Standard Room): Detect occupancy anywhere within a circular area of 1000 sq. ft. when mounted on a 96-inch-high ceiling.

4. Detection Coverage (Room, Wall Mounted): Detect occupancy anywhere within a 180-degree pattern centered on the sensor over an area of 3000 square feet when mounted 48 inches above finished floor.

2.3 SWITCHBOX-MOUNTED OCCUPANCY SENSORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cooper Industries, Inc.
2. Hubbell Building Automation, Inc.
3. Leviton Manufacturing Co., Inc.
4. Lithonia Lighting; Acuity Brands Lighting, Inc.
5. Lutron Electronics Co., Inc.
6. Philips Lighting Controls.
7. Sensor Switch, Inc.
8. WattStopper; a Legrand® Group brand.

- B. General Requirements for Sensors: Automatic-wall-switch occupancy sensor with manual on-off switch, suitable for mounting in a single gang switchbox, with provisions for connection to BAS using hardwired connection.

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Occupancy Sensor Operation: Unless otherwise indicated, turn lights on when coverage area is occupied, and turn lights off when unoccupied; with a time delay for turning lights off, adjustable over a minimum range of 1 to 15 minutes.
3. Operating Ambient Conditions: Dry interior conditions, 32 to 120 deg F.
4. Switch Rating: Not less than 800-VA LED load at 120 V, 1200-VA LED load at 277 V, and 800-W incandescent.

- C. Wall-Switch Sensor:

1. Standard Range: 180-degree field of view, field adjustable from 180 to 40 degrees; with a minimum coverage area of 2100 sq. ft.
2. Sensing Technology: Dual technology - PIR and ultrasonic.

3. Switch Type: SP, field-selectable automatic "on," or manual "on," automatic "off."
4. Capable of controlling load in three-way application.
5. Voltage: Match the circuit voltage.
6. Ambient-Light Override: Concealed, field-adjustable, light-level sensor from 10 to 150 fc. The switch prevents the lights from turning on when the light level is higher than the set point of the sensor.
7. Concealed, "off" time-delay selector at 30 seconds and 5, 10, and 20 minutes.
8. Adaptive Technology: Self-adjusting circuitry detects and memorizes usage patterns of the space and helps eliminate false "off" switching.
9. Color: As selected by Architect.
10. Faceplate: stainless steel.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine lighting control devices before installation. Reject lighting control devices that are wet, moisture damaged, or mold damaged.
- B. Examine walls and ceilings for suitable conditions where lighting control devices will be installed.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 SENSOR INSTALLATION

- A. Comply with NECA 1.
- B. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression systems, and partition assemblies.
- C. Install and aim sensors in locations to achieve not less than 90-percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.

3.3 CONTACTOR INSTALLATION

- A. Comply with NECA 1.
- B. Mount electrically held lighting contactors with elastomeric isolator pads to eliminate structure-

borne vibration unless contactors are installed in an enclosure with factory- installed vibration isolators.

3.4 WIRING INSTALLATION

- A. Comply with NECA 1.
- B. Wiring Method: Comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables." Minimum conduit size is 1/2 inch.
- C. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower- limited conductors according to conductor manufacturer's written instructions.
- D. Size conductors according to lighting control device manufacturer's written instructions unless otherwise indicated.
- E. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

3.5 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."
 - 1. Identify controlled circuits in lighting contactors.
 - 2. Identify circuits or luminaires controlled by photoelectric and occupancy sensors at each sensor.
- B. Label time switches and contactors with a unique designation.

3.6 FIELD QUALITY CONTROL

- A. Testing Agency: Engage a qualified testing agency to evaluate lighting control devices and perform tests and inspections.
- B. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect components, assemblies, and equipment installations, including connections.
- C. Perform the following tests and inspections:
 - 1. Operational Test: After installing time switches and sensors, and after electrical circuitry has been energized, start units to confirm proper unit operation.
 - 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

- D. Lighting control devices will be considered defective if they do not pass tests and inspections.
- E. Prepare test and inspection reports.

3.7 ADJUSTING

- A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting lighting control devices to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.
 - 1. For occupancy and motion sensors, verify operation at outer limits of detector range. Set time delay to suit Owner's operations.
 - 2. For daylighting controls, adjust set points and deadband controls to suit Owner's operations.
 - 3. Align high-bay occupancy sensors using manufacturer's laser aiming tool.

3.8 SOFTWARE SERVICE AGREEMENT

- A. Technical Support: Beginning at Substantial Completion, service agreement shall include software support for two years.
- B. Upgrade Service: At Substantial Completion, update software to latest version. Install and program software upgrades that become available within two years from date of Substantial Completion. Upgrading software shall include operating system and new or revised licenses for using software.
 - 1. Upgrade Notice: At least 30 days to allow Owner to schedule and access the system and to upgrade computer equipment if necessary.

3.9 DEMONSTRATION

- A. Coordinate demonstration of products specified in this Section with demonstration requirements for low-voltage, programmable lighting control systems.
- B. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain lighting control devices.

END OF SECTION 26 0923

SECTION 271300 – COMMUNICATIONS SYSTEMS

PART 1 - GENERAL

1.1 FORWARD

- A. The following specification is typically intended for the extension of existing communications systems in an existing facility. They are intended to provide a set of instructions and materials needed for installation of additional data and voice ports, and additional cabling for new data and voice ports, etc. within parameters set by industry standards and by the SDP IT Department:

1.2 DESIGN

- A. Structured Cabling Systems:
 1. All horizontal drops for voice and data shall be Cat.6 (minimum) copper.
 2. From drop locations to IDF

1.3 APPLICABLE STANDARDS

- A. EIA/TIA-569A-1 to A-7. "Commercial Building Standard for Telecommunications Pathways and Spaces."
- B. EIA/TIA-568-B.1 & B.1-1; B.2, B-2.2, B-2.3; B.3."Commercial Building Telecommunication Standard."
- C. EIA/TIA-455-61. "FOTP-61, Measurement of Fiber or Cable Attenuation Using an OTDR."
- D. ANSI/TIA/EIA-606. "The Administration Standard for the Telecommunications Infrastructure of Commercial Building."
- E. ANSI/TIA/EIA-607-A."Commercial Building Grounding and Bonding Requirements for Telecommunications."
- F. TIA/EIA 492AAAB "Detail Specification for 50µm Core Diameter/125µm Cladding Diameter Class Multi-Mode Optical Fibers"
- G. TIA/EIA 492AAAC-A "Detail Specification for 850-nm Laser Optimized 50-µm Core Diameter/125µm Cladding Diameter Class 1a Graded Index Multi-Mode Optical Fibers"
- H. IEEE 802.3 "Carrier Sense Multiple Access with Collision Detection" and all applicable supplements a through af.
 1. IEEE 802.3u-100 Base T/100-Base-TX, Fast Ethernet
 2. IEEE 802.3z-Gigabit Ethernet
 3. IEEE 802.3 ab-1000 Base T
 4. IEEE 802.3ae-10 Gigabit Ethernet
- I. Electrical Code Compliance: Comply with applicable local and code requirements of the authority having jurisdiction.
- J. NFPA-70-NEC Compliance: Comply with NEC requirements as applicable to construction, installation and color coding of both power type wires/cables and control/signal transmission media.

- K. UL Compliance: Comply with applicable requirements of UL Standards 83, "Thermoplastic-Insulated Wires and Cables," 486A, "Wire Connectors and Soldering Lugs for Use with Copper Conductors," and UL 910, "Test Method for Fire and Smoke Characteristics of Cables Used in Air-Handling Spaces." Provide products which are ULlisted and labeled.
- L. NEMA/ICEA Compliance: Comply with NEMA/ICEA Std. Pub/No's WC-5, "Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy," and WC30, "Color Coding of Wires and Cables," pertaining to control and signal transmission media.
- M. ASTM Compliance: Comply with applicable requirements of D-2219 and D-2220. Provide copper conductors with conductivity of not less than 98% at 20°C (68°F).
- N. FCC Compliance: Comply with U.S. Federal Communications Commission Class 8 standard for allowable radiation from network equipment and wiring.
- O. Internet Networking Standards: Network hardware and software shall be able to communicate with the Internet and provide for the creation of IP based networks for the district. Supplied hardware and software shall comply with the following standards and RFC's as appropriate.
 - 1. MIL-STD -1777, RFC 971 -Internet Protocol
 - 2. MIL-STD -1778, RFC 793 -Transmission Control Protocol
 - 3. MIL-STD -1780, RFC 959 -File Transfer Protocol
 - 4. MIL-STD -1781, RFC 821 -Simple Mail Transfer Protocol
 - 5. MIL-STD -1782, RFC 854 -TELNET Protocol
 - 6. RFC 950 -Internet Standard Sub-Netting Procedure
 - 7. RFC 1140 -Official Protocol Standards
 - 8. RFC 1156 -MIB Base for IP Networks
 - 9. RFC-1213 -MIB-II
 - 10. RFC-1757 -Remote Monitoring (RMON)
 - 11. 1RFC 1157 -Simple Network Management Protocol
 - 12. RFC 1720 -TCP/IP, OSI Compliant
 - 13. RFC 1918 -Address Allocation for Private Subnets
 - 14. RFC 1583 -OSPF, Version II
 - 15. RFC 1723 -RIP -II
- P. NECA (National Electrical Contractors Association) Standard of Installation.
- Q. BICSI TDM Manual, latest edition
- R. BICSI LAN Design Manual, latest edition
- S. BICSI Cabling Installation Manual, latest edition

PART 2 - STRUCTURED CABLING SYSTEM (SCS) DISTRIBUTION

2.1 DEFINITIONS

- A. MAIN DISTRIBUTION FRAME (MDF): The MDF is the location, within a building or complex of buildings, where the entire telecommunications system originates. It may include: the physical location, enclosure, wire and cable management hardware, termination hardware, distribution hardware, and patching and equipment racks.
- B. INTERMEDIATE DISTRIBUTION FRAME (IDF): The IDF is the location in a building where a transition between the backbone or vertical riser system and the individual drop distribution system occurs. It may include: the physical location, enclosure, wire and cable management hardware, termination hardware, distribution hardware, and patching and equipment racks. The IDF's provide the interface location between fiber distribution cable (backbone) and station cable (horizontal distribution). All walls shall be covered with 3/4" plywood, AC or better, from

12" above the finished floor to the ceiling, painted with two coats of fire retardant paint both sides.

- C. Entrance Facility (EF): Existing. Existing MDF room is the entrance facility.
- D. BACKBONE PATHWAY: The Backbone Pathway consists of a series of conduits, surface raceways (renovations only), cable trays, conduit sleeves, and chases which connect the MDF to IDF's and MDF to the EF and the MDF to the Server Room. It generally houses the vertical or backbone system.
- E. BACKBOARD: Backboard generally refers to the plywood sheeting lining the walls of telecommunications facilities. Backboard may also refer to the entire wall-mounted assembly, including wire management, wiring blocks, and equipment racks. In this case, the term Backboard is fully interchangeable with SBB or TTB and the equipment required to fulfill the Scope of Work below.

2.2 WORK DESCRIPTION -TYPICAL

- A. Contractor shall provide data, voice and wireless outlets where indicated on plans, and shall provide cabling from outlets to existing IT equipment room. Termination to new cables to existing IT equipment by School District.
- B. The work performed under these guidelines shall be of good quality and performed in a workmanlike manner. In this context "good quality" means the work shall meet industry technical standards and quality of appearance. The owner reserves the right to reject all or a portion of the work performed, either on technical or aesthetic grounds. "Rats Nest" wiring and poor workmanship is not acceptable.

2.3 MANUFACTURERS

- A. Cat 6 cables and telecommunications outlets shall be equal in quality and performance to that manufactured by SYSTIMAX. Note that other cabling systems meeting the listed performance and warranty requirements are also acceptable substitutions.

2.4 FUNCTIONS AND OPERATION

- A. The intended function of the data communications cable system is to transmit data signals from a central location to several individual data outlet locations. Upon completion of the work outlined in this specification, the system shall be capable of transmitting data signals at a rate of 1000 Mbps minimum over Category 6 cable and over SM and MM fiber. Both SM and MM fiber shall also be capable of transmitting 10Gbps based upon the transmitting distance and number of links.
- B. Work station cable, from the IDF to the work area, shall be installed in accordance with EIA/TIA-568-B.2 specified installation practices, BICSI Guidelines, manufacturer specified installation practices, SYSTIMAX or (Other Acceptable Substitutes) Certified Cabling System installation practices, and shall be capable of transmitting a signal at 1000 Mbps with acceptable attenuation and cross-talk measurements and PSACR MARGIN. The entire workstation cable system, including wiring blocks, cable, and telecommunications outlets shall be tested for Category Six compliance.

PART 3 - PRODUCTS AND INSTALLATION

3.1 GENERAL

- A. Throughout Part 3, material quantities are not given. It is the responsibility of the Contractor to provide appropriate quantities of materials to provide a complete, functional system according to the design drawings, specifications, and work description.
- B. General installation provisions are as follows:
1. Cable: Where cable enters an MDF or IDF it shall be supported on horizontal or vertical cable runway. If terminations are on backboards, then from the runway support to the backboard via "D" Rings and cable ties. All cable shall be neatly bundled, combed, and tied. All cable runs, within the MDF or IDF, shall be horizontal or vertical, and bends shall comply with minimum specified cable bending radii. Copper UTP cable runs shall be provided with a ten-foot slack loop in the cable runway, in each IDF. Spread out the Cat. 6 cable in the runway and cable trays to avoid heavy stressing of the cable due to its own weight. Provide sufficient slack in the run to avoid any cinching of cables. NOTE CAT.6 CABLES SHALL NOT BE CINCHED TOO TIGHTLY. CABLE TIES AT PATCH PANEL LOCATIONS SHALL BE VELCRO TYPE TIE-WRAPPS ONLY. PLASTIC WIRE TIE WRAPS ARE NOT ALLOWED TO BE USED FOR ANY CAT.6 CABLING.
 2. Labeling: hand written labels are not acceptable. All labels shall be machine printed on clear or opaque tape, stenciled onto adhesive labels, or type written onto adhesive labels. The font shall be at least one-eighth inch (1/8") in height, block characters, and legible. The text shall be of a color contrasting with the label such that it may be easily read. If labeling tape is utilized, the width of the tape shall not exceed 3/8," and the font color shall contrast with the background. Patch panels shall exhibit workstation numbers, in sequential order, for all workstations served by the MDF or IDF.
 - a. Each telecommunications outlet shall be labeled with its respective work station number (machine labels only). Workstation numbers shall be comprised of a sequential numbering scheme that meets the TIA/EIA606 requirements, i.e. "1-1-DJ-52"(IDF #1-rack 1-data patch panel-port #52); or "1-2-VJ-48" (IDF #1-rack 2-voice patch panel-port# 48). Each workstation cable shall be labeled, using a machine based net permanent labeling medium, at each end with its respective workstation number. Each binder group shall be tied off with its respective identifying ribbon at each break-out point.
 3. T-Bar Suspended Ceilings: All data drop cable above dropped ceilings shall be installed in J-hooks, cable tray, or a combination thereof, conduit, or in cable chase. In no case shall cable be supported on ceiling tiles, T-bars, or tie-wrapped to any conduit or pipes. Cable must be supported in all areas. Bridle rings and tie-wrapped supporting means are not acceptable. Wire-rod cable trays are acceptable above dropped ceilings in-lieu of J-hooks. Laying cable on a T-bar ceiling is not allowed by the NEC and is not acceptable for support of Cat. 6 cabling, j-hooks must be used between conduit stub-ups and the wire rod cable tray for support.

3.2 WORK STATION CABLE

- A. DESCRIPTION: From each IDF, 4-pair Category 6 UTP cables shall be routed to each work station (for both data and voice outlets) served by the IDF. Where the data outlet resides in a classroom, a minimum of 6 cables plus one voice drop shall be required Route drops in, conduit, j-hooks, and /or chases and sleeves as required.
- B. COPPER UTP CABLE SPECIFICATIONS
1. HIGH SPEED LAN COMMUNICATIONS PLENUM CABLE; ENHANCED MARGIN CATEGORY 6, HORIZONTAL UNSHIELDED TWISTED PAIR (UTP).
- C. SCOPE
1. This section defines the requirements for commercially available high-performance Category 6 plenum-rated LAN communications cable. The cable design described herein exceeds minimum ANSI/TIA/EIA 568-B Category 6 and ISO/IEC 11801 Class D standards in critical transmission characteristics and provides additional specifications for conductor insulation. This specification provides more ACR margin (headroom) at transmission frequencies up to 200 MHz, better electrical balance, and temperature/humidity stability

for superior long-term performance. (NOTE: Minimum cable fire-rating shall be CMR; plenum rating only as required if returns are ducted; however, 100% FEP cable must be supplied).

- a. The minimum Power Sum ACR, for the Worst Case Pair for a 4Connector Channel shall be 10.9dB at 200 MHz.

2. ENGINEERING SPECIFICATIONS

- a. Cable Manufacturers' Part Numbers:
 - 1) SYSTIMAX # 2071E GigaMax Cable & Gigamax Cabling SystemPreferred
 - 2) Mohawk/CDT: AdvanceNet with Hubbell NEXTSPEED
 - 3) Berk-Tek: LanMark 2000 with Ortronics Clarity
 - 4) Superior Essex: NextGain with Leviton eXtreme
 - 5) Commscope : Ultrapipe with Siemon Ultra-"Uniprise Solution"
- b. Product: Jack Faceplates (WAO's) 4 pair, S110 connecting blocks, T568B pinning, Category 6 compliant, light Ivory or as selected by SDP:
 - 1) Modular Outlet Jacks & Faceplates: SYSTIMAX MGS-400 Series jacks in M-Series Information Outlets, 8 wire, T568B pinning, Category 6 S110 type insulation displacement modular outlet. Provide couplers as required per application and drawings.
- c. Accessories: Snap-in colored icons, blue for data and light gray for voice, 'phone' for voice and 'computer' for data/video, labels and clear label covers, quantities as required
 - 1) Required Accessories and Quantities (Surface Mount Boxes):
 - 2) Modular Mounting Frames: SYSTIMAX. PART #M12AP-246, Two-port, with cover, base, bezel, icons, screws, Light Ivory – surface mount with screws.
 - 3) Modular Mounting Frames: SYSTIMAX, PART #M14L-246, Four-port, with cover, base, bezel, icons, screws, Light Ivory – surface mount with screws.
 - 4) Modular Mounting Frames: SYSTIMAX, PART #M16L-246, Six-port, with cover, base, bezel, icons, screws, Light Ivory – surface mount with screws.
 - 5) Modular Outlet Jacks: SYSTIMAX M-Series Information Outlets or Flexible Information Outlets for HI-LO outlets and/or A/V outlets, 8 wire, T568B pinning, Category 6 S110 insulation displacement type modular outlet. Provide couplers as per application and drawings.
 - a) SYSTIMAX MGS400 Category 6 jack
 - b) single port F-type coaxial adapter
 - c) blank inserts for unused port
 - d) Icons same as surface raceway jacks

3. INSTALLATION:

- a. Installation shall be conducted in accordance with guidelines established the manufacturer and industry standards. Surface raceway jack faceplates shall be mounted in the surface raceway hanging boxes and shall be coordinated by the installation contractor. Each jack faceplate plate shall be labeled with its respective work station number. Each modular surface mounted box shall be labeled with its respective work station number. Labels shall be made by machine and shall be compliant with TIA/EIA-606 requirements.

D. TESTING AND DOCUMENTATION

1. TESTING:

- a. Contractor shall test each pair of each twisted-pair copper cable. The Owner reserves the right to have a representative present during all or a portion of the testing process. If the Owner elects to be present during testing, test results will only be acceptable when conducted in the presence of the Owner.
 - b. Tests
 - 1) Multi-mode: Signal attenuation at 850 and 1300 nm.

- 2) Single-mode: Bi-directional signal attenuation at 1310 and 1550 nm.

E. WORKSTATION CABLE

1. Each workstation cable shall be tested from the Jack Panel to the data outlet per TIA/EIA-568-B2.1 permanent link test requirements.
 - a. Test Equipment: Minimum Level III Compliant Tester
 - 1) Wirescope 350(Agilent Technologies) or equivalent
 - a) Test Criteria: The system shall be tested to Category 6 TIA/EIA-568B.2-1 permanent link test parameter requirements.

F. DOCUMENTATION

1. Contractor shall provide documentation to include test results and as-built drawings, all test results shall be computer generated. One Hard Copy shall also be provided to the District. Software for viewing the test results shall also be provided in the soft copy package.

G. WORK STATION CABLE:

1. The results of the work station cable tests shall be provided in the form of computer print-outs from the test equipment.

H. AS-BUILT DRAWINGS:

1. Contractor will be provided with clean copies of the Electrical drawings depicting data outlet locations or, if required by Addendum, shall produce drawings depicting data outlet locations as they were installed. The drawings, provided by Owner or in accordance with Addendum shall be modified to indicate actual cable routing, work station locations and workstation numbers.

3.3 INSTALLATION TESTING - COPPER

- A. The Owner/Engineer shall be notified 2 weeks prior to any testing so that the testing may be witnessed.
- B. Before requesting a final inspection, the Contractor shall perform a series of end to end installation performance tests. The Contractor shall submit for approval a proposal describing the test procedures, test result forms, and timetable for fiber optic and all copper plant wiring.
- C. Acceptance of the simple test procedures discussed below is predicated on the Contractor's use of the recommended products including but not limited to twisted pair cable, cross-connect blocks, and outlet devices specified and adherence to the inspection requirements, and practices set forth. Acceptance of the completed installation will be evaluated in the context of each of these factors.
- D. Minimum Test Parameter requirements for Enhanced Category 6 horizontal cabling.
 1. Category 6:
 - a. Each wire/pair shall be tested at both ends for the following utilizing Contractor generated test results forms:
 - 1) Wire Map
 - 2) Length
 - 3) Insertion Loss
 - 4) Near-end crosstalk (NEXT) loss
 - 5) Power sum near-end crosstalk (PSNEXT)
 - 6) Equal-level far-end crosstalk (ELFEXT)
 - 7) Power sum equal-level far-end crosstalk (PSELFEXT)
 - 8) Return loss
 - 9) Propagation delay
 - 10) Delay Skew
 - 11) Power Sum ACR

2. When errors are found, the source of each error shall be determined, corrected, and the cable re-tested. All defective components shall be replaced and retested. Defective components not corrected shall be reported to the Owner/Engineer with explanations of the corrective actions attempted.
3. Test records shall be maintained using the approved test results forms. The form shall record closet number, riser pair number or outlet ID, outcome of test, indication of errors found (e.g., a, b, c, d, or e) cable length, re-test results after problem resolution and signature of the technician completing the tests.
4. Test results for each 4 pair, Category 6, UTP cable must be submitted with identification to match labels on all patch panel ports and 8 position modular jacks, and identification to match as-built associated with that cable.
5. Owner/Engineer will observe and verify the accuracy of test results submitted.
6. Submit in both hardcopy and electronic floppy disc format.

E. ACCEPTANCE

1. Acceptance of the Data Communications System, by Owner, shall be based on the results of testing, functionality, and the receipt of documentation. With regard to testing, all fiber segments and all workstation data cables must meet the criteria established in the Section above. With regard to functionality, Contractor must demonstrate to Owner that 1000 Mbps data signals can be successfully transmitted, bi-directionally, from the MDF to and from a minimum of 10% of individual data outlets on each floor, witness tested by the Owner. The number of outlet locations to be tested shall be determined by Owner. With regard to documentation, all required documentation shall be submitted to Owner.

F. MINIMUM WARRANTY

1. The Cabling System shall meet the performance requirements of the ANSI/TIA/EIA568-B.2 standard. The warranty on the material, services, and operation of the cabling system to this specification must be for a period of at least 20 years. The connecting hardware shall have a lifetime extended warranty against defects in material and workmanship.
2. The warranty must include the following statements regarding the cabling system:
 - a. "Will support and conform to TIA/EIA-568-B specifications covering ANY CURRENT OR FUTURE APPLICATION which supports transmission over a properly constructed horizontal cabling system premises network which meets the channel and/or basic link performance as described in TIA/EIA-568-B."
 - b. "Will be free from defects in material or faulty workmanship."

PART 4 -VOICE DISTRIBUTION

4.1 GENERAL

A. PERFORMANCE REQUIREMENTS

1. The Telephone Voice Distribution System shall be provided from the outlet locations to the IDF's with Cat.6 station cabling.

4.2 PRODUCTS AND INSTALLATION

A. General: Refer to the requirements and equipment outlined in this guideline specification.

B. Miscellaneous Hardware: Provide all terminations, cross-connects, wire management, surge protectors, etc. for a complete and operational system.

1. Jacks, wall mount only, EIA/TIA 568B Pin-out, Cat. 6; provide wall mount type jacks with studded mounts for locations as required – Classrooms shall be located in the recessed wall box enclosure-see module details
2. Auxiliary Equipment: The Contractor shall install cross-connect wire (minimum Cat. 3 rated), D-rings, wire distribution spools, 110 block labeling, organizer rings, and other appurtenances for a complete, neat, and functional system.

C. RECORD DRAWINGS

1. The Contractor shall submit record drawings showing the actual system installation and the hardware/equipment locations. Clearly drafted markings on the Bid Documents attached Drawings shall be acceptable. These drawings shall indicate actual cable routing, cable numbers, outlet jack labeling, and designations of each termination at outlets and in the IDF's/MDF. Also included shall be the test report.

PART 5 -CABLE AND WIRE MANAGEMENT

5.1 GENERAL

- A. Unless indicated all data and voice cables shall be installed in conduit.
- B. Cabling, voice and data shall be installed according to the general requirements, as detailed below, and as shown on the drawings or in an attached addendum.
 1. No more than 50 UTP cable drops per run can be installed in Category 6 two inch "Jhooks" as called out herein (if necessary).
 2. Station Cable drops from work area outlet will be installed in conduit, Category 6 "Jhooks," from outlet stub up to the cable tray.
 3. Use Vertical Wire runway to support any /all risers between floors in closets or accessible locations; in no case shall any cable risers be unsupported.
 4. Cables entering IDF's/MDF's shall be supported with Cable runway from entrance to rack/cabinet location.

PART 6 - CORING/SLOTTING/SLEEVING

6.1 SLEEVES

- A. All wall penetrations shall be bored, and then sleeved; minimum is 1-inch metallic sleeve with plastic bushings or as required to size up. All floor penetrations shall be core drilled clean and true, and then installed with a metallic sleeve and plastic bushings on each side.
- B. The Contractor shall provide sleeves where required to protect equipment or facilities in the installation. Each sleeve shall extend through its respective floor, wall, or partition and shall be cut flush with each surface unless otherwise required.
- C. Sleeves in bearing and masonry walls, floors, and partitions shall be of standard weight steel pipe finished with smooth edges. For other masonry partitions, through suspended ceilings and for concealed vertical piping, sleeves shall be No. 22 U.S.G. galvanized iron.
- D. All sleeves shall be properly installed and securely cemented in place.
- E. Floor sleeves shall extend 3 inches above the finished floor. Space between floor sleeves and passing conduit shall be caulked with graphite packing and waterproof caulking compound as required for a waterproof installation. All floor sleeves shall be installed with plastic bushings to protect the cable, on both sides.
- F. Where conduits pass through waterproofed floors or walls, design of sleeves shall be such that waterproofing can be flashed into and around the sleeves.
- G. Sleeves through exterior walls below grade shall have the spaces between conduit and sleeve caulked watertight.
- H. Core drill one size larger than sleeve to accommodate the sleeve installation, caulk the void with watertight and fire rated sealing mastic (between bore and sleeve).

6.2 CHASES AND OPENINGS

- A. All openings or chases required for the installation of the telecommunications work in the building shall be provided by the Contractor.
- B. This Contractor shall seal all openings he has made in fire rated floors, ceilings or partitions after his work has been installed. The material used for sealing the openings shall have a fire rating equal to or greater than the rating of the floor, ceiling or partition material. All fire stop material shall be U.L. classified. Fire stop sealants, foams and compounds shall be as manufactured by 3M, STI, or Nelson. All floors minimum 2-hour rated fire stops and all corridor penetrations to classrooms or other areas.
- C. All Corridor Walls shall be considered fire rated and shall have a two-hour fire stop also-the Contractor has the option to install a UL Classified Sleeve/Firestop Combination, for wall and floor applications; use the STI "EZ-PATH" System, 1.5" for corridor penetrations to classrooms and 4" for floors for risers and 4" for entering IDF's/MDF's from the corridor.

APPENDIX #1

THE SCHOOL DISTRICT OF PHILADELPHIA

CURRENT PRODUCTS (STANDARDS)

1. Cabling: EIA/TIA 568B Compliant minimum (568B pinouts)-Cat.6 drops
2. Data Wireless Networking: AVAYA –AP6/AP8 Access Points-PROPRIETARY
 - a. Access Point (AP) in the Classroom to be protected with a non-metallic, plenum rated box, lockable, installed above the ceiling above the door or near the door. Antenna is mounted on the dropped ceiling in classroom and cabled to the AP lockbox; use antenna attenuators to keep signal within classroom area. AP Lockbox shall be Hoffman#A48, or equivalent.
 - b. All areas of student aggregation shall be covered for wireless access.
 - c. Design for 40% non-overlapping cells, use only non-overlapping channels 1, 6 and 11.
 - d. Each AP 54 MBPS minimum unless otherwise directed by SDP IT Dept.
 - e. Power using 802.3af PoE from IDF's. Install in a separate rack in IDF's/MDF.
 - f. Connect Cat 6 AP drop in ceiling to lockbox via a Cat. 6 patch cord.
 - g. Security: IEEE 802.1x and IEEE 802.1i standards employing EAP and RADUIS
 - 1) Utilize Wireless LAN Switch as a gateway from AP's to the network.

END OF SECTION

SECTION 27 5313 - 2-WIRE CLOCK SYSTEM

1 GENERAL

1.01 SUMMARY OF WORK

- A. This Section specifies materials and accessories for a 2-wire digital communication clock system.
- B. Section Includes:
 - 1. Secondary analog clock.

1.02 REFERENCE STANDARDS

- A. Federal Communications Division (FCC)
 - 1. Part 15 - Code of Federal Regulations.
- B. National Fire Protection Association (NFPA).
 - 1. NFPA 70E-2012, Standard for Electrical safety in the Workplace.
- C. US Green Building Council (USGBC).
 - 1. LEED[®] NC Version 2.2-2009, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations.
- D. Underwriter's Laboratories (UL)

1.03 ACTION AND INFORMATIONAL SUBMITTALS

- A. Make submittals in accordance with Contract Conditions - Submittal Procedures.
- B. Product Data: Submit product data including manufacturer's literature for clock system materials and accessories, indicating compliance with specified requirements and material characteristics.
 - 1. Submit list on clock system manufacturer's letterhead of materials and accessories to be incorporated into Work.
 - 2. Include product name.
 - 3. Include preparation instructions and recommendations, installation methods, and storage and handling requirements.
 - 4. Include contact information for manufacturer and their representative for this Project.
- C. Shop Drawings: Submit shop drawings with information as follows:
 - 1. Diagram of proposed system showing system platform appliance, communication pathway, and schedule of individual device locations.
 - 2. Indicate integration with the Owner's network and servers. Include line diagram of network relationships.
 - 3. Show system power requirements.
- D. Samples:
 - 1. Submit one sample of each type of device used on project. Samples will be returned Contractor for incorporation into the Work after Consultant's review.
- E. Test Reports:

1. Submit evaluation and test reports or other independent testing agency reports showing compliance with specified performance characteristics and physical properties.

F. Subcontractor Experience: Submit verification of communication and electronics subcontractor's experience.

1.04 QUALITY ASSURANCE

- A. Communications and Electronics Subcontractor Quality Assurance:
1. Work experience of [3] years minimum with work similar to work of this Section.
 2. Manufacturer's authorization to perform work of this section.
- B. Supplier's Accreditation: Use only suppliers accredited by clock system manufacturer.
- C. Supplier's Maintenance Requirements:
1. Ensure local supplier has adequate facility for storage of spare parts for clock system.

1.05 DELIVERY STORAGE AND HANDLING

- A. Delivery and Acceptance Requirements:
1. Deliver materials and accessories in clock system manufacture's original packaging with identification labels intact and to suit project.
 2. Ensure clock system materials are not exposed to moisture during delivery.
 3. Replace damaged clock system materials.
- B. Storage and Handling Requirements: Store materials off ground in dry location and protected from exposure to fumes and harmful weather conditions and at temperature conditions recommended by manufacturer.
1. Store in original packaging until installed.

1.06 WARRANTY

- A. Warranty period: 2 years commencing on Date of Purchase.

2 PRODUCTS

2.01 MANUFACTURER

- A. Manufacturer: Sapling Inc., 670 Louis Drive, Warminster, Pennsylvania 18974, USA, Phone: 1-215-322- 6063, URL: www.sapling-inc.com.
- B. Substitution: Substitution will be accepted only if approved by consulting engineer and School District's Engineer.

2.02 SYSTEM REQUIREMENTS

- A. Ensure clock system components are designed to operate as a 2-wire digital communications system and as part of complete system including "fail-proof" design to ensure power interruption does not cause system failure.
- B. Ensure system can work in conjunction with existing wiring.
- C. Ensure system synchronizes all clocks and devices to each other.
- D. Include Converter Box, which allows combining data and electrical power requirements on same line.

- E. Ensure system is capable of receiving signal as often as once per second.
- F. Ensure system is capable of correcting clocks immediately upon receipt of digital signal.
 - 1. Analog and digital clocks automatically correct themselves on receipt of digital signal.
 - 2. Include built-in closed-loop system in analog clocks capable of allowing clocks to detect position of hands and bring clocks to correct time even if clocks are manually altered.
 - 3. Ensure analog clocks have diagnostic function capable of allowing user to view how long since clock received a digital signal.
 - 4. Ensure analog clocks are capable of functional tests of electronics and gears.
- G. Ensure each individual product is bench tested at the manufacturer's facility.
 - 1. Random testing is unacceptable
- H. Ensure each product is designed, assembled and tested in the United States of America.
- I. Basis of Design: Sapling Inc., 2-Wire Clock System. SRM Series Wired Round Clock (V5.4)

SECONDARY CLOCKS

- A. Analog Clocks: To UL and cUL 863, designed for 2-wire digital communication system with fully automatic plug and play capability.
 - 1. Ensure secondary clock is capable of receiving digital signals through a wired connection, and has automatic communication protocol identification recognizing:
 - a. 2-wire digital communication.
 - b. 59-minute correction.
 - c. 58-minute correction.
 - d. National Time or Rauland correction.
 - 2. Clock display: 12-hour white face with black numbers.
 - a. Size: Round 12 inches.
 - 3. Materials:
 - a. Dial: Polystyrene
 - b. Case: Smooth surface, low profile SlimLine ABS
 - c. Crystal: Shatter-proof, side-molded polycarbonate
 - 4. Hand tolerance:
 - a. Hour and Minute hand: $\pm 1/4$ minute;
 - b. Second hand: $\pm 1/2$ minute.
 - 5. Power Requirements: 24 V DC.
 - 6. Basis of design: Sapling Inc., SAM Series Smart Wired Round Clock.

1.02 SOURCE QUALITY CONTROL

- A. Ensure clock system components and accessories are supplied by single manufacturer.

2 EXECUTION

2.01 INSTALLERS

- A. Use only installers with 3 years minimum experience with work similar to work of this Section.

- B. Ensure all clock system components are installed by single communications and electronics subcontractor.

2.02 EXAMINATION

- A. Verification of Conditions: Verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for clock system installation in accordance with manufacturer's written recommendations.
 - 1. Visually inspect substrate in presence of Consultant.
 - 2. Ensure surfaces are free of snow, ice, frost, grease, and other deleterious materials.
 - 3. Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Consultant.
- B. Start of clock system installation indicates installer's acceptance of substrate installation conditions.

2.03 INSTALLATION

- A. Install 2-wire digital communication clock system in accordance with manufacturer's written recommendations and in accordance with NFPA 70E.
- B. Integrate clock system with Owner's electrical and communications network.
- C. Install wiring in accordance with requirements of local Authority Having Jurisdiction.
- D. Conceal wiring except in unfinished spaces and as approved in writing by Consultant.
- E. Install clocks only after painting and other finish work is completed in each room.
- F. Install clocks and other devices square and plumb.

2.04 SYSTEM STARTUP

- A. At completion of installation and before final acceptance, turn on equipment and ensure equipment is operating properly, and clock system devices and components are functioning.
- B. Evaluate and test each device in clock system on room-by-room basis using factory-trained technicians.
 - 1. Fix or replace devices which fail test or are functioning incorrectly.
 - 2. Submit evaluation and report showing results of room-by-room tests and overall system compliance within 3 days of testing being carried out.

2.05 CLEANING

- A. Progress Cleaning: Perform cleanup as work progresses.
 - 1. Leave work area clean at end of each day.
- B. Final Cleaning: Upon completion, remove surplus materials, rubbish, tools, and equipment.
- C. Waste Management:
 - 1. Co-ordinate recycling of waste materials with 01 74 19 - Construction Waste Management and Disposal.
 - 2. Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
 - 3. Remove recycling containers and bins from site and dispose of materials at

appropriate facility.

2.06 DEMONSTRATION AND TRAINING

- A. Arrange system demonstration and training session for Owner's operation and maintenance personnel.
 - 1. Allow Owner and Consultant 7 days minimum advance notice before training session.
- B. Break down system demonstration and training session into logical segments for Owner's operations and maintenance personnel.
- C. Train Owner's maintenance personnel in procedures and schedules involved in operating, troubleshooting, servicing, and preventative maintenance of clock system.

2.07 PROTECTION

- A. Protect installed products and accessories from damage during construction.
- B. Repair damage to adjacent materials caused by clock system installation.

END OF SECTION

LIGHTING

(NOTE: CAPITAL LETTER @ SYMBOL DENOTES FIXTURE TYPE, LOWER CASE LETTER DENOTES CONTROL DEVICE.) CEILING MOUNT 2x2 LED FIXTURE, CEILING MOUNT 2x4 LED FIXTURE, 4' CEILING MOUNT LED FIXTURE, 8' CEILING MOUNT LED FIXTURE, WALL MOUNT LED FIXTURE, CEILING MOUNT LED FIXTURE, WALL MOUNT LED FIXTURE, LED SPOT/FLOOD LIGHT FIXTURE, WALL MOUNT LED SPOT/FLOOD LIGHT FIXTURE, LED LIGHT FIXTURE DEDICATED FOR UNSWITCHED, POLE STANDARD LIGHT FIXTURE (ONE LUMINAIRE INDICATED), EXIT SIGN FIXTURE (SINGLE FACE UNIVERSAL MOUNT INDICATED), EXIT SIGN FIXTURE W/DIRECTIONAL ARROWS (DOUBLE FACE UNIVERSAL MOUNT INDICATED), SWITCH, SINGLE POLE, SWITCH, 3-WAY, SWITCH, 4-WAY, SWITCH, DIMMER, DIRECTIONAL MOTION DETECTOR LIGHT CONTROL, MULTI-DIRECTIONAL MOTION DETECTOR LIGHT CONTROL, SPECIAL PURPOSE LIGHT SWITCH, DESCRIPTION OF SWITCH WILL BE AS NOTED ON DRAWINGS, PHOTOELECTRIC CONTROL, LIGHTING CONTACTOR: REPRESENTS LIGHTING CONTACTOR IDENTIFICATION, LIGHTING CONTACTOR REMOTE CONTROL: REPRESENTS LIGHTING CONTACTOR TO BE CONTROLLED, 1 - PIR OCCUPANCY SENSOR CEILING MOUNT, 2 - ULTRASONIC OCCUPANCY SENSOR CEILING MOUNT, 3 - DUAL TECH OCCUPANCY SENSOR CEILING MOUNT, 1 - PIR OCCUPANCY SENSOR WALL MOUNT, 2 - ULTRASONIC OCCUPANCY SENSOR WALL MOUNT, 3 - DUAL TECH OCCUPANCY SENSOR WALL MOUNT, 1 - PIR VACANCY SENSOR WALL MOUNT, 2 - ULTRASONIC VACANCY SENSOR WALL MOUNT, 3 - DUAL TECH VACANCY SENSOR WALL MOUNT, DIGITAL TIME SWITCH WALL MOUNT

ONE LINE DIAGRAM

LOW VOLTAGE DRAWOUT CIRCUIT BREAKER, AMP TRIP, ELECTRICALLY OPERATED TRIP ELEMENTS, L - LONG TIME, S - SHORT TIME, I - INSTANTANEOUS, G - GROUND FAULT, SHUNT TRIP, LOW VOLTAGE CIRCUIT BREAKER, CURRENT TRANSFORMER/METER COMBINATION, ST - SHUNT TRIP, GF - GROUND FAULT, EO - ELECTRICALLY OPERATED, MEDIUM VOLTAGE ISOLATION SWITCH, FUSED CUTOFF, FUSED LOAD BREAK SWITCH, CONTACTOR - NEMA SIZE, MAGNETIC MOTOR STARTER, NUMERAL INDICATES NEMA SIZE (FVNR UNLESS OTHERWISE NOTED), CAPACITOR, VARIABLE FREQUENCY DRIVE, POWER TRANSFORMER, VOLTAGE TRANSFORMER RATIO, NUMBER REQUIRED, POLARITY MARK, CURRENT TRANSFORMER, MULTI RATIO, ACCURACY CLASS, GROUND FAULT CURRENT TRANSFORMER (CORE BALANCE), MOTOR, NUMBER INDICATES HORSE POWER, GENERATOR, ATS - AUTOMATIC TRANSFER SWITCH, MTS - MANUAL TRANSFER SWITCH, FUSE, GROUND, METER, A - AMMETER, V - VOLTMETER, W - WATT METER, WH - WATT HOUR METER, KWH - KILOWATT HOUR, KVAR - KILOWATT METER, VAR - VAR METER, HZ - FREQUENCY METER, PF - POWER FACTOR METER, DIGITAL POWER METER, SURGE PROTECTION DEVICE, LIGHTNING ARRESTOR, NON FUSED SAFETY SWITCH, FUSED SAFETY SWITCH, MANUAL TRANSFER SWITCH WITH CONNECTION FOR PERMANENT GENERATOR (HARDWIRED) PORTABLE GENERATOR (CAM CONNECTIONS) & LOAD BANK (CAM CONNECTIONS) (TRIPLE SWITCH OR APPROVED EQUAL)

GENERAL POWER

--- DENOTES MOUNTED 6" ABOVE COUNTER TOP, SINGLE RECEPTACLE, DUPLEX RECEPTACLE, NEMA 5-20R, RECEPTACLE WIRED TO GROUND FAULT CIRCUIT BREAKER, GFCI GROUND FAULT CIRCUIT INTERRUPTER, S - SWITCHED ISOLATED GROUND, SWITCHED, TAMPER RESISTANT, WEATHER RESISTANT RECEPTACLE W/IN-USE COVER (WET LOCATION), WEATHER RESISTANT RECEPTACLE W/NON-IN-USE COVER (DAMP LOCATION), DUPLEX RECEPTACLE, NEMA 5-20R, RECEPTACLE FOR TV MONITOR, DOUBLE DUPLEX RECEPTACLE, DUPLEX RECEPTACLE DEDICATED FOR UPS POWER, SPECIAL PURPOSE RECEPTACLE (AMPACITY AS NOTED), A - 30A, 2 POLE + GROUND, 208VAC, 1-PHASE, NEMA 4X, IP66/IP67, B - 30A, 1 POLE + 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, DUPLEX RECEPTACLE FLOOR MOUNTED, SPECIAL PURPOSE RECEPTACLE FLOOR MOUNTED (AMPACITY AS NOTED), SURFACE MOUNTED RACEWAY LETTER INDICATES TYPE (SEE E600) NUMBER INDICATES LENGTH, JUNCTION BOX, NON FUSED DISCONNECT SWITCH, FUSED DISCONNECT SWITCH, MOTOR STARTER, COMBINATION MOTOR STARTER, CONTACTOR, TIME CLOCK SWITCH CONTROL, TIME SWITCH, MANUAL MOTOR STARTER SWITCH WITHOUT OVERLOADS, MANUAL MOTOR STARTER SWITCH WITH THERMAL OVERLOADS, MANUAL MOTOR STARTER SWITCH WITHOUT OVERLOADS WITH PILOT LIGHT, PANELBOARD, PUSHBUTTON STATION TYPE AS NOTED, MUSHROOM SWITCH, MOTOR (HORSEPOWER INDICATED ON PLANS), TRANSFORMER, GENERATOR, MOTOR OPERATED DAMPER, THERMOSTAT, UNINTERRUPTIBLE POWER SUPPLY, SURGE PROTECTION DEVICE, UNIT HEATER, VARIABLE FREQUENCY DRIVE

GENERAL NOTES

- 1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NFPA-70) AS ADOPTED AND AMENDED BY PHILADELPHIA ELECTRICAL CODE AND 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 DRAWINGS FOR ACTUAL LOCATION OF EQUIPMENT.
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. OUTDOORS
A. UNLESS OTHERWISE NOTED ON THE DRAWINGS CONDUIT INSTALLED OUTDOORS SHALL BE GALVANIZED RIGID STEEL AND FLEXIBLE CONNECTIONS SHALL BE LIQUIDTIGHT FLEXIBLE METAL CONDUIT.
3. 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, POINT OF CONNECTION, TERMINATION POINT OF DEMOLITION, POINT OF FUTURE CONNECTION, SHEET NOTE REFERENCE, REVISION REFERENCE, EQUIPMENT TAG, NORTH ARROW, INDICATES PLAN/DETAIL NUMBER, PLAN/DETAIL TITLE, VIEW TITLE, SCALE, INDICATES PLAN/DETAIL NUMBER, INDICATES DRAWING ON WHICH DRAWING SECTION APPEARS

CONDUIT FEEDERS & BRANCH CIRCUITS

CONDUIT - EXPOSED, CONDUIT TURNED, CONDUIT TURNED UP, CONDUIT TURNED DOWN, CONDUIT CAPPED, CIRCUIT HOME RUN, CONDUIT FEEDER IDENTIFICATION (SEE FEEDER LEGEND ON DRAWING), 3 #8, 1 #10 EGC - 3/4", CONDUIT FEEDER IDENTIFICATION

COMMUNICATION

CEILING SPEAKER, WALL MOUNTED SPEAKER, WALL MOUNTED DOUBLE SPEAKER, POLE MOUNTED SPEAKER, POLE MOUNTED DOUBLE SPEAKER, DATA OUTLET, TELEPHONE OUTLET, PAY TELEPHONE OUTLET, TELEPHONE / DATA OUTLET, USB RECEPTACLE, TELEPHONE TERMINAL CABINET, DESKTOP HAND SET, WALL MOUNTED HAND SET, TV OUTLET

SEAL:

Electrical Engineer: XX Elnorrenn DATE: MM/DD/YYYY

ENGINEER OF RECORD AND MECHANICAL/ELECTRICAL/PLUMBING ENGINEER:

GANNETT FLEMING, INC.
1010 ADAMS AVENUE
VALLEY FORGE, PA 19403
Phone: 610.783.3862
Email: BWEISSER@GFNET.COM
Attn: BRIAN WEISSER

ARCHITECT:

OZ COLLABORATIVE
4818 BALTIMORE AVENUE
PHILADELPHIA, PA 19143
Phone: 215.386.8191 ext. 210
Email: NJZIMMERMAN@OZCOLLABORATIVE.COM
Attn: MORRIS ZIMMERMAN

GENERAL DEMOLITION NOTES

- SEE ARCHITECTURAL DRAWING A-001 FOR GENERAL NOTES AND PROJECT INFORMATION.
- NOTES AND GRAPHIC REPRESENTATIONS SHALL NOT LIMIT THE EXTENT OR DEMOLITION REQUIRED. CONTRACTOR SHALL VISIT THE SITE, CAREFULLY EXAMINE EXISTING CONDITIONS AND SHALL PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF ALL DEMOLITION WORK SHALL BE COORDINATED WITH THE OWNER & ENGINEER.
- ALL WORK REQUIRED TO REMAIN IN SERVICE BUT INTERFERING WITH THE ALTERATIONS SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
- EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
- EQUIPMENT INDICATED TO BE REMOVED SHALL BE TAKEN FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS. EQUIPMENT REQUIRED TO BE TURNED OVER TO THE OWNER, SHALL BE PLACED IN A MUTUALLY ACCEPTED LOCATION.
- PROCEDURE FOR FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN OR THE BOUNDARY OF THE PROJECT AREA. WIRING SHALL BE REMOVED TO THE PANEL OF ORIGIN, WHERE EMPTY CONDUITS REMAIN, INSTALL A PULL STRING AND IDENTIFY AT BOTH ENDS.
- PROCEDURE FOR FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICTS WITH NEW WORK. INSTALL JUNCTION BOXES, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
- WHERE PORTIONS OF EXISTING BRANCH CIRCUITS ARE REMOVED, MAINTAIN THE CONTINUITY OF CIRCUITING TO REMAINING DEVICES.
- PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED FROM ENCLOSURES OR SURFACES NOT INDICATED TO BE REPAIRED OR REFINISHED.
- PROVIDE ADDITIONAL SUPPORT FOR ALL EXISTING CONDUITS, LOW VOLTAGE CABLING AND DEVICES TO REMAIN WHICH ARE AFFECTED BY DEMOLITION OF EXISTING CEILINGS AND PARTITIONS.
- ALL WORK SHALL BE PROPERLY IDENTIFIED AFTER DEMOLITION. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT REMOVALS.

**BID DOCUMENTS
JANUARY 07, 2022
FOR BID PURPOSES ONLY**

NO.	DATE	REVISION
1	2/16/22	ADDENDUM #3

SCHOOL & LOCATION

DELAPLAINE McDANIEL SCHOOL

1801 S 22nd St, PHILADELPHIA, PA 19145

PROJECT TITLE

McDANIEL CLASSROOMS MODERNIZATIONS

DRAWING NAME

ELECTRICAL FIRST FLOOR POWER DEMOLITION PLAN

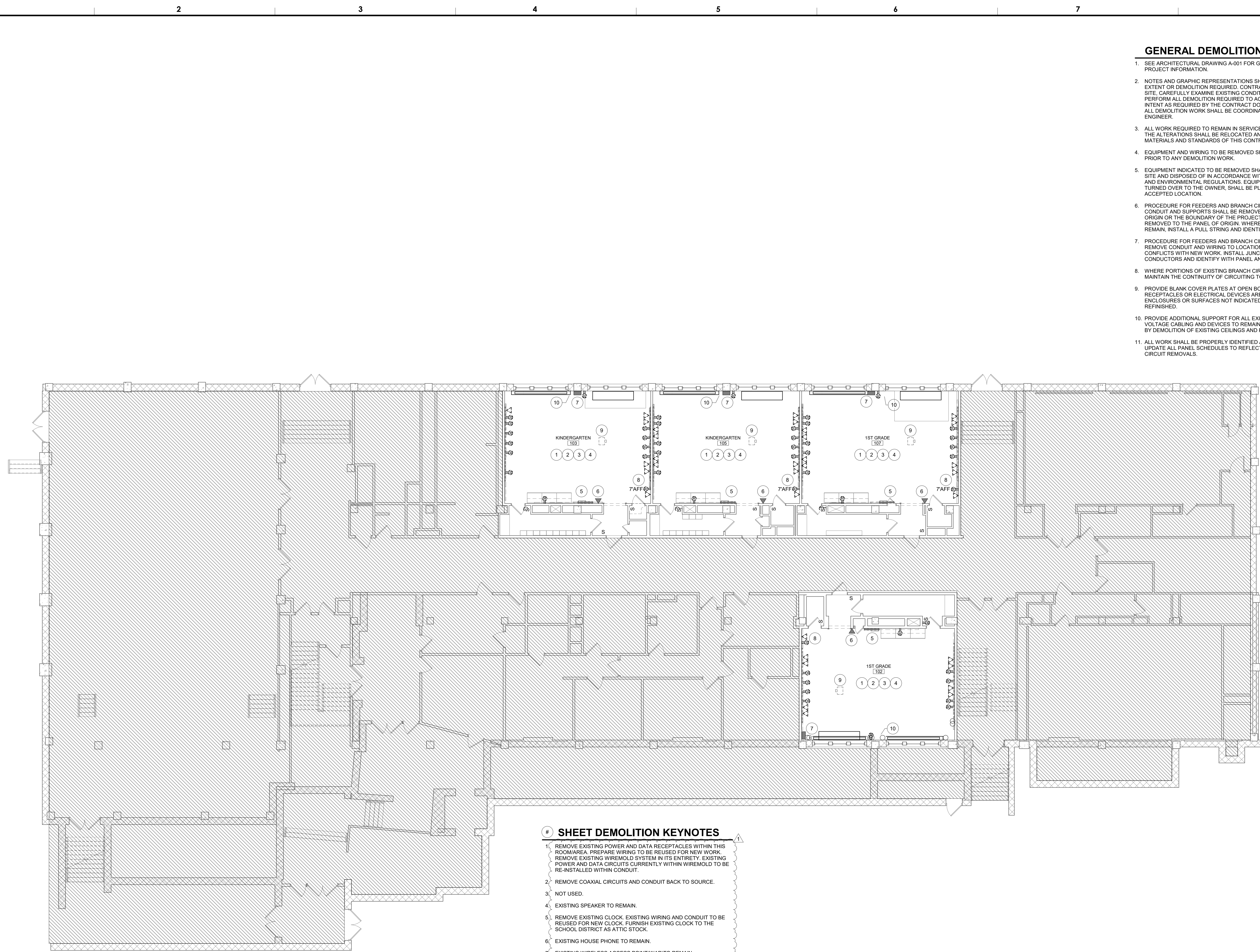
DRAWING SCALE
As indicated

LOCATION NO. 2370 ENGINEER'S PROJECT # 069078

DRAWN BY Author CHECKED BY Checker

GC: 2022-009-G
EC: 2022-009-E

DRAWING NO.
ED101

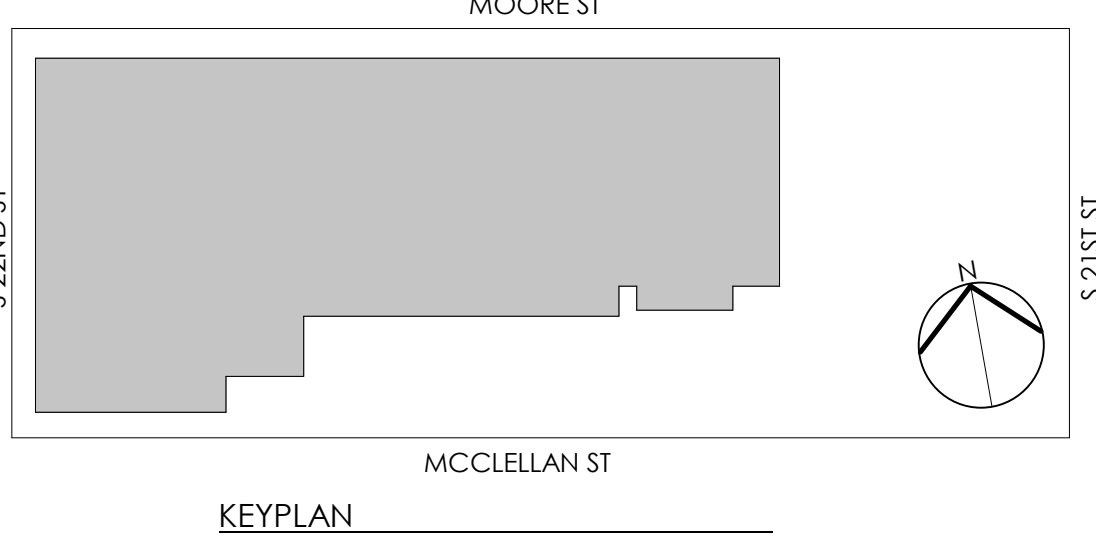


1 ELECTRICAL FIRST FLOOR POWER DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

9 SHEET DEMOLITION KEYNOTES

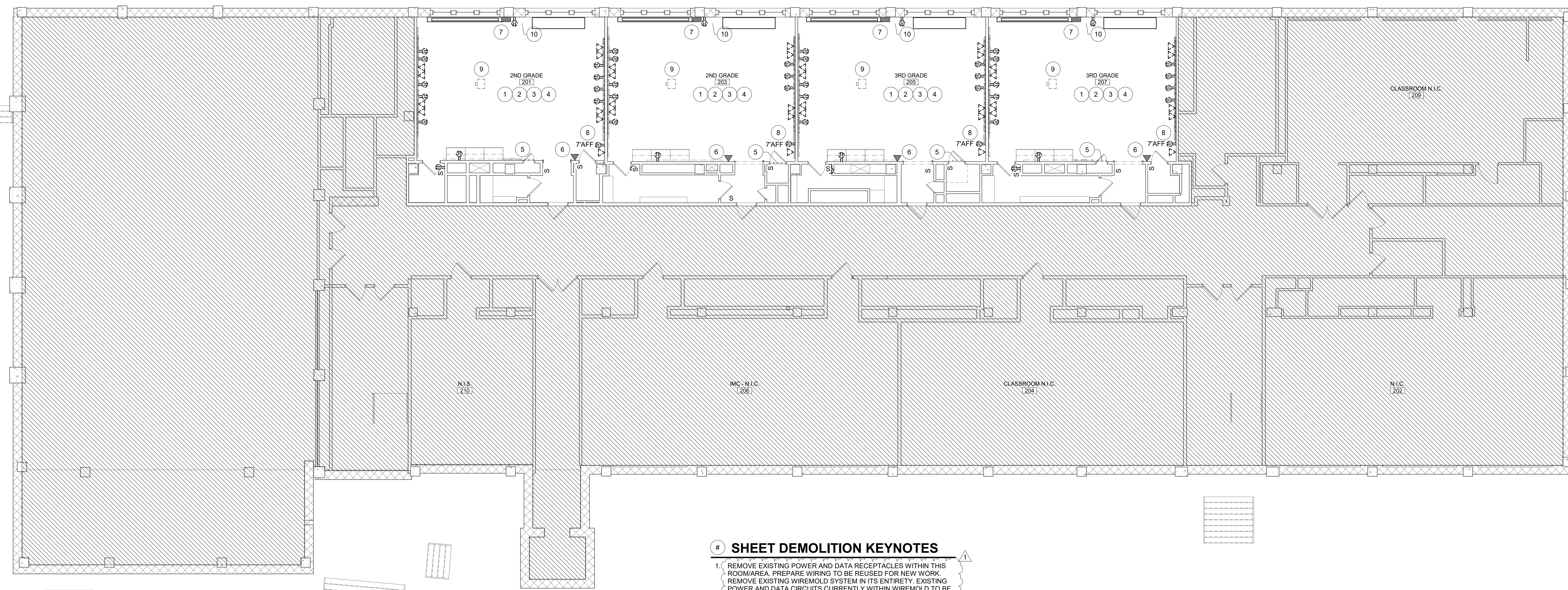
- REMOVE EXISTING POWER AND DATA RECEPTACLES WITHIN THIS ROOM/AREA. PREPARE WIRING TO BE REUSED FOR NEW WORK. REMOVE EXISTING WIREMOLD SYSTEM IN ITS ENTIRETY. EXISTING POWER AND DATA CIRCUITS CURRENTLY WITHIN WIREMOLD TO BE RE-INSTALLED WITHIN CONDUIT.
- REMOVE COAXIAL CIRCUITS AND CONDUIT BACK TO SOURCE.
- NOT USED.
- EXISTING SPEAKER TO REMAIN.
- REMOVE EXISTING CLOCK. EXISTING WIRING AND CONDUIT TO BE REUSED FOR NEW CLOCK. FURNISH EXISTING CLOCK TO THE SCHOOL DISTRICT AS ATTIC STOCK.
- EXISTING HOUSE PHONE TO REMAIN.
- EXISTING WIRELESS ACCESS POINT(WAP) TO REMAIN.
- REMOVE EXISTING AV BOX. CONDUIT & WIRING SHALL BE REMOVED BACK TO SOURCE.
- EXISTING PROJECTOR TO BE REMOVED BY GENERAL CONTRACTOR. ELECTRICAL CONTRACTOR TO REMOVE POWER WIRING, DATA WIRING AND CONDUIT BACK TO SOURCE. LABEL CIRCUIT BREAKER AS SPARE.
- EXISTING FIRE ALARM DEVICES TO REMAIN.

THE ELECTRICAL CONTRACTOR SHALL PERFORM A SURVEY OF THE EXISTING SITE CONDITIONS PRIOR TO BEGINNING WORK. THE SURVEY SHALL INCLUDE TRACING THE WIRING/CONDUIT FOR EACH PIECE OF EQUIPMENT THAT IS BEING DEMOLISHED BACK TO THE SOURCE PANELBOARD/SWITCHBOARD AND IDENTIFYING THE CIRCUIT BREAKER FEEDING THAT EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL MARK UP THE PLANS IDENTIFYING THE PANELBOARD LOCATION AND RATINGS AS WELL AS THE CIRCUIT BREAKER LOCATION IN THE PANELBOARD AND THE CIRCUIT BREAKER AMPERAGE RATINGS, MANUFACTURER AND CATALOG NUMBER. THIS INFORMATION SHALL BE PROVIDED TO CLIENT'S REP/PROJECT MANAGER PRIOR TO BEGINNING CONSTRUCTION.



GENERAL DEMOLITION NOTES

1. SEE ARCHITECTURAL DRAWING A-001 FOR GENERAL NOTES AND PROJECT INFORMATION.
2. NOTES AND GRAPHIC REPRESENTATIONS SHALL NOT LIMIT THE EXTENT OR DEMOLITION REQUIRED. CONTRACTOR SHALL VISIT THE SITE, CAREFULLY EXAMINE EXISTING CONDITIONS AND SHALL PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF ALL DEMOLITION WORK SHALL BE COORDINATED WITH THE OWNER & ENGINEER.
3. ALL WORK REQUIRED TO REMAIN IN SERVICE BUT INTERFERING WITH THE ALTERATIONS SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
5. EQUIPMENT INDICATED TO BE REMOVED SHALL BE TAKEN FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS. EQUIPMENT REQUIRED TO BE TURNED OVER TO THE OWNER, SHALL BE PLACED IN A MUTUALLY ACCEPTED LOCATION.
6. PROCEDURE FOR FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN OR THE BOUNDARY OF THE PROJECT AREA. WIRING SHALL BE REMOVED TO THE PANEL OF ORIGIN. WHERE EMPTY CONDUITS REMAIN, INSTALL A PULL STRING AND IDENTIFY AT BOTH ENDS.
7. PROCEDURE FOR FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICTS WITH NEW WORK. INSTALL JUNCTION BOXES, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
8. WHERE PORTIONS OF EXISTING BRANCH CIRCUITS ARE REMOVED, MAINTAIN THE CONTINUITY OF CIRCUITING TO REMAINING DEVICES.
9. PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED FROM ENCLOSURES OR SURFACES NOT INDICATED TO BE REPAIRED OR REFINISHED.
10. PROVIDE ADDITIONAL SUPPORT FOR ALL EXISTING CONDUITS, LOW VOLTAGE CABLING AND DEVICES TO REMAIN WHICH ARE AFFECTED BY DEMOLITION OF EXISTING CEILING AND PARTITIONS.
11. ALL WORK SHALL BE PROPERLY IDENTIFIED AFTER DEMOLITION. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT REMOVALS.

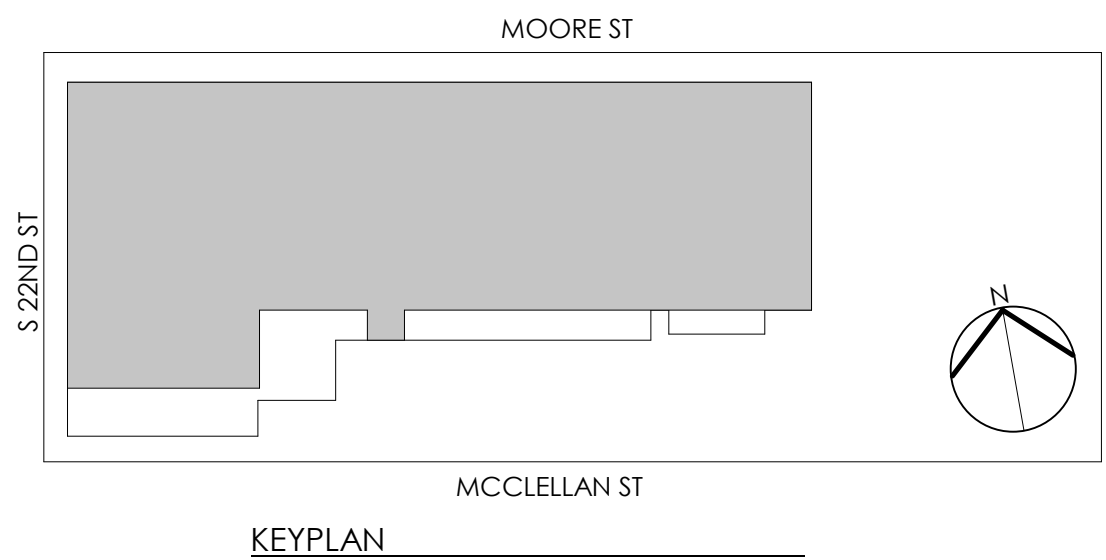


1 ELECTRICAL SECOND FLOOR POWER DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

SHEET DEMOLITION KEYNOTES

1. REMOVE EXISTING POWER AND DATA RECEPTACLES WITHIN THIS ROOM/AREA. PREPARE WIRING TO BE REUSED FOR NEW WORK. REMOVE EXISTING WIREMOLD SYSTEM IN ITS ENTIRETY. EXISTING POWER AND DATA CIRCUITS CURRENTLY WITHIN WIREMOLD TO BE RE-INSTALLED WITHIN CONDUIT.
2. REMOVE COAXIAL CIRCUITS AND CONDUIT BACK TO SOURCE.
3. NOT USED.
4. EXISTING SPEAKER TO REMAIN.
5. REMOVE EXISTING CLOCK. EXISTING WIRING AND CONDUIT TO BE REUSED FOR NEW CLOCK. FURNISH EXISTING CLOCK TO THE SCHOOL DISTRICT AS ATTIC STOCK.
6. EXISTING HOUSE PHONE TO REMAIN.
7. EXISTING WIRELESS ACCESS POINT (WAP) TO REMAIN.
8. REMOVE EXISTING AV BOX. CONDUIT & WIRING SHALL BE REMOVED BACK TO SOURCE.
9. EXISTING PROJECTOR TO BE REMOVED BY GENERAL CONTRACTOR. ELECTRICAL CONTRACTOR TO REMOVE POWER WIRING, DATA WIRING AND CONDUIT BACK TO SOURCE. LABEL CIRCUIT BREAKER AS SPARE.
10. EXISTING FIRE ALARM DEVICES TO REMAIN.

THE ELECTRICAL CONTRACTOR SHALL PERFORM A SURVEY OF THE EXISTING SITE CONDITIONS PRIOR TO BEGINNING WORK. THE SURVEY SHALL INCLUDE TRACING THE WIRING/CONDUIT FOR EACH PIECE OF EQUIPMENT THAT IS BEING DEMOLISHED BACK TO THE SOURCE PANELBOARDS/SWITCHBOARD AND IDENTIFYING THE CIRCUIT BREAKER FEEDING THAT EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL MARK UP THE PLANS IDENTIFYING THE PANELBOARD LOCATION AND RATINGS AS WELL AS THE CIRCUIT BREAKER LOCATION IN THE PANELBOARD AND THE CIRCUIT BREAKER AMPERAGE RATINGS, MANUFACTURER AND CATALOG NUMBER. THIS INFORMATION SHALL BE PROVIDED TO CLIENT'S REP/PROJECT MANAGER PRIOR TO BEGINNING CONSTRUCTION.



**BID DOCUMENTS
JANUARY 07, 2022
FOR BID PURPOSES ONLY**

NO	DATE	REVISION

1 2/16/22 ADDENDUM #3

SCHOOL & LOCATION

DELAPLAINE McDANIEL SCHOOL

1801 S 22nd St, PHILADELPHIA, PA 19145

PROJECT TITLE

**McDANIEL CLASSROOMS
MODERNIZATIONS**

DRAWING NAME

**ELECTRICAL SECOND FLOOR
POWER DEMOLITION PLAN**

DRAWING SCALE
As indicated

LOCATION NO. ENGINEER'S PROJECT #
2370 069078

DRAWN BY CHECKED BY
Author Checker

GC: 2022-009-G
EC: 2022-009-E

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ED102

SEAL:

DATE

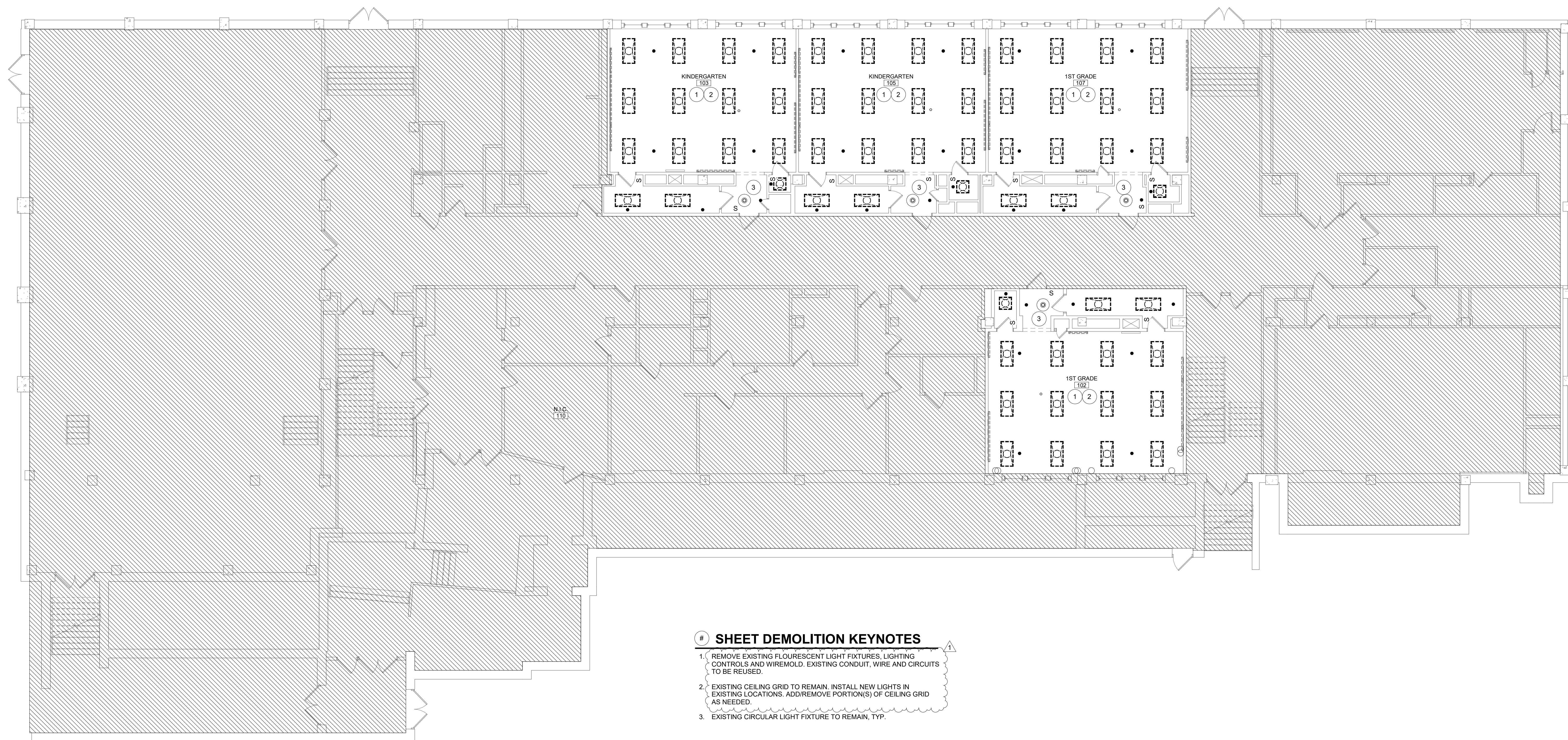
ENGINEER OF RECORD AND MECHANICAL/ELECTRICAL/PLUMBING ENGINEER:

GANNETT FLEMING, INC. 1010 ADAMS AVENUE VALLEY FORGE, PA 19403 Phone: 610.783.3862 Email: BWESSER@GFNET.COM Attn: BRIAN WEISSER

ARCHITECT OZ COLLABORATIVE 4818 BALTIMORE AVENUE PHILADELPHIA, PA 19143 Phone: 215.386.8191 ext. 210 Email: MZIMMERMAN@OZCOLLABORATIVE.COM Attn: MORRIS ZIMMERMAN

GENERAL DEMOLITION NOTES

- 1. SEE ARCHITECTURAL DRAWING A-001 FOR GENERAL NOTES AND PROJECT INFORMATION.
2. NOTES AND GRAPHIC REPRESENTATIONS SHALL NOT LIMIT THE EXTENT OF DEMOLITION REQUIRED...
3. ALL WORK REQUIRED TO REMAIN IN SERVICE BUT INTERFERING WITH THE ALTERATIONS SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
5. EQUIPMENT INDICATED TO BE REMOVED SHALL BE TAKEN FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS...
6. PROCEDURE FOR FEEDERS AND BRANCH CIRCUITS TO BE REMOVED: CONDUIT AND SUPPORTS SHALL BE REMOVED TO THE PANEL OF ORIGIN OR THE BOUNDARY OF THE PROJECT AREA...
7. PROCEDURE FOR FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICTS WITH NEW WORK...
8. WHERE PORTIONS OF EXISTING BRANCH CIRCUITS ARE REMOVED, MAINTAIN THE CONTINUITY OF CIRCUITING TO REMAINING DEVICES.
9. PROVIDE BLANK COVER PLATES AT OPEN BOXES WHERE EXISTING RECEPTACLES OR ELECTRICAL DEVICES ARE REMOVED FROM ENCLOSURES OR SURFACES NOT INDICATED TO BE REPAIRED OR REFINISHED.
10. PROVIDE ADDITIONAL SUPPORT FOR ALL EXISTING CONDUITS, LOW VOLTAGE CABLING AND DEVICES TO REMAIN WHICH ARE AFFECTED BY DEMOLITION OF EXISTING CEILINGS AND PARTITIONS.
11. ALL WORK SHALL BE PROPERLY IDENTIFIED AFTER DEMOLITION. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT REMOVALS.

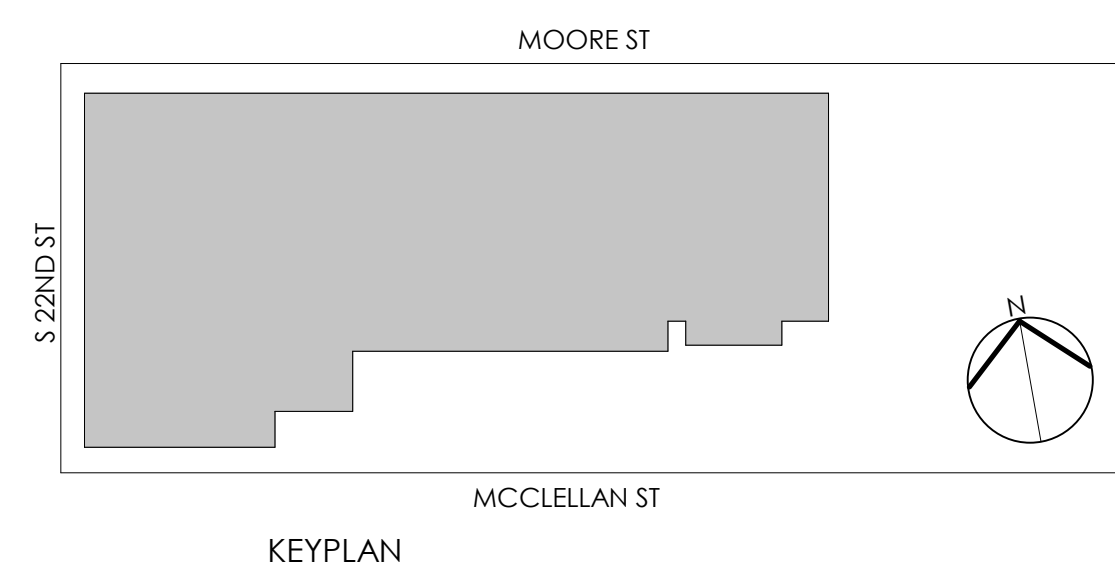


SHEET DEMOLITION KEYNOTES

- 1. REMOVE EXISTING FLOURESCENT LIGHT FIXTURES, LIGHTING CONTROLS AND WIREMOLD. EXISTING CONDUIT, WIRE AND CIRCUITS TO BE REUSED.
2. EXISTING CEILING GRID TO REMAIN. INSTALL NEW LIGHTS IN EXISTING LOCATIONS. ADD/REMOVE PORTION(S) OF CEILING GRID AS NEEDED.
3. EXISTING CIRCULAR LIGHT FIXTURE TO REMAIN, TYP.

ELECTRICAL FIRST FLOOR LIGHTING DEMOLITION PLAN SCALE: 1/8" = 1'-0"

THE ELECTRICAL CONTRACTOR SHALL PERFORM A SURVEY OF THE EXISTING SITE CONDITIONS PRIOR TO BEGINNING WORK. THE SURVEY SHALL INCLUDE TRACING THE WIRING/CONDUIT FOR EACH PIECE OF EQUIPMENT THAT IS BEING DEMOLISHED...



BID DOCUMENTS JANUARY 07, 2022 FOR BID PURPOSES ONLY

Table with columns for NO., DATE, and REVISION.

NO. DATE REVISION

SCHOOL & LOCATION DELAPLAINE McDANIEL SCHOOL

1801 S 22nd St, PHILADELPHIA, PA 19145

PROJECT TITLE McDANIEL CLASSROOMS MODERNIZATIONS

DRAWING NAME ELECTRICAL FIRST FLOOR LIGHTING DEMOLITION PLAN

DRAWING SCALE As indicated

LOCATION NO. 2370 ENGINEER'S PROJECT # 069078

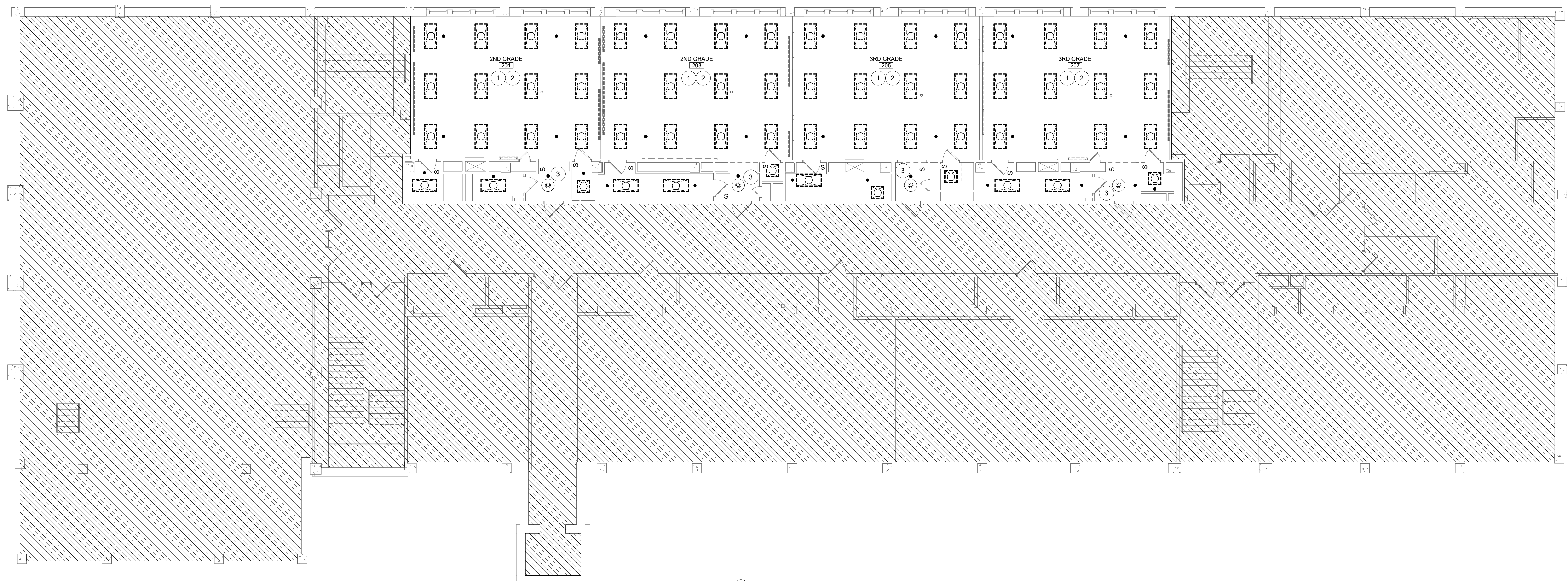
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GC: 2022-009-G EC: 2022-009-E

DRAWING NO. ED201

GENERAL DEMOLITION NOTES

1. SEE ARCHITECTURAL DRAWING A-001 FOR GENERAL NOTES AND PROJECT INFORMATION.
2. NOTES AND GRAPHIC REPRESENTATIONS SHALL NOT LIMIT THE EXTENT OF DEMOLITION REQUIRED. CONTRACTOR SHALL VISIT THE SITE, CAREFULLY EXAMINE EXISTING CONDITIONS AND SHALL PERFORM ALL DEMOLITION REQUIRED TO ACHIEVE THE FINAL DESIGN INTENT AS REQUIRED BY THE CONTRACT DOCUMENTS. EXTENT OF ALL DEMOLITION WORK SHALL BE COORDINATED WITH THE OWNER & ENGINEER.
3. ALL WORK REQUIRED TO REMAIN IN SERVICE BUT INTERFERING WITH THE ALTERATIONS SHALL BE RELOCATED AND RECONNECTED USING MATERIALS AND STANDARDS OF THIS CONTRACT.
4. EQUIPMENT AND WIRING TO BE REMOVED SHALL BE DE-ENERGIZED PRIOR TO ANY DEMOLITION WORK.
5. EQUIPMENT INDICATED TO BE REMOVED SHALL BE TAKEN FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND ENVIRONMENTAL REGULATIONS. EQUIPMENT REQUIRED TO BE TURNED OVER TO THE OWNER, SHALL BE PLACED IN A MUTUALLY ACCEPTED LOCATION.
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7. PROCEDURE FOR FEEDERS AND BRANCH CIRCUITS TO BE RE-USED: REMOVE CONDUIT AND WIRING TO LOCATIONS WHICH AVOID CONFLICTS WITH NEW WORK. INSTALL JUNCTION BOXES, TAPE OFF CONDUCTORS AND IDENTIFY WITH PANEL AND CIRCUIT NUMBER.
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11. ALL WORK SHALL BE PROPERLY IDENTIFIED AFTER DEMOLITION. UPDATE ALL PANEL SCHEDULES TO REFLECT EQUIPMENT AND CIRCUIT REMOVALS.

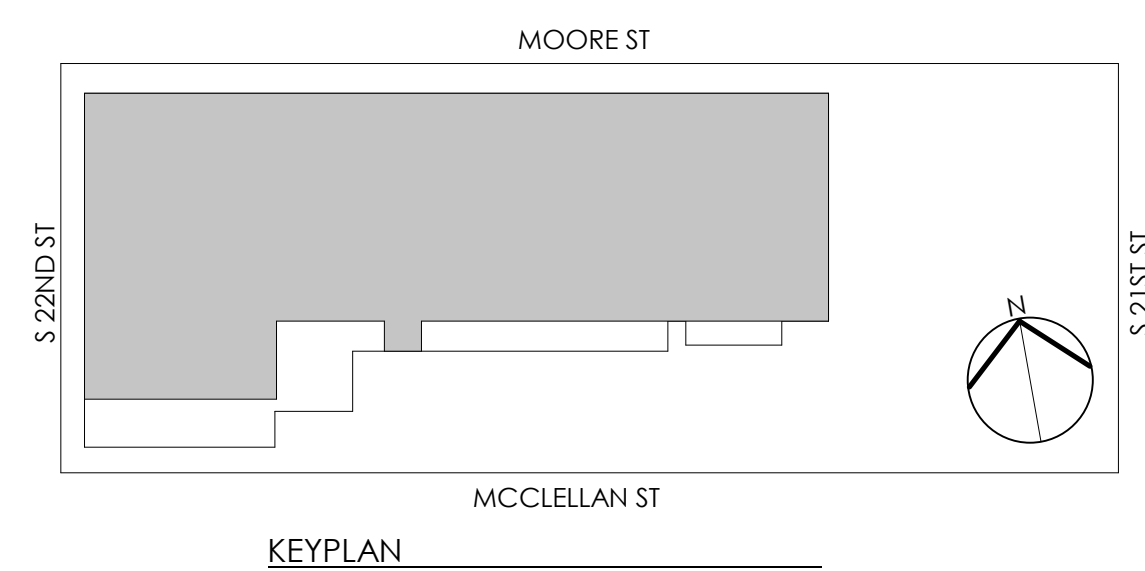


SHEET DEMOLITION KEYNOTES

1. REMOVE EXISTING FLOURESCENT LIGHT FIXTURES, LIGHTING CONTROLS AND WIREMOLD, EXISTING CONDUIT, WIRE AND CIRCUITS TO BE REUSED.
2. EXISTING CEILING GRID TO REMAIN. INSTALL NEW LIGHTS IN EXISTING LOCATIONS. ADD/REMOVE PORTION(S) OF CEILING GRID AS NEEDED.
3. EXISTING CIRCULAR LIGHT FIXTURE TO REMAIN, TYP.

1 ELECTRICAL SECOND FLOOR LIGHTING DEMOLITION PLAN
SCALE: 1/8" = 1'-0"

THE ELECTRICAL CONTRACTOR SHALL PERFORM A SURVEY OF THE EXISTING SITE CONDITIONS PRIOR TO BEGINNING WORK. THE SURVEY SHALL INCLUDE TRACING THE WIRING/CONDUIT FOR EACH PIECE OF EQUIPMENT THAT IS BEING DEMOLISHED BACK TO THE SOURCE PANELBOARDS/SWITCHBOARD AND IDENTIFYING THE CIRCUIT BREAKER FEEDING THAT EQUIPMENT. THE ELECTRICAL CONTRACTOR SHALL MARK UP THE PLANS IDENTIFYING THE PANELBOARD LOCATION AND RATINGS AS WELL AS THE CIRCUIT BREAKER LOCATION IN THE PANELBOARD AND THE CIRCUIT BREAKER AMPERAGE RATINGS, MANUFACTURER AND CATALOG NUMBER. THIS INFORMATION SHALL BE PROVIDED TO CLIENT'S REP/PROJECT MANAGER PRIOR TO BEGINNING CONSTRUCTION.



**BID DOCUMENTS
JANUARY 07, 2022
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NO.	DATE	REVISION

NO. DATE REVISION

SCHOOL & LOCATION
DELAPLAINE McDANIEL SCHOOL

1801 S 22nd St, PHILADELPHIA, PA 19145

PROJECT TITLE
**McDANIEL CLASSROOMS
MODERNIZATIONS**

DRAWING NAME
**ELECTRICAL SECOND FLOOR
LIGHTING DEMOLITION PLAN**

DRAWING SCALE
As indicated

LOCATION NO. ENGINEER'S PROJECT #
2370 069078

DRAWN BY CHECKED BY
Author Checker

GC: 2022-009-G
EC: 2022-009-E

DRAWING NO.
ED202

SEAL:

DATE

ENGINEER OF RECORD AND
MECHANICAL/ELECTRICAL/PLUMBING ENGINEER:

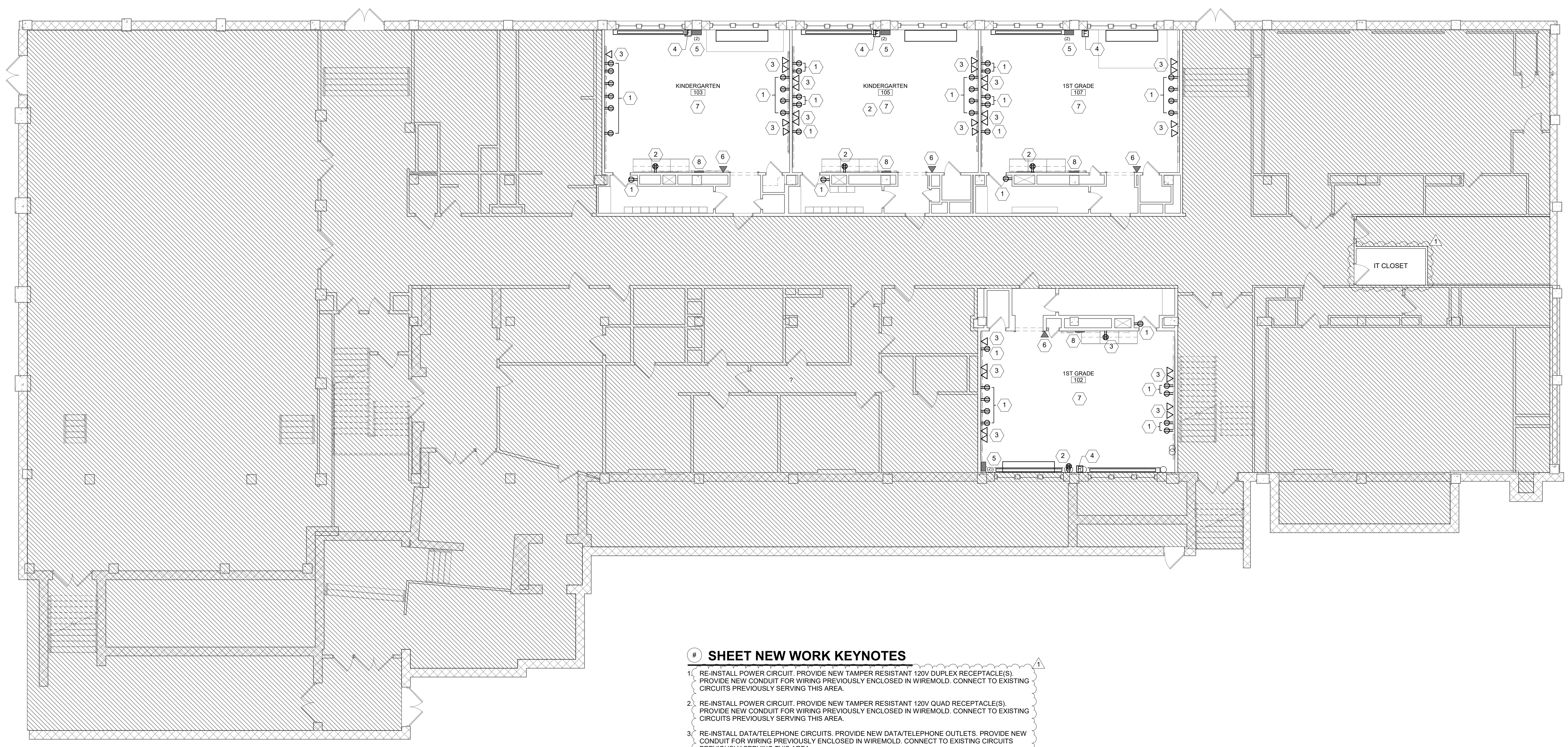
GANNETT FLEMING, INC.
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Email: MZIMMERMAN@OZCOLLABORATIVE.COM
Attn: MORRIS ZIMMERMAN

NEW WORK GENERAL NOTES

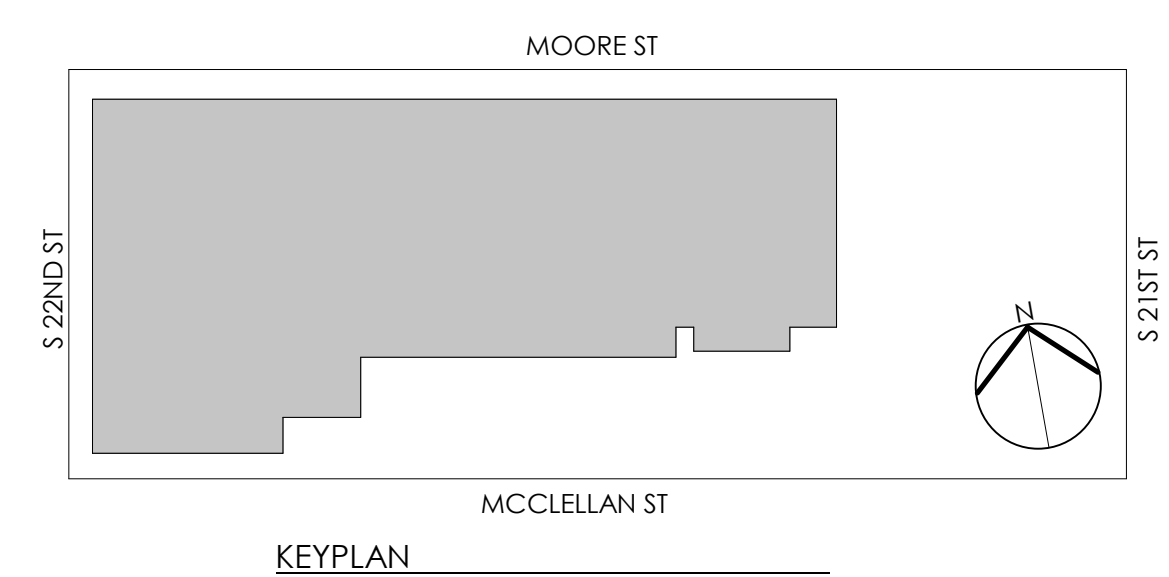
- REFER TO DRAWING E001 FOR GENERAL NOTES AND WIRING METHODS.
- ALL ELECTRICAL EQUIPMENT SHOWN ON DRAWING IS NEW UNLESS NOTED OTHERWISE.
- PAINT-ABLE SURFACE MOUNTED CONDUIT, NOT WIREMOLD. RUN DROPS IN ROOM CORNERS, DO NOT CUT WALL MOLDINGS.



1 ELECTRICAL FIRST FLOOR POWER NEW WORK PLAN
SCALE: 1/8" = 1'-0"

SHEET NEW WORK KEYNOTES

- RE-INSTALL POWER CIRCUIT. PROVIDE NEW TAMPER RESISTANT 120V DUPLEX RECEPTACLE(S). PROVIDE NEW CONDUIT FOR WIRING PREVIOUSLY ENCLOSED IN WIREMOLD. CONNECT TO EXISTING CIRCUITS PREVIOUSLY SERVING THIS AREA.
- RE-INSTALL POWER CIRCUIT. PROVIDE NEW TAMPER RESISTANT 120V QUAD RECEPTACLE(S). PROVIDE NEW CONDUIT FOR WIRING PREVIOUSLY ENCLOSED IN WIREMOLD. CONNECT TO EXISTING CIRCUITS PREVIOUSLY SERVING THIS AREA.
- RE-INSTALL DATA/TELEPHONE CIRCUITS. PROVIDE NEW DATA/TELEPHONE OUTLETS. PROVIDE NEW CONDUIT FOR WIRING PREVIOUSLY ENCLOSED IN WIREMOLD. CONNECT TO EXISTING CIRCUITS PREVIOUSLY SERVING THIS AREA.
- EXISTING FIRE ALARM DEVICE TO REMAIN.
- EXISTING WIRELESS ACCESS POINT TO REMAIN.
- EXISTING HOUSE PHONE TO REMAIN.
- EXISTING SPEAKER TO REMAIN.
- PROVIDE NEW CLOCK.



BID DOCUMENTS
JANUARY 07, 2022
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NO.	DATE	REVISION
1	2/16/22	ADDENDUM #3

SCHOOL & LOCATION
DELAPLAINE McDANIEL SCHOOL

1801 S 22nd St, PHILADELPHIA, PA 19145

PROJECT TITLE
**McDANIEL CLASSROOMS
MODERNIZATIONS**

DRAWING NAME
**ELECTRICAL FIRST FLOOR
POWER NEW WORK PLAN**

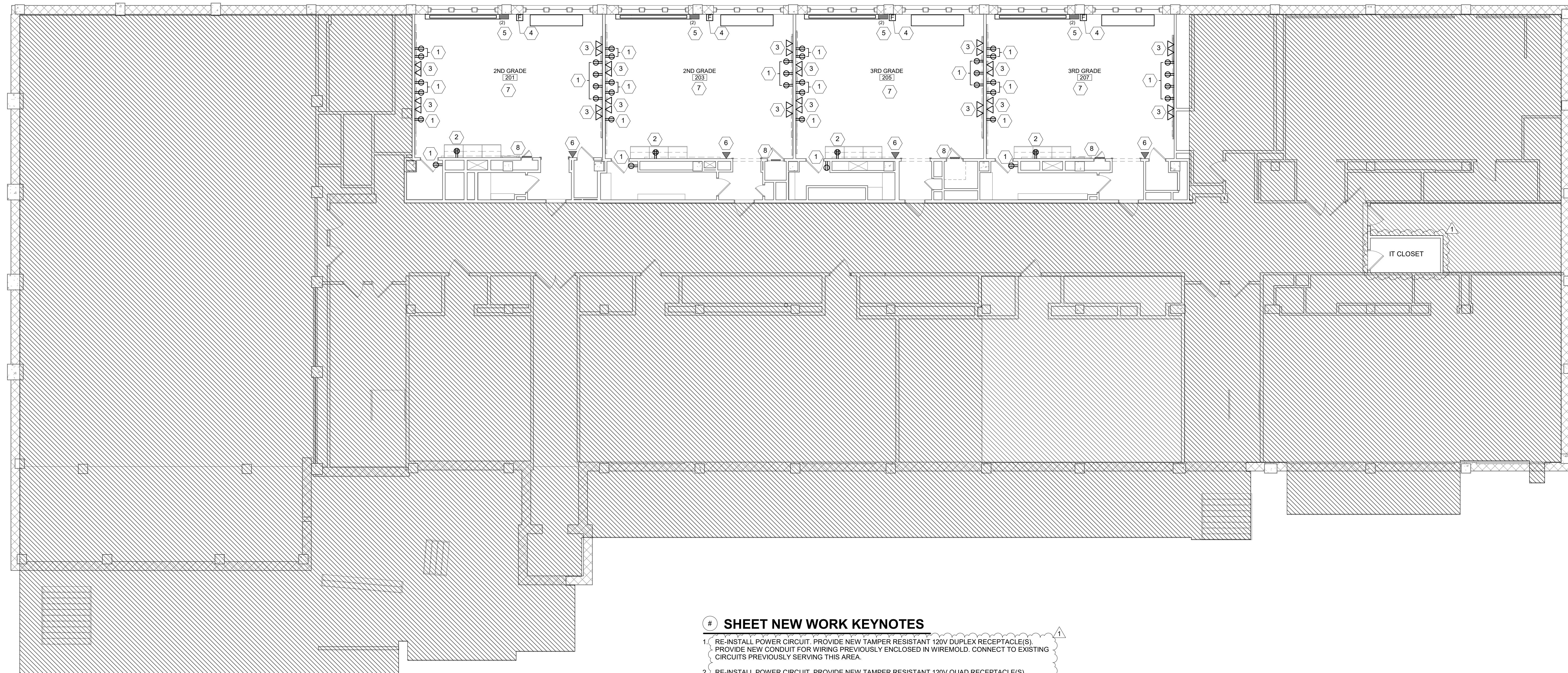
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LOCATION NO. 069078	CHECKED BY Checker
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GC: 2022-009-G
EC: 2022-009-E

DRAWING NO.
E101

NEW WORK GENERAL NOTES

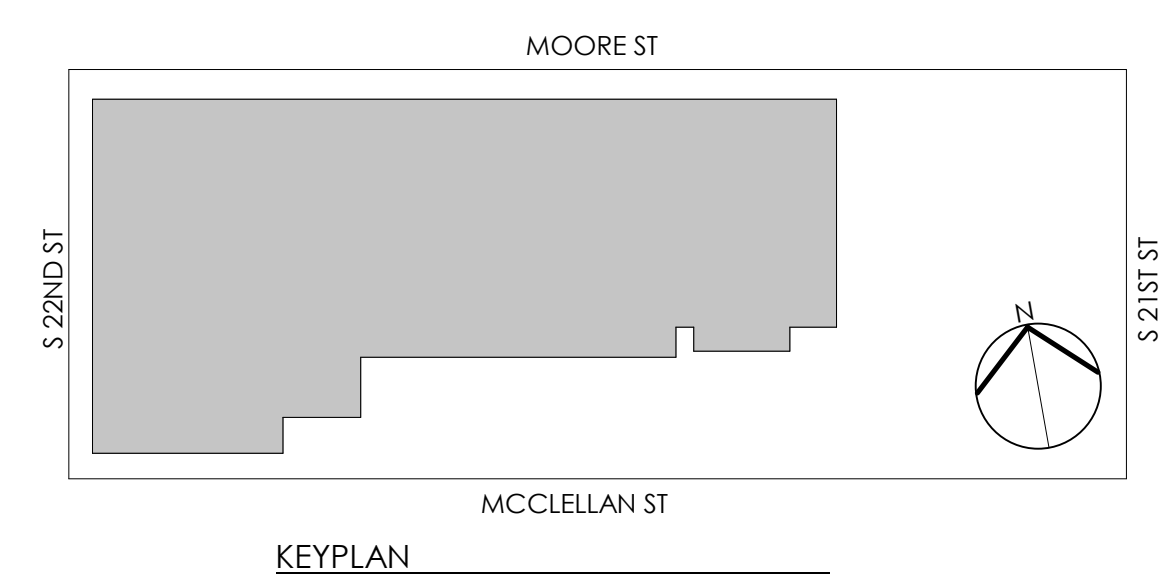
1. REFER TO DRAWING E001 FOR GENERAL NOTES AND WIRING METHODS.
2. ALL ELECTRICAL EQUIPMENT SHOWN ON DRAWING IS NEW UNLESS NOTED OTHERWISE.
3. PAINT-ABLE SURFACE MOUNTED CONDUIT, NOT WIREMOLD; RUN DROPS IN ROOM CORNERS, DO NOT CUT WALL MOLDINGS.



1 ELECTRICAL SECOND FLOOR POWER NEW WORK PLAN
SCALE: 1/8" = 1'-0"

8 SHEET NEW WORK KEYNOTES

1. RE-INSTALL POWER CIRCUIT. PROVIDE NEW TAMPER RESISTANT 120V DUPLEX RECEPTACLE(S). PROVIDE NEW CONDUIT FOR WIRING PREVIOUSLY ENCLOSED IN WIREMOLD. CONNECT TO EXISTING CIRCUITS PREVIOUSLY SERVING THIS AREA.
2. RE-INSTALL POWER CIRCUIT. PROVIDE NEW TAMPER RESISTANT 120V QUAD RECEPTACLE(S). PROVIDE NEW CONDUIT FOR WIRING PREVIOUSLY ENCLOSED IN WIREMOLD. CONNECT TO EXISTING CIRCUITS PREVIOUSLY SERVING THIS AREA.
3. RE-INSTALL DATA/TELEPHONE CIRCUITS. PROVIDE NEW DATA/TELEPHONE OUTLETS. PROVIDE NEW CONDUIT FOR WIRING PREVIOUSLY ENCLOSED IN WIREMOLD. CONNECT TO EXISTING CIRCUITS PREVIOUSLY SERVING THIS AREA.
4. EXISTING FIRE ALARM DEVICE TO REMAIN.
5. EXISTING WIRELESS ACCESS POINT TO REMAIN.
6. EXISTING HOUSE PHONE TO REMAIN.
7. EXISTING SPEAKER TO REMAIN.
8. PROVIDE NEW CLOCK.



**BID DOCUMENTS
JANUARY 07, 2022
FOR BID PURPOSES ONLY**

NO.	DATE	REVISION

1	2/16/22	ADDENDUM #3
NO.	DATE	REVISION

**SCHOOL & LOCATION
DEPLAINE McDANIEL SCHOOL**

1801 S 22nd St, PHILADELPHIA, PA 19145

**PROJECT TITLE
McDANIEL CLASSROOMS
MODERNIZATIONS**

**DRAWING NAME
ELECTRICAL SECOND FLOOR
POWER NEW WORK PLAN**

DRAWING SCALE As indicated	
LOCATION NO. 2370	ENGINEER'S PROJECT # 069078
DRAWN BY Author	CHECKED BY Checker

GC: 2022-009-G
EC: 2022-009-E

**DRAWING NO.
E102**

Project Number: 069078
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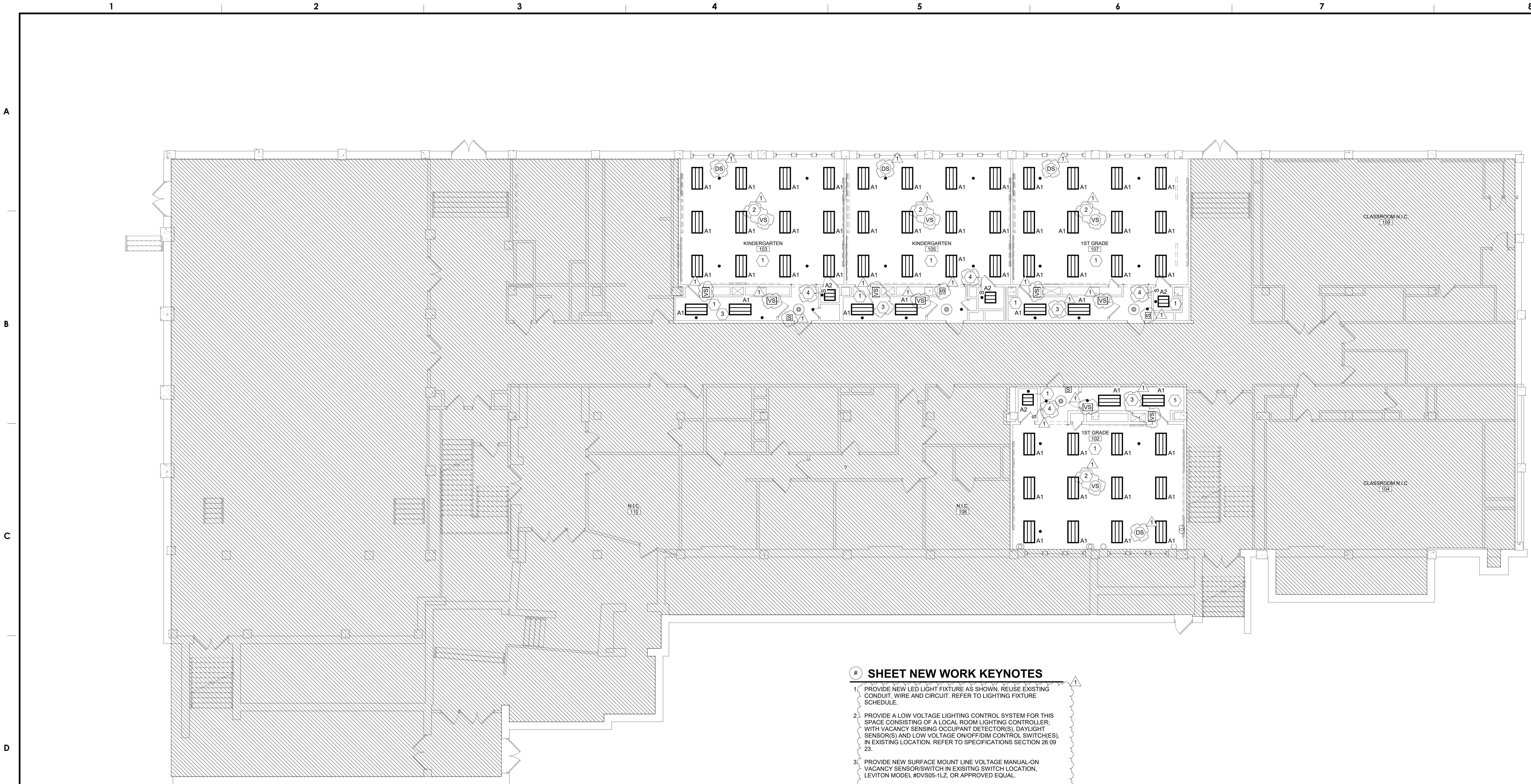
DATE

ENGINEER OF RECORD AND MECHANICAL/ELECTRICAL/PLUMBING ENGINEER:

GANNETT FLEMING, INC.
1010 ADAMS AVENUE
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Attn: MORRIS ZIMMERMAN



1 ELECTRICAL FIRST FLOOR LIGHTING NEW WORK PLAN
SCALE: 1/8" = 1'-0"

SHEET NEW WORK KEYNOTES

1. PROVIDE NEW LED LIGHT FIXTURE AS SHOWN. REUSE EXISTING CONDUIT, WIRE AND CIRCUIT. REFER TO LIGHTING FIXTURE SCHEDULE.
2. PROVIDE A LOW VOLTAGE LIGHTING CONTROL SYSTEM FOR THIS SPACE CONSISTING OF A LOCAL ROOM LIGHTING CONTROLLER, WITH VACANCY SENSING OCCUPANT DETECTOR(S), DAYLIGHT SENSOR(S) AND LOW VOLTAGE ON/OFF/DIM CONTROL SWITCH(ES), IN EXISTING LOCATION. REFER TO SPECIFICATIONS SECTION 26 09 23.
3. PROVIDE NEW SURFACE MOUNT LINE VOLTAGE MANUAL-ON VACANCY SENSOR SWITCH IN EXISTING SWITCH LOCATION, LEVITON MODEL #DVS05-1LZ, OR APPROVED EQUAL.
4. REPLACE EXISTING ON/OFF LIGHT SWITCH WITH NEW LIGHT SWITCH IN SAME LOCATION. REUSE EXISTING WIRING AND CIRCUIT.

LIGHTING FIXTURE SCHEDULE							
TYPE	DESCRIPTION	MANUFACTURER	CATALOG #	LAMP TYPE	WATTS	MOUNTING	REMARKS
A1	LED RECESSED TROFFER	LITHONIA	2GTL 4 30L GZ10 LP835	LED	34	RECESSED	
A2	LED RECESSED TROFFER	LITHONIA	2GTL-2 33L GZ10 LP835	LED	28	RECESSED	



**BID DOCUMENTS
JANUARY 07, 2022
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NO.	DATE	REVISION
1	2/16/22	ADDENDUM #3

**SCHOOL & LOCATION
DELAPLAINE McDANIEL SCHOOL**

1801 S 22nd St, PHILADELPHIA, PA 19145

**PROJECT TITLE
McDANIEL CLASSROOMS
MODERNIZATIONS**

**DRAWING NAME
ELECTRICAL FIRST FLOOR
LIGHTING NEW WORK PLAN**

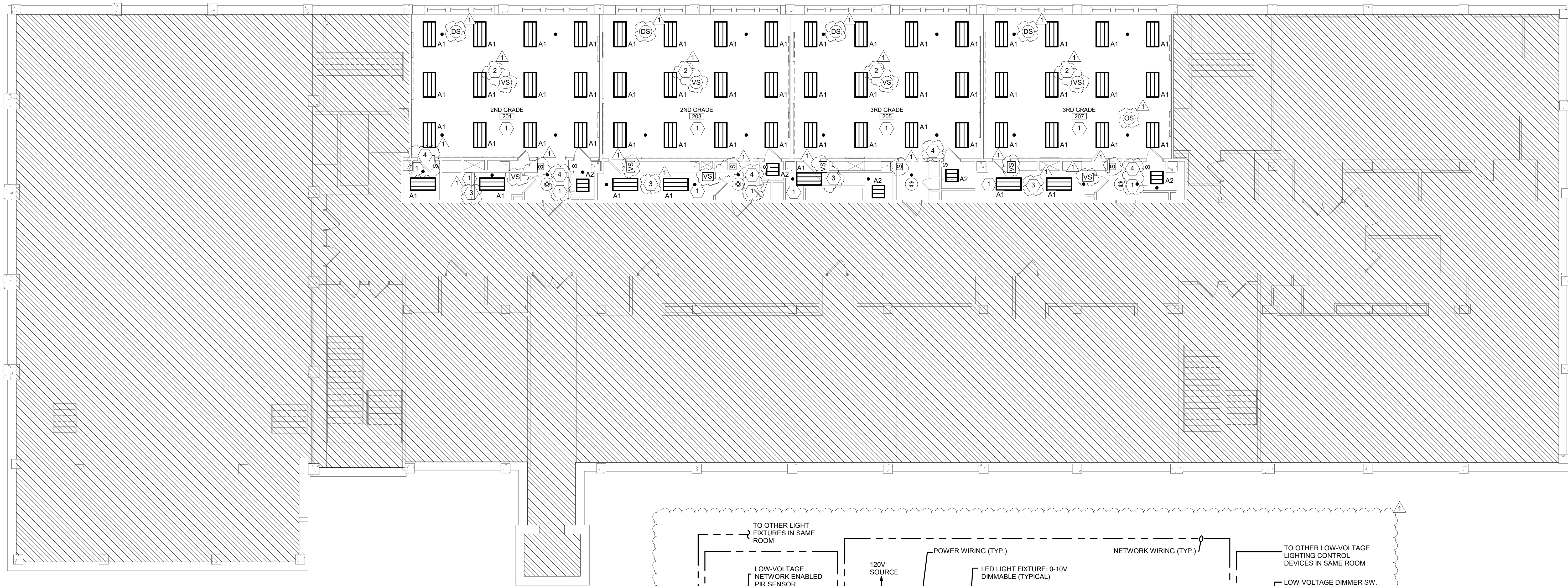
DRAWING SCALE As indicated	
LOCATION NO. 2370	ENGINEER'S PROJECT # 069078
DRAWN BY Author	CHECKED BY Checker

GC: 2022-009-G
EC: 2022-009-E

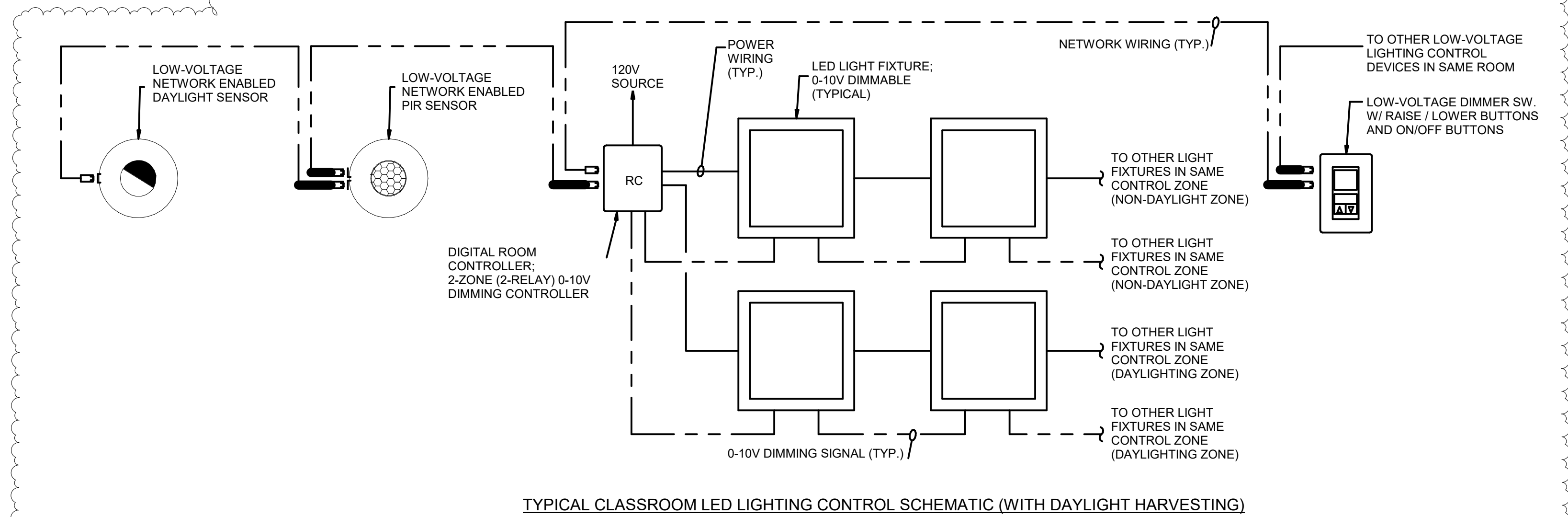
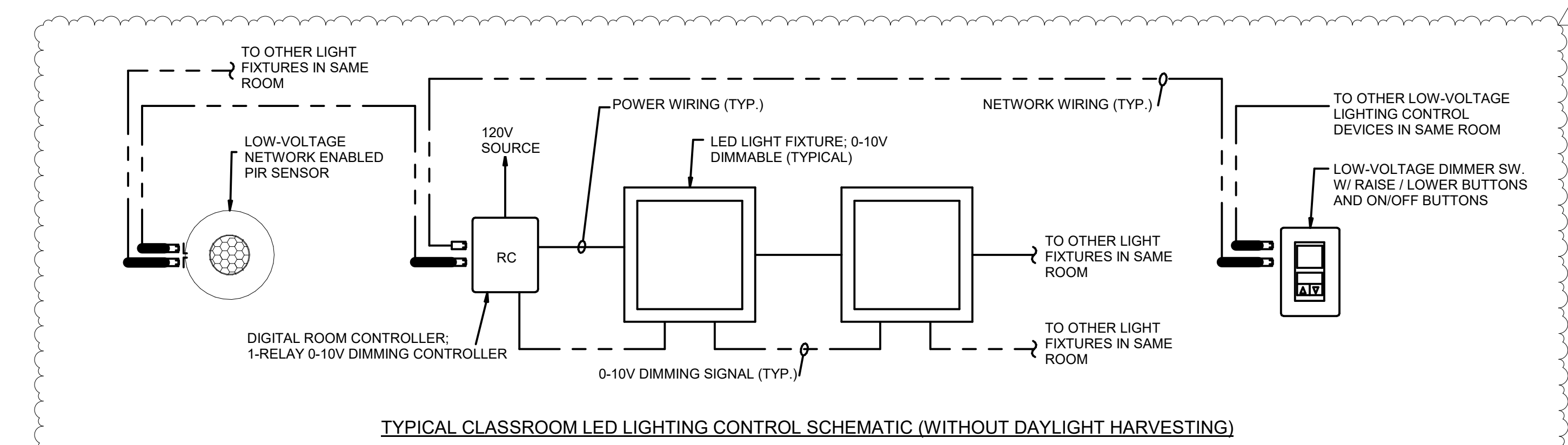
**DRAWING NO.
E201**

SHEET NEW WORK KEYNOTES

- 1. PROVIDE NEW LED LIGHT FIXTURE AS SHOWN. REUSE EXISTING CONDUIT, WIRE AND CIRCUIT. REFER TO LIGHTING FIXTURE SCHEDULE.
2. PROVIDE A LOW VOLTAGE LIGHTING CONTROL SYSTEM FOR THIS SPACE CONSISTING OF A LOCAL ROOM LIGHTING CONTROLLER, WITH VACANCY SENSING OCCUPANT DETECTOR(S), DAYLIGHT SENSOR(S) AND LOW VOLTAGE ON/OFF/DIM CONTROL SWITCHES, IN EXISTING LOCATION. REFER TO SPECIFICATIONS SECTION 26 09 23.
3. PROVIDE NEW SURFACE MOUNT LINE VOLTAGE MANUAL-ON VACANCY SENSOR/SWITCH IN EXISTING SWITCH LOCATION, LEVITON MODEL #DVS05-1LZ, OR APPROVED EQUAL.
4. REPLACE EXISTING ON/OFF LIGHT SWITCH WITH NEW LIGHT SWITCH IN SAME LOCATION. REUSE EXISTING WIRING AND CIRCUIT.



1 ELECTRICAL SECOND FLOOR LIGHTING NEW WORK PLAN SCALE: 1/8" = 1'-0"



LIGHTING CONTROL NOTES

- LC1. NOT ALL LIGHT FIXTURES, CONTROLS, DEVICES, ETC. ARE SHOWN. DIAGRAMS SHOWN ARE TYPICAL FOR CONTROL OF INTERIOR LIGHT FIXTURES AND NEED TO BE MODIFIED AS NECESSARY TO MEET THE INTENT OF THE DRAWINGS.
LC2. NETWORK WIRING SHALL BE CAT 5E PLENUM-RATED WITH A WHITE JACKET AND INSTALLED IN ACCORDANCE WITH THE EQUIPMENT MANUFACTURER'S DIRECTIONS. SUPPORT CABLE ABOVE CEILING VIA CLOSED RINGS OR OPEN TOP HOOKS. CABLE SHALL NOT LAY ON THE CEILING TILE OR BE TIED TO CEILING WIRE HANGERS.
LC3. PROVIDE PROGRAMMABLE SWITCHES THAT ARE NETWORK ENABLED. SWITCHES MAY OPERATE AS A SINGLE, 3-WAY, 4-WAY, OR DIMMER TYPE.
LC4. CONNECT MULTIPLE SENSORS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
LC5. INSTALL ROOM CONTROLLERS AND NETWORK WIRING ABOVE ACCESSIBLE CEILING. COORDINATE LOCATIONS OF ROOM CONTROLLERS WITH THE SCHOOL DISTRICT PRIOR TO INSTALLATION.
LC6. CONTROL SYSTEMS SHALL BE ARRANGED FOR VACANCY SENSING (MANUAL ON / AUTO OFF) OPERATION UNLESS OTHERWISE INDICATED.
LC7. REFER TO SPECIFICATIONS, SECTION 26 05 23 - LIGHTING CONTROL SYSTEMS, FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

2 LIGHTING CONTROL DIAGRAM SCALE: 12" = 1'-0"

