A D D E N D U M N O. 1

Portage Township Schools
Portage High School Auditorium Lighting
Portage, IN 46368

Project No. 223151.00

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Specification sections: 26 55 61 – Theatrical Lighting
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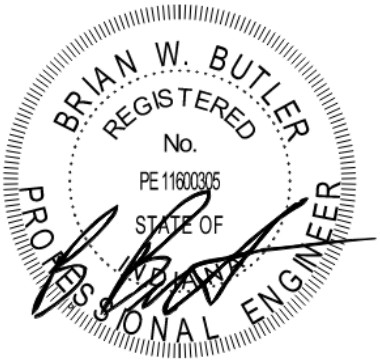
March 22, 2024

I hereby certify that this Addendum was prepared by me or under my direct supervision and that I am a duly registered Architect/Engineer under the Laws of the State of Indiana.

FANNING/HOWEY ASSOCIATES, INC.
ARCHITECTS/ENGINEERS/CONSULTANTS



TO: ALL BIDDERS OF RECORD

ADDENDUM NO.1 to Drawings and Project Manual, dated March 6, 2024, for Portage High School Auditorium Lighting for Portage Township Schools, Portage, Indiana; as prepared by Fanning/Howey Associates, Inc., Indianapolis, Indiana.

This Addendum shall hereby be and become a part of the Contract Documents the same as if originally bound thereto.

The following clarifications, amendments, additions, revisions, changes, and modifications change the original Contract Documents only in the amount and to the extent hereinafter specified in this Addendum.

Each bidder shall acknowledge receipt of this Addendum in his proposal or bid.

NOTE: Bidders are responsible for becoming familiar with every item of this Addendum. (This includes miscellaneous items at the very end of this Addendum.)

RE: ALL BIDDERS

ITEM NO. 1. REVISED PROJECT MANUAL SECTION 26 55 61 THEATRICAL LIGHTING

A. Section 26 55 61 has been revised, dated March 22, 2024, is included with and hereby made a part of this Addendum.

ITEM NO. 2. DRAWING SHEET E001 – ELECTRICAL SYMBOLS AND ABBREVIATIONS

A. Replace sheet in its entirety.

ITEM NO. 3. DRAWING SHEET NO. ED11A - FIRST FLOOR DEMOLITION PLAN

A. Remove and replace the following sheet keynotes (demolition plan notes) as follows:
   a. D6 - REMOVE EXISTING DIRECTOR STATION WIRING FROM EXISTING CONTROL SOURCE, LABEL AND CAP WIRING. EXISTING FLOOR BOX DUPLEX OUTLET SHALL REMAIN IN PLACE.
   b. D7 - REMOVE EXISTING LIGHTING CONSOLE INPUT PLATE (DMX IN) AND WIRING COMPLETE BACK TO CONTROL SOURCE. PROTECT BOX AND CONDUIT FOR REUSE FOR NEW CONTROLS. REMOVE EXISTING SURFACE MOUNTED HOUSE LIGHTING CONTROL STATION LOCATED AT UPPER AREA IN CONTROL BOOTH AND WIRING COMPLETE BACK TO CONTROL SOURCE. PROVIDE BLANK COVERPLATE.
   c. D10 - REMOVE EXISTING THEATRICAL LIGHTING EQUIPMENT AND FIXTURES INCLUDING CONNECTOR STRIPS COMPLETE UP TO (BUT NOT INCLUDING) GRIDIRON BOX. REMOVE EXISTING WIRING BACK TO DIMMER RACK COMPLETE. PROTECT CONDUIT AND BOXES FOR REUSE.

B. Add the following demolition plan general notes.
   a. A. PROTECT EXISTING FLOORING, INCLUDING TERRRAZO BETWEEN EXTERIOR DOORS AND AUDITORIUM, EXISTING STAGE FLOORING, AS WELL AS AUDITORIUM FLOORING WITH SUITABLE MATERIAL FOR LIFTS AND SCAFFOLDING REQUIRED. REPAIR ANY DAMAGED FINISHES BACK TO CONDITION FOUND BEFORE START OF CONSTRUCTION PROJECT.
   b. B. CONTRACTOR SHALL REMOVE EXISTING SEATING SECTIONS AS REQUIRED FOR ERECTION OF LIFTS. REPLACE SEATING IN EXISTING LOCATIONS AT END OF PROJECT.
   c. EXISTING STAGE RIGGING WILL BE REUSED.

ITEM NO. 4. DRAWING SHEET NO. EL11A – FIRST FLOOR LIGHTING PLAN

A. Remove and replace the following sheet keynotes (lighting plan notes) as follows:
   a. L5 - PROVIDE NEW STAGE MANAGER PANEL EQUIPMENT AT STAGE MANAGER'S PANEL LOCATION. PROVIDE NEW GALVANIZED STEEL COVERPLATE (PAINTED BLACK) TO REPLACE EXISTING CONTROLS. SEE SPECIFICATION FOR DETAILS OF NEW CONTROLS AND INPUTS.

B. Add the following lighting plan general notes as follows:
   a. 2. SEE SPECIFICATION SECTION 26 55 61 THEATRICAL LIGHTING PARAGRAPH 2.4 FOR RETROFIT LAMP MODULE SCHEDULE.

ITEM NO. 5. DRAWING SHEET NO. EL11B – SECOND AND THIRD FLOOR LIGHTING PLAN

A. Remove and replace the following sheet keynotes (lighting plan notes) as follows:
   a. L9 - PROVIDE TOUCHSCREEN, TWO NEW DMX INPUT JACKS, TWO ETCNET ETHERCON JACKS AND WIRING BACK TO DIMMING CONTROLS IN EXISTING BOX.
   b. L20 - PROVIDE NEW LED STRIP FIXTURE, TYPE AS SHOWN, SUSPENDED FROM STRUCTURE ABOVE ON JACK CHAIN. LOCATION AS DETERMINED IN FIELD TO AVOID EXISTING RIGGING. MOUNTED AT APPROXIMATELY 20' AFF (DETERMINE IN FIELD TO BE ABOVE BOTTOM EDGE OF RIGGING LINESETS). PROVIDE A NEW 277 VOLT CIRCUIT FROM NEARBY PANEL AND CONNECT TO SWITCH MOUNTED AT STAGE MANAGER PANEL LOCATION.

B. Add the following lighting plan general notes as follows:
   a. 2. SEE SPECIFICATION SECTION 26 55 61 THEATRICAL LIGHTING PARAGRAPH 2.4 FOR RETROFIT LAMP MODULE SCHEDULE.

SECTION 26 55 61 - THEATRICAL LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes equipment for stage and house lighting systems including fixtures, lamps, dimmers, controls, and distribution components. To ensure a complete system, it is the intent of the specification that this equipment be purchased through a qualified theatrical dealer / integrator.

B. **Base bid** includes:
   1. Auditorium dimming and relay system – new equipment and reuse of one existing ETC relay panel.
      a. New control equipment including lighting network connections and UPS (uninterruptable power system).
      b. New dimming rack for existing dimmed circuits
      c. Additional relay panels as required
      d. DMX wiring between inputs and DMX controller
      e. DMX wiring to new theatrical pipe mounted connectors
      f. New plugging strips
      g. New linear color changing striplights
      h. Emergency and DMX bypass equipment
      i. New lighting console
         1) ETC Ion XE 20
         2) Two (2) touch screen monitors
         3) Accessories as specified

   2. LED static white linear worklights (type LS1 on plan)

   3. Portable theatrical fixtures
      a. Twenty (20) LED ellipsoidal spotlights consisting of:
         1) Sixteen (16) LED ellipsoidal spotlights with 20 degree lens
         2) Two (2) LED ellipsoidal spotlights with 30 degree lens
         3) Two (2) LED ellipsoidal spotlights with 36 degree lens
      b. Twenty-five (25) LED fresnels
      c. Six (6) banks of LED linear strip

   4. Accessories (in addition to those required for each fixture)
      a. Ten (10) 10’ DMX cables
      b. Five (5) 25’ DMX cables

   5. Auditorium house lighting retrofits
      a. New LED modules in existing recessed downlights, type as shown on plan and scheduled herein.

C. **Alternate bid** includes. These are not listed in priority order. Assume that all installation for these fixtures will be performed at the same time as the base bid fixtures.

   1. Alternate #1 – Twenty (20) LED ellipsoidal spotlights with 20 degree lens

   2. Alternate #2 – Three (3) LED followspots including tripod base, cords and accessories.

1.2 DEFINITIONS

A. Batten: Steel pipe supporting curtain by means of cables or chains from overhead structural support.

B. Rigging: General term for hardware used to move scenery, lights, or curtains on or over the stage.

C. Trim: Adjustment of height or level of batten or equipment.

1.3 SUBMITTALS

A. With Bid: Bill of materials

B. Shop Drawings: Show fabrication and installation details for dimmer racks showing arrangements, characteristics, and circuit assignments of various modules. Include elevation views of front panels indicating devices and controls. Include illustrations and dimensioned outline drawings.
   1. Wiring Diagrams: Power, signal, and control wiring. Show connections and circuit and channel assignments.
   2. Shop Drawings: Assembly and installation drawings showing product components in assembly. General system drawings shall be scaled no less than 1/4"=1’-0”. Details shall be scaled as necessary to clearly illustrate Contractor’s intent.
   3. Equipment Legend: Show a unified system of designations for lighting instruments, panels, dimmers, circuits, and equipment.

1.4 CLOSEOUT DOCUMENTS

A. General: Closeout Submittals are to be submitted with O and M Manuals only. Do not submit with other ACTION and INFORMATIONAL Submittals:
   1. Operation and Maintenance Data: In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
   2. Safety rules and safety directions for operation. Maximum load limits for all assemblies.
   3. As-built drawings and schematic diagrams.
   4. List of components for all assemblies, with part/model numbers, including manufacturers' addresses and phone numbers.
   5. Inspection check sheets with maintenance schedules.
   6. Name, address, and telephone number of manufacturer, installer, architect, and consultant for guidance of future service personnel.
      a. System Troubleshooting: Procedures for common software, programming, control console, dimmer bank, and distribution system problems; include information on how to get help.
   7. Extra Materials: Receipt for extra materials.
   8. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers trained and approved by manufacturer.

B. Rigging Installer Qualifications: A firm or individual experienced in installing rigging similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

C. Dimming Equipment Manufacturer Qualifications: A qualified manufacturer. Maintain, within 100 miles of Project site, a service center capable of providing training, parts, and emergency maintenance repair support within 24 hours' maximum response time.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with NECA 1.

F. Comply with NFPA 70.

G. Preinstallation Meeting: Conduct meeting at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.6 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
   1. Dimmer Modules: One of each type and rating installed.
   2. Fuses: Three of each kind.
   3. Lamps: One for every 10 of each retrofit lamp type and rating installed. Furnish at least one of each type.

1.7 WARRANTY

A. Special Warranty for Rigging Equipment: Manufacturer's standard form in which manufacturer agrees to repair or replace components of rigging equipment that fail in materials or workmanship within specified warranty period.
   1. Failures include, but are not limited to faulty operation of rigging equipment.

B. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

B. Products of other manufacturers will be considered for acceptance only when allowed in Section 260050, General Electrical Requirements.

2.2 PLUG CONNECTORS

A. Plug Connectors (provide as scheduled in sub-paragraphs):
   1. Stage pin (2P&G) - USITT S3, 2-pole, 3-wire, 20-A, pin type.
   2. Edison – parallel blade “U” plug ground.
   3. Twistlock – L5 – 20P plug”

2.3 LIGHTING FIXTURES AND ACCESSORIES

A. Manufacturers:
   1. Altman Lighting Co., Inc.
   2. Electronic Theatre Controls.
   3. Leviton Mfg. Co., Inc.; Lighting Management Systems.
   4. Strand Lighting.

B. General Lighting Fixture and Accessory Requirements:
   1. Listed under UL 1573.
   2. Fixtures: Equipped with pigtail, yoke with pipe clamp, safety cable for batten mounting, and filter holder.
   3. Metal Parts: Free of burrs, sharp corners, and edges.
   4. Sheet Metal Components: Steel, unless otherwise indicated. Form and support to prevent warping and sagging.
   5. Fixture Doors and Their Internal Access: Smooth operating, free of light leakage under operating conditions. Doors, lenses, diffusers, and other pieces arranged to prevent accidental falling when secured in operating position.
   6. Pigtail: Factory wired, 60-inch-long, 3-wire cord and plug connector assembly with cord encased in woven fiberglass or silicone tubing.
   7. Fixture Ventilation Openings: Baffled against light leaks.
   8. Fixture Operating Controls and Handles: Thermally insulated.
   9. Lenses: Borosilicate glass in silicone mountings.
   10. Framing Shutters: Stainless steel, four way; with each blade in a separate plane under adjustable tension mounting. Blades adjust plus or minus 30 degrees of rotation in gate, for 120-degree-minimum total angular rotation between adjacent blades.
   11. Fixture Yoke: Rigid metal, arranged for vertical aiming of unit and equipped with T-bolt or hand screw to lock alignment.

C. LED Ellipsoidal Spotlights (BASE BID – quantity of twenty units), ALTERNATE BID #1 (an additional twenty units):
   1. Finish: Black
   2. Supply each fixture with:
      a. 5 foot power cable with stage pin connector
      b. 10 foot long DMX cable
      c. C-clamp
      d. Safety cable
      e. Soft focus pattern holder.
      f. Lens tube per part 1.
   3. Manufacturers & Models
      a. Altman Lighting: Model: PHX LVD LED Profile
      b. Chauvet Professional: Model: Reve E-3
      c. Electronic Theater Controls: Model: Source Four LED Series 3
      d. Elation Model: KL Profile FC

D. LED Fresnel Lens Spotlights:
   1. Finish: Black
   2. Supply each fixture with:
      a. 5 foot power cable with stage pin connector
      b. 10 foot long DMX cable
      c. C-clamp
      d. Safety cable
      e. Color frame
      f. Soft focus pattern holder.
      g. Lens tube per part 1.
   3. Manufacturers & Models
      a. Altman Lighting: Model: Pegasus 6 LED
      b. Electronic Theater Controls: Model: Desire Fresnel
   4. Accessories: Two, four-leaf rotatable metal flaps (barn doors) for every three fixtures.

E. Striplight Units: Compartmented steel sheet housing, two meter long. Compartments shall be in line and wired with four cells of control.
   1. Designed to hold secondary lenses.
   2. Hanger: Adjustable, steel-strap type equipped at each end with pipe clamp and safety cable for suspension from a batten.

3. Accessories: Provide with full complement of horizontal, vertical, and round lensing.
4. Manufacturers & Models
    a. Electronic Theater Controls: Model : ColorSource Linear 4 Deep Blue

F. (ALTERNATE BID #2) - LED Followspots: LED followspot with tripod stand. Independent local control or DMX.
1. Onboard controller
2. Front accessory holder
3. DMX 5-pin input and pass-through
4. Tripod stand
5. 3 foot power cable with Edison connector.
6. 10 foot long DMX cable
7. 2, C-clamps
8. Safety cable
9. Manufacturers & Models
    a. Altman Lighting Model: AFS700

2.4 RETROFIT LAMPS

A. Manufacturers:
1. Canto USA Mode: Retro Fusion 2.0
2. Alternate manufacturer approved by Engineer in advance of bid through Addendum process.

B. Lamp module schedule:
1. Type R1 – 150 Tall (15.4 watts, with 1” E26 socket extension where called out on plan)
2. Type R2 – 150 Short (15.4 watts)
3. Type R3 – 300 (with cross hatch reflector, short or tall as determined in field)
4. Type R4 – 500 (with cross hatch reflector, short or tall as determined in field)

C. Provide E26 Edison base, 3000K CCT.

2.5 DISTRIBUTION COMPONENTS

A. Manufacturers:
1. Altman Lighting Co., Inc.
2. American Insulated Wire Corp.
3. Electronic Theater Controls (ETC)
4. Leviton Mfg. Co., Inc.; Lighting Management Systems.
5. Performance Electric, Inc.
6. SSRC, Inc.
7. Superior Essex; Electrical Products Group.
8. Union Connector Co., Inc.

B. Connector Strip: UL-listed, factory-wired wireway and receptacle assembly.
1. Wireway: Steel or extruded aluminum; with removable cover and nominal cross-section dimensions of 3 by 4-1/2 inches .
2. Accessories: Cable clamps, support cradles, and cable strain relief grips for each cable.
3. Receptacles: Flush or 18” long pigtail mounted with strain relief at wireway wall penetration, as scheduled.
4. Receptacle Wiring: For connecting to terminal blocks; with 125 deg C, crosslinked, polyethylene-insulated, identification-labeled wire.
5. Terminal Blocks: Molded-barrier type, with screw lugs to suit supply conductors and low voltage DMX.
6. Mounting Hardware: Furnished with each unit; permits surface, single-pipe-bracket, or double-pipe-bracket mounting.
7. Finish: Semigloss or matte black.

8. Schedule:
    a. 1E – 24’ length, sixteen (16) flush mounted stage pin receptacles, 18” centers. Provide four 20A power circuits from to relay panel to strip. Provide two connectorized DMX outputs per strip.
    b. 2E and 3E – 30’ length, twenty (20) flush mounted stage pin receptacles, 18” centers. Provide four 20A power circuits from to relay panel to strip. Provide two connectorized DMX outputs per strip.
    c. BR, BC, and BL – 10’ length, pipe mounted on handrail, seven pigtail mounted stage pin receptacles, 18” centers, one Edison flush duplex receptacle. Connect duplex to constant circuit C13. Provide two 20A power circuits from to relay panel to strip. Provide two connectorized DMX outputs per strip.
    d. SR and SL – 5’ length, vertically mounted, eight total stage pin receptacles (four doubles), 12” centers, one Edison plug duplex receptacle. Connect duplex to constant circuit C19. Provide two 20A power circuits from to relay panel to strip. Provide one connectorized DMX output per strip.

C. Plug-in Boxes: UL-listed, factory-wired wireway and receptacle assembly, 24 inches long, unless otherwise indicated; and with the following features:
    1. Wireway: Steel or extruded aluminum, with removable cover; nominal cross-section dimensions of 3 by 4-1/2 inches .
    2. Accessories: Cable clamps, support cradles, and cable strain relief grips for each cable.
    3. Receptacles: Pigtail mounted, 18 inches long, with strain relief at wireway wall penetration.
    4. Receptacle Wiring: For connecting to terminal blocks; with 125 deg C, crosslinked, polyethylene-insulated, identification-labeled wire.
    5. Terminal Blocks: Molded-barrier type, with screw lugs to suit supply conductors.
    6. Surface or Grid Mounting: With accessories for surface mounting or with pipe-mounting accessory bracket.
    7. Recessed Mounting: With flanged cover suitable for recessed mounting in wall.
    8. Finish: Semigloss or matte black.

D. Gridiron Junction Boxes: UL listed and factory wired with terminal strips and concentric knockouts on all sides.
    1. Terminal Blocks: Molded-barrier type, with screw lugs to suit supply conductors.
    2. Accessories: Cable clamps, support cradles, and cable strain relief grips for each cable, and brackets for surface or with pipe mounting.
    3. Finish: Semigloss or matte black.

E. Power Wire and Cable:
    1. Building Wire in Raceways: Comply with Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."
    2. Portable Power Cable: UL listed; flexible stage and lighting power cable; Types SC, SCE, or SCT; 600 V; multiconductor; 60 deg C temperature rating.
    3. Provide new umbilical cords up to gridiron box at 1E, 2E and 3E. Remove existing conductors rendered useless back to dimmer rack.

2.6 LIGHTING CONTROL SYSTEM

A. Manufacturers:
    1. Electronic Theatre Controls.
    2. Strand Lighting.

B. Description: Microprocessor-based modular system consisting of dimmer and control modules operated from remote-control stations and a control console.
    1. Comply with UL 508.
    2. Comply with USITT DMX 512 for data transmission.

C. Existing to be reconnected:
   1. Provide twenty-four (24) 20A/1P circuit breaker for constants (Edison receptacles).
   2. Provide ten (10) 20A/1P circuit breakers for emergency lighting loads for house lighting – circuits HL1, HR1, HF1, HL11, HL12, HR11, HR12.
   3. Provide forty (40) dimming circuits for house lights.
   4. Provide twenty-one (21) dimming circuits for floor box stage pin outlets.

D. Existing floor boxes schedule (based on white tape labeling for dimmed circuits):
   1. AR – Edison duplex (constant) – C12, stage pin receptacles: circuits 21, 22, 23 (in yellow).
   2. AC – Edison duplex (constant) – C12, stage pin receptacles: circuits 21, 22, 23 (in yellow).
   3. AL – Edison duplex (constant) – C12, stage pin receptacles: circuits 21, 22, 23 (in yellow).
   4. FR1 – Edison duplex (constant) – C15, stage pin receptacles: circuits 112, 113, 114.
   5. FR2 - Edison duplex (constant) – C15, stage pin receptacles: circuits 115, 116, 117.
   6. FR3 - Edison duplex (constant) – C15, stage pin receptacles: circuits 118, 119, 120.
   7. FL1 - Edison duplex (constant) – C14, stage pin receptacles: circuits 103, 104, 105.
   8. FL2 – Edison duplex (constant) – C14, stage pin receptacles: circuits 106, 107, 108.
   9. FL3 - Edison duplex (constant) – C14, stage pin receptacles: circuits 109, 110, 111.

E. Existing wall box receptacle schedule:
   1. WR – Twistlock 20A, 120V – R22, R24
   2. WC – Twistlock 20A, 120V – R22, R23
   3. WL - Twistlock 20A, 120V – R23, R24

F. House lighting circuits to be reconnected – HL2 through HL10, HR2 through HL10, and HF2 through HF21.

G. Provide a NEMA 1, 208/120, three phase, four wire, 1200 amp main lug only distribution panel with one 800 amp circuit breaker and feeders for new dimming equipment, and two 200 amp circuit breakers and feeders for relay panels. Connect line side to existing conductors serving dimmer rack to be removed. Provide by ETC or Square D. Provide feeder wiring to meet ampacity of wiring per National Electric Code.

H. Dimmer Boards: Dead-front, UL-labeled, front-access, freestanding board for mounting modular dimmers; formed-steel or extruded-aluminum structural members, completely enclosed with steel or aluminum panels. Painted with manufacturer's standard corrosion-resistant primer and finish coats and the following features:
   1. Main lug only main buss, 208/120, three phase, four wire, 800 amps.
   2. Hinged, locking front door, with openings to allow air intake across the face of all dimmer modules.
   3. Individual board sections shall not exceed 84 inches high by 25 inches deep by 30 inches wide.
   4. For each module position, provide support rails and control-pin configurations, constructed for precise alignment of dimmer modules into power and signal connector sockets.
   5. Forced-air cooling of each board for maintaining operating temperature at each dimmer, assuming full load, in ambient temperature not to exceed 40 deg C. Exhaust rates shall be variable using temperature sensors and fan-speed control electronics. Individual control of multiple fans is acceptable in lieu of fan-speed control. Fan(s) shall start and stop automatically. Fan noise at full load shall be less than 3.1 sones.
   6. Each board shall have an automatic air-temperature sensor to shut off all dimmers in the board should the internal temperature rise above maximum safe operating limits. In an overheat condition, the fan shall continue operating. When a safe operating temperature is restored, the system shall automatically reset allowing normal user control.

I. Dimmers: Provide 25 % spare capacity for future growth. Modular solid-state units that operate smoothly over their operating ranges without audible lamp noise or radio-frequency interference at any setting. Modules shall be dead-front, draw-out type with floating line, load, and control sockets for smooth insertion and withdrawal; with load-side thermal-magnetic circuit breaker, speed-controlled cooling fan, and overtemperature sensor.
   1. Non-Dim Units: On-off relay control only. Capable of serving inductive loads such as motors or high-intensity-discharge fixtures.
   2. Surge Protection: Modules shall withstand power-line surges of 6000 V/3000 A according to IEEE C62.41.
   3. Filter each dimmed circuit to provide a minimum 500-microsecond, current-rise time at a 90-degree conduction angle at 50 percent of rated dimmer capacity. At any load within rating, rate of current rise shall not exceed 30 mA/microsecond, measured from 10 to 90 percent of load current waveform.

J. Control System: Microprocessor-based control system with a nonvolatile system memory to adjust dimmer channel settings for different scenes, to patch dimmers to channels, and to manually or automatically change dimmer settings from one preset scene to another.
   1. Provide emergency bypass detection system and DMX bypass to drive designated fixtures to 100% upon loss of utility power.

K. Control Console: Tabletop unit with manual and computer-based programming controls, memory units, indicating devices, and the following features:
   1. ETC Ion XE 20
   2. Two touch screens with associated display controls, for displaying operating menus and memory readout.
   3. Controls for setting levels into memory.
   4. Cord and connector for connecting console to outlets for console power and control.

L. System Operation: Selectable between multichannel two-scene preset and four-channel single-scene memory. Console features include electronic patching of control signals for dimmers and off-line data storage. Operational capability includes the following:
   1. Live and blind programming.
   2. Special effects programmability for automatic operation of lights in pulsating, sequential dimming and brightening, and other special operating modes. Special effects menu displays operator guidance for programming and individual step levels.
   3. Inserting cues between designated cues without renumbering.
   4. Out-of-sequence playback of cues.
   5. Controlling houselights and stage lights from console by assigning their dimmers or non-dim on-off controls to a channel.
   6. Retaining programmed cues in memory for minimum of one year after power outage.
   7. Automatic sequential execution of programmed cues.

M. Console Power and Control Outlets: Multiple receptacles matched to connector on console connector cord.

N. House Lighting Control Station: Provide seven inch touchscreen, provide two (2) 5 pin XLR style DMX inputs, provide two ETCNET Ethercon jacks.
   1. Flush mount in a galvanized steel wallplate (painted black) replacing existing steel plate.

O. Walk-through Station: Two push buttons activates or deactivates indicating light and presets scene of house lighting control system.
   1. Light-emitting-diode indicating light illuminates when preset command is executed.
   2. Labeled "ON" and “OFF”.
   3. Flush wall mounted, unless otherwise indicated.

P. Usher Station: Five push buttons activates or deactivates indicating light and presets scene of house lighting control system.

1. Light-emitting-diode indicating light illuminates when preset command is executed.
2. Labeled "ON", “PRESET 1”, “PRESET 2”, “PRESET 3” and “OFF”. Configured as directed by Owner.
3. Flush wall mounted, unless otherwise indicated.

Q. Stage Manager Panel: Provide seven inch touchscreen control and ten push buttons with presets for activating or deactivating theatrical and house lighting control system.
1. Light-emitting-diode indicating light illuminates when preset command is executed.
2. Labeled "ON", “PRESET X”, and “OFF”. Configured as directed by Owner.
3. Flush wall mounted, unless otherwise indicated.
4. DMX Input jack – Provide two (2) 5 pin XLR style
5. DMX Network – Provide two (2) ETCNET Ethercon jacks.

R. DMX controls at connector strips: Provide DMX control from DMX processor to each connector strip as scheduled, see section 2.5. Reconnect DMX to existing 4E electric.

2.7 DMX Cables

A. Manufacturers:
1. LEX
2. Four Star Wire & Cable
3. Elation

B. 10’-0” long unless otherwise specified.

C. 5-pin XLR-type connectors unless otherwise specified.

D. Heavy-duty cable construction intended for use as a portable data cable in a stage environment.

2.8 RIGGING COMPONENTS

A. Manufacturers:
1. Altman Lighting Co., Inc.
2. James Thomas Engineering Inc.
3. J. R. Clancy.

B. Battens: Existing to remain.

C. Trim and Support Cable: As required: 1/4-inch-diameter, 7x19 galvanized steel aircraft cable with a breaking strength of 7000 lb. Provide fittings complying with cable manufacturer's written recommendations for size, number, and method of installation, including a drop-forged galvanized turnbuckle to allow for leveling.

D. Trim and Support Chain: As required: Grade 80 hardened alloy steel chain rated for overhead lifting, ASTM A 391/A 391M.

E. Inserts, Bolts, Rivets, and Fasteners: Manufacturer's standard corrosion-resistant units.

F. Pipe Clamps: Malleable iron, suitable for clamping fixtures or items to pipe from 3/4 to 2 inches in OD. Arranged for horizontal rotation of yoke for aiming; equipped with T-bolt to lock alignment.

G. Safety Cables: Heavy-duty, flexible steel; 30-inch nominal length, with spring clip at one end and steel ring at other.

H. Cable Grips: Stainless steel; basket-weave type for supporting stage cables.

I. C-Clamps: All C-clamps shall be permanently marked with a load rating, The Light Source Mega-Clamp or equal.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Set permanently mounted items level, plumb, and square with ceilings and walls.

B. Indicated mounting heights are to bottom of unit for suspended items and to center of unit for wall-mounted items.

C. Mount and connect fixtures, and install and connect distribution devices.
   1. If arrangement is not indicated, install so each fixture, dimmer, house lighting circuit, control channel, and outlet circuit can be operated and complete system demonstrated in all operating modes.
   2. Install safety cables secured to stage rigging or gridiron for all pipe-mounted electrical fixtures and equipment.

D. Install and anchor dimmer boards level on existing concrete base.
   1. For new equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
   2. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   3. Install anchor bolts to elevations required for proper attachment to equipment.

E. Comply with mounting and anchoring requirements specified in Division 26 Section "Hangers and Supports for Electrical Systems."

3.2 BATTEN INSTALLATION

A. Install battens by suspending at heights indicated with trim and support cable or chain spaced to support load, but do not exceed 10 feet o.c.
   1. Cable: Secure cables either directly to structures or to inserts, eye screws, or other devices that are secure and appropriate to substrate and that will not deteriorate or fail with age or elevated temperatures. Attach other cable end to pipe clamps with turnbuckles, moused or fixed with nuts after adjustment, to prevent loosening.
   2. Chain: Secure chain with load-rated terminations.

3.3 WIRING

A. Power Wiring:
   1. Install wiring as specified in Division 26 Section "Low-Voltage Electrical Power Conductors and Cables" for hard-wired connections. Install wiring in raceways except cable and plug connections.
   2. Install power wiring with a separate neutral for each output circuit from main dimmer and for each house and stage lighting circuit.

B. Signaling, Remote-Control, and Power-Limited Circuits:
   1. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
   2. Remote-control circuits associated with emergency lighting control shall be installed complying with Class 1 Circuit standards in NFPA 70.
   3. Install data-transmission cabling as specified in Division 27 Section "Communications Copper Horizontal Cabling."

C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points.

D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

E. Remove wall plates and protect devices and assemblies during painting.

F. Support lighting fixtures, distribution components, and accessories as specified in Division 26 Section "Hangers and Supports for Electrical Systems." Equip all pipe-mounted equipment with safety cables that are secured to supporting pipe.

G. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

3.4 IDENTIFICATION

A. Identify components, power, and control wiring according to Division 26 Section "Identification for Electrical Systems."

B. Label each fixture, lighting outlet, distribution device, and dimmer module with unique designation. Make designations on elevated components readable from floor.

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

B. Schedule electrical tests and visual and mechanical inspections with at least seven days' advance notice.

C. Visual and Mechanical Tests and Inspections:
1. Inspect each fixture, outlet, module, control, and device for defects, finish failure, corrosion, physical damage, labeling by nationally recognized testing laboratory, and nameplate.
2. Exercise and perform operational tests on mechanical parts and operable devices according to manufacturer's written instructions.
3. Check tightness of electrical connections with torque wrench.
4. Verify proper protective device settings, fuse types, and ratings.
5. Record results of tests and inspections.

D. Electrical Tests: Perform tests according to manufacturer's written instructions.
1. Continuity tests of circuits.
2. Operational Tests: Connect each outlet to a fixture and a dimmer output circuit so each dimmer module, dimmer control and output circuit, outlet, and fixture in a typical operating mode will be sequentially tested. Set and operate controls to demonstrate fixtures, outlets, dimmers, and controls in a sequence that cues and reproduces actual operating functions for a typical system of the size and scope installed. Include operation and control of houselights and stage lights from each control location and station including optional plug-in control-console outlet locations. Record fixture and outlet assignments, control settings, operations, cues, and observations of performance.

E. Correct deficiencies disclosed by tests and inspections, and retest deficient items. Verify that specified requirements are met.

F. Test Labeling: After satisfactory completion of tests and inspections, apply a label to tested components indicating test results, date, and responsible organization and person.

G. Reports: Prepare a schedule of lighting outlets by number; indicate circuits, dimmers, connected fixtures, and control-channel assignments. Prepare a schedule of control settings and circuit assignments for house control channels. Prepare written reports of tests and observations. Report defective materials, workmanship, and unsatisfactory test results. Include records of repairs and adjustments made.

3.6 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting and programming system to suit actual occupied conditions. Provide up to two visits to Project outside normal occupancy hours for this purpose.

B. First night: Provide Owner support with on-site technician familiar with installed system during first performance.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain stage lighting equipment. Refer to Division 01 Section "Demonstration and Training."

END OF SECTION 26 55 61

ELECTRICAL ABBREVIATIONS

ABBREVIATIONS USED ON THE CONTRACT DOCUMENTS, INCLUDE BUT ARE NOT LIMITED TO THOSE LISTED BELOW

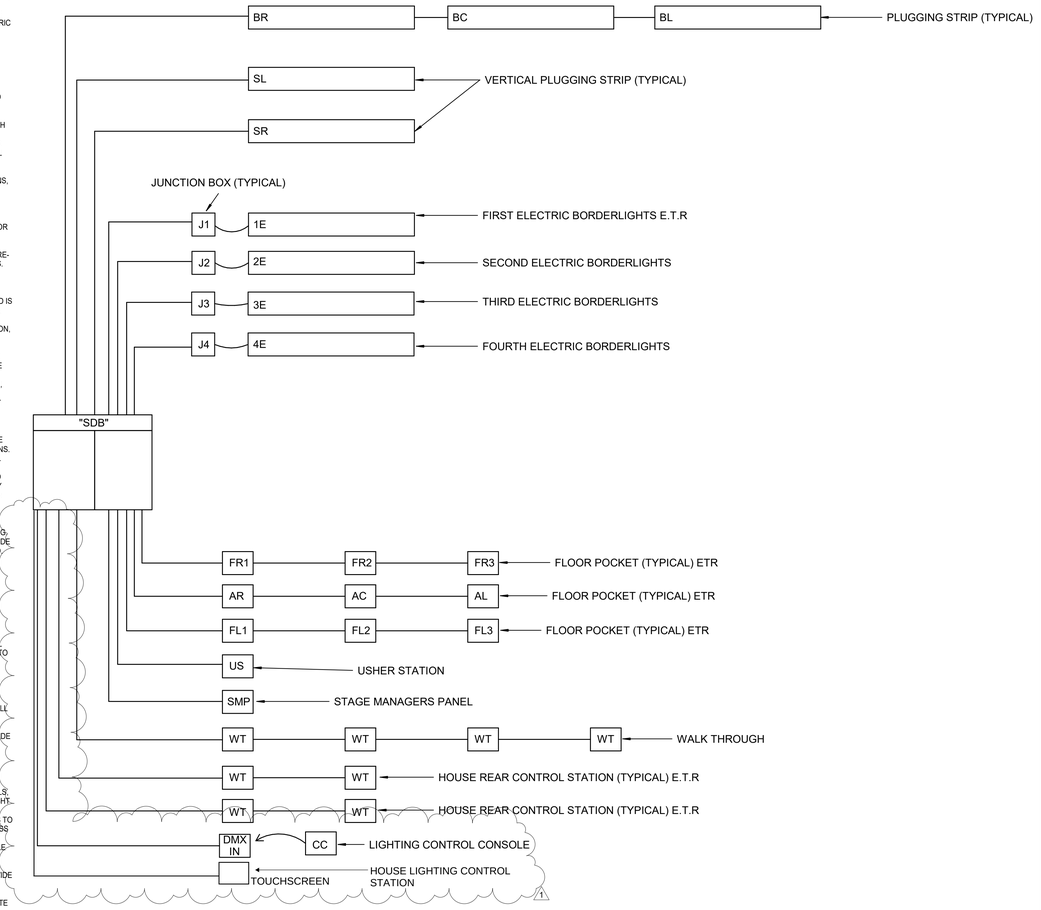
#	NUMBER
(N)P(N)W	NUMBER OF POLES, NUMBER OF WIRES
ACU	AIR CONDITIONING UNIT
AF	AMP FRAME
AFC	ABOVE FINISHED COUNTERTOP
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHU	AIR HANDLER UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AID	ADDRESSABLE INTERFACE DEVICE
AR	AS REQUIRED
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
A/V	AUDIO VISUAL
B	BLANK
BPS	BOLTED-PRESSURE CONTACT SWITCH
C	CONDUIT (GENERIC TERM FOR RACEWAY, PROVIDE AS SPECIFIED)
Cd	CANDELA
CLG	CEILING MOUNTED
CAM	CAMERA
CL	LIGHTING CONTACTOR
COL	COLUMN
CMF	COMBINATION MOTOR FUSIBLE STARTER
CUH	CABINET UNIT HEATER
D	DEMO TABLE
DC	DIRECT CURRENT
DED	DEDICATED DEVICE ON INDIVIDUAL BRANCH CIRCUIT
DF	DUAL FACE
DIA	DIAMETER
DISTR	DISTRIBUTION
DPST	DOUBLE POLE SINGLE THROW
DPDT	DOUBLE POLE DOUBLE THROW
DT	DUST-TIGHT
EBJ	EQUIPMENT BONDING JUMPER ON LOAD SIDE OF AN OVER-CURRENT DEVICE
EC	ELECTRICAL CONTRACTOR
EM	WIRED ON EMERGENCY CIRCUIT
EOL	END OF LINE
ETR	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EX	EXISTING
F	FLUSH
F@	FUSED AT
FA	FIRE ALARM
FBO	FURNISHED BY OTHERS
FCU	FAN COIL UNIT
FDN	FOUNDATION
FPB	FAN POWERED BOX
FRE	FIBERGLASS REINFORCED EPOXY CONDUIT
FS	FLOW SWITCH
H-O-A	HAND-OFF-AUTO
HTP	HEAT PUMP
KEC	KITCHEN EQUIPMENT CONTRACTOR
K/O	KNOCK-OUT
LFMC	LIQUIDTIGHT FLEXIBLE METALLIC CONDUIT
LFNC	LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT
LS	LIMIT SWITCH
LSIG	LONG TIME, SHORT TIME, INSTANTANEOUS AND GROUND FAULT TRIP ADJUSTMENTS TO BE PROVIDED ON A CIRCUIT BREAKER
LV	LOW VOLTAGE
MATV	MASTER ANTENNA TV
MBJ	MAIN BONDING JUMPER
MC/ER	MAIN CROSS-CONNECT/EQUIPMENT ROOM
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MDP	MAIN DISTRIBUTION PANEL
M.H.	MANHOLE (ON SITE PLAN)
MH	MOUNTING HEIGHT (ON PLAN), ALL MOUNTING HEIGHTS FOR DEVICE BOXES ARE FROM FINISHED FLOOR TO BOTTOM OF BOX, UNO. VERIFY OUTLET LOCATIONS WITH OTHER TRADES BEFORE ROUGH-IN
MLO	MAIN LUGS ONLY
MOD	MOTOR OPERATED DISCONNECT SWITCH
MOCP	MAXIMUM OVER-CURRENT PROTECTION
MSB	MAIN SWITCHBOARD
MSC	MOTOR STARTER CENTER
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
MZU	MULTI-ZONE HVAC UNIT
N	GROUNDED CIRCUIT CONDUCTOR (NEUTRAL)
+N	INDICATES MOUNTING HEIGHT (N) TO BOTTOM OF DEVICE FROM FINISH FLOOR, UNO
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NFS	NONFUSIBLE SWITCH
NIC	NOT IN CONTRACT
NL	NIGHT LIGHT
NM	NONMETALLIC SHEATHED CABLE
NO	NORMALLY OPEN
NRTL	NATIONALLY RECOGNIZED TESTING LAB
NTS	NOT TO SCALE
OC	ON CENTER
OCPD	OVER-CURRENT PROTECTIVE DEVICE
PA	PUBLIC ADDRESS SYSTEM
PB	PULL BOX
PE	PNEUMATIC/ELECTRIC
PH	PROPELLER HEATER
PIV	POST INDICATING VALVE
PR	PAIR
PUH	PROPELLER UNIT HEATER
R	RELEASE
RAF	RETURN AIR FAN
RT	RAIN-TIGHT
RVS	REDUCE VOLTAGE STARTER
S	SURFACE
SBJ	SYSTEM BONDING JUMPER
SIG	SIGNAL
SN	SOLID NEUTRAL
SP	SPARE
SPL	SPLICE
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SS	STAINLESS STEEL
SSBJ	SUPPLY-SIDE BONDING JUMPER
ST	SHUNT TRIP
STP	SHIELDED TWISTED PAIR
STL	CARBON STEEL
SUSP	SUSPENDED
SW	SWITCH
SWBD	SWITCHBOARD
TC	TELEPHONE CABINET
TCP	TEMPERATURE CONTROL PANEL
TEL/DATA	TELEPHONE/DATA
TEL	TELEPHONE
TERM	TERMINAL(S)
TGB	TELECOMMUNICATIONS GROUNDING BUSBAR
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUSBAR
TTB	TELEPHONE TERMINATION BOARD
UEF	UTILITY EXHAUST FAN
UG	UNDERGROUND
UNO	UNLESS NOTED OTHERWISE
UV	UNIT VENTILATOR
VG	VANDAL GUARD
VIF	VERIFY IN FIELD
VT	VAPOR-TIGHT
WG	WIRE GUARD
WH	WATTHOUR
WM	WALL MOUNTED
WP	WEATHERPROOF
WT	WATER-TIGHT

LIGHTING SYMBOLS

SYMBOL	DESCRIPTION	MH
HB	OCCUPANCY SENSOR - CEILING MOUNTED (UNO), HIGH BAY INFRARED, 360 DEGREE PATTERN, 36' DIA. COVERAGE PATTERN (MIN.) AT 20' MOUNTING HEIGHT. PROVIDE WITH RELAY OPTION.	CLG
H	OCCUPANCY SENSOR - CEILING MOUNTED, ULTRASONIC AND INFRARED SENSOR FOR CORRIDOR & HALLWAY APPLICATIONS. 56'x16' (MIN.) RECTANGULAR SHAPED COVERAGE PATTERN. PROVIDE WITH RELAY OPTION. "/\" PORTION OF SYMBOL INDICATES AIMING OF ULTRASONIC SENSORS.	CLG
CT	OCCUPANCY SENSOR - CEILING MOUNTED, DUAL TECHNOLOGY, 360 DEGREE PATTERN, 2000 S.F. COVERAGE. PROVIDE WITH RELAY OPTION. "/\" PORTION OF SYMBOL INDICATES AIMING OF ULTRASONIC SENSORS.	CLG
CD	OCCUPANCY SENSOR - CEILING MOUNTED, DUAL TECHNOLOGY, 360 DEGREE PATTERN, 2000 S.F. COVERAGE. PROVIDE WITH RELAY OPTION. "/\" PORTION OF SYMBOL INDICATES AIMING OF ULTRASONIC SENSORS. PROVIDE WITH INTEGRAL DAYLIGHT SENSOR.	CLG
CI	OCCUPANCY SENSOR - CEILING MOUNTED, INFRARED, 360 DEGREE PATTERN, 1200 S.F. COVERAGE (MIN.). PROVIDE WITH RELAY OPTION.	CLG
CU	OCCUPANCY SENSOR - CEILING MOUNTED, ULTRASONIC, 360 DEGREE PATTERN, 2000 S.F. COVERAGE. PROVIDE WITH RELAY OPTION. "/\" PORTION OF SYMBOL INDICATES AIMING OF ULTRASONIC SENSORS.	CLG
CT	OCCUPANCY SENSOR - CEILING MOUNTED, DUAL TECHNOLOGY, DIRECTIONAL/180 DEGREE PATTERN, 1200 S.F. COVERAGE (MIN.). PROVIDE WITH RELAY OPTION. PROVIDE WITH CEILING MOUNTING BRACKET ACCESSORY IF NOT SUPPLIED AS STANDARD WITH SENSOR. "/\" PORTION OF SYMBOL INDICATES AIMING.	CLG
CI	OCCUPANCY SENSOR - CEILING MOUNTED, INFRARED, DIRECTIONAL/180 DEGREE PATTERN, 1200 S.F. COVERAGE (MIN.). PROVIDE WITH RELAY OPTION. PROVIDE WITH CEILING MOUNTING BRACKET ACCESSORY IF NOT SUPPLIED AS STANDARD WITH SENSOR. "/\" PORTION OF SYMBOL INDICATES AIMING.	CLG
WT	OCCUPANCY SENSOR - WALL MOUNTED, DUAL TECHNOLOGY, 180 DEGREE PATTERN, 1200 S.F. COVERAGE (MIN.). PROVIDE WITH RELAY OPTION.	96"
WI	OCCUPANCY SENSOR - WALL MOUNTED, INFRARED, 180 DEGREE PATTERN, 1200 S.F. COVERAGE (MIN.). PROVIDE WITH RELAY OPTION.	96"
ST	OCCUPANCY SENSOR - WALL SWITCH TYPE, DUAL TECHNOLOGY WITH MANUAL OVERRIDE SWITCH	44"
ST 2	OCCUPANCY SENSOR - DUAL LEVEL WALL SWITCH TYPE, DUAL TECHNOLOGY WITH MANUAL OVERRIDE SWITCH	44"
SI	OCCUPANCY SENSOR - WALL SWITCH TYPE,INFRARED WITH MANUAL OVERRIDE SWITCH	44"
DS	DAYLIGHT SENSOR	CLG
-K	KEY OPERATED SWITCH, NUMBER INDICATES NUMBER OF POLES, 277V, 20A, FLUSH UNO	44"
-3	SWITCH, NUMBER INDICATES NUMBER OF POLES, 277V, 20A, FLUSH UNO	44"
-MK	MOMENTARY CONTACT SNAP KEYED SINGLE POLE SWITCH, DOUBLE THROW, CENTER-OFF	44"
-MC	MOMENTARY CONTACT SNAP SINGLE POLE SWITCH, DOUBLE THROW, CENTER-OFF	44"
-L	SINGLE POLE SWITCH, 277V, 20A, FLUSH UNO WITH LIGHTED HANDLE	44"
-a	SINGLE POLE SWITCH, 277V, 20A, FLUSH UNO TYPICAL. SUBSCRIPT a, b, c INDICATES WHICH LUMINAIRE THAT WILL BE CONTROLLED VIA SWITCH LEG	44"
-P	SINGLE POLE SWITCH, 277V, 20A, FLUSH UNO WITH PILOT LIGHT	44"
-D	WALL BOX DIMMER 277V, 1200 WATT MINIMUM, FLUSH, UNO. PROVIDE WATTAGE SIZE TO EXCEED CIRCUIT LOAD	44"
LC	LIGHTING CONTACTOR, MECHANICALLY HELD, 30A - 3P WITH H-O-A SWITCH, UNO	48"
LC	COMBINATION LIGHTING CONTACTOR, MECHANICALLY HELD, WITH H-O-A SWITCH AND 30A - 3P CIRCUIT BREAKER, UNO	48"
LRP	LIGHTING RELAY PANEL	-
	DOWNLIGHT LUMINAIRE, APPROXIMATE SIZE INDICATED	-
	DOWNLIGHT LUMINAIRE CONNECTED TO EMERGENCY SYSTEM AS INDICATED	-
	WALL SCONCE LUMINAIRE	-
	WALL MOUNTED EXIT SIGN, DIRECTIONAL ARROWS AS SHOWN	96"
	CEILING MOUNTED EXIT SIGN, SHADED PORTION(S) INDICATES SINGLE OR DOUBLE FACE	CLG
	ARM MOUNTED AREA LUMINAIRE	-
	POLE TOP AREA LUMINAIRE	-
	TRACK HEAD LUMINAIRE	-
	EMERGENCY LIGHTING UNIT WITH 2 HEADS AND BATTERY	76"
	WALL-BRACKET LUMINAIRE, APPROXIMATE SIZE INDICATED	-
	WALL-BRACKET LUMINAIRE CONNECTED TO EMERGENCY SYSTEM AS INDICATED	-
	RECESSED LUMINAIRE, APPROXIMATE SIZE INDICATED. ("NL", INDICATES NIGHT LIGHT FIXTURES)	CLG
	RECESSED LUMINAIRE CONNECTED TO EMERGENCY SYSTEM AS INDICATED	CLG
	SURFACE OR PENDANT MOUNTED LUMINAIRE, APPROXIMATE SIZE INDICATED	CLG
	SURFACE OR PENDANT MOUNTED LUMINAIRE CONNECTED TO EMERGENCY SYSTEM AS INDICATED	CLG
	PENDANT LUMINAIRE, APPROXIMATE SIZE INDICATED	CLG
	PENDANT LUMINAIRE CONNECTED TO EMERGENCY SYSTEM AS INDICATED	CLG
	AIMABLE LUMINAIRE, CARROT INDICATING DIRECTION OF AIMING	-

ELECTRICAL GENERAL NOTES

1. THE TERM "PROVIDE" INDICATES CONTRACTOR SHALL FURNISH AND INSTALL ITEMS AND CONNECT AS REQUIRED TO OBTAIN A COMPLETE AND OPERABLE SYSTEM.
2. COORDINATE DEVICE LOCATIONS WITH ARCHITECTURAL PLANS, CASEWORK, WINDOWS, WALL FINISHES, EQUIPMENT , AND OTHER TRADES PRIOR TO ROUGH IN. DEVICES ARE INTENDED TO BE ACCESSIBLE, DO NOT INSTALL BEHIND CASEWORK, DOORS OR EQUIPMENT UNLESS INDICATED ON PLANS. NOTIFY ARCHITECT IN WRITING OF CONFLICTS PRIOR TO PROCEEDING WITH WORK.
3. WORK SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF ALL LOCAL, STATE AND NATIONAL CODES INCLUDING, BUT NOT LIMITED TO NFPA 70 (NATIONAL ELECTRIC CODE), NFPA 72, NFPA 101, INTERNATIONAL BUILDING CODE, ETC.
4. CONFLICTS BETWEEN THE APPLICABLE CODES, STANDARDS, AND THE PLANS AND SPECIFICATIONS SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING PRIOR TO PROCEEDING WITH WORK.
5. REFER TO E8.1 FOR LUMINAIRE SCHEDULE.
6. REFER TO E8 SERIES FOR PANEL SCHEDULES.
7. E3 SERIES DRAWINGS ARE FOR TECHNOLOGY ROUGH-INS
8. REFER TO TECHNOLOGY PLANS, T1 SERIES FOR COMMUNICATIONS, SECURITY AND ACCESS CONTROL.
9. CONTRACTOR SHALL FOLLOW SEISMIC RESTRAINT AND DESIGN REQUIREMENTS CONTAINED IN LATEST ADOPTED STATE AND INTERNATIONAL BUILDING CODES WITH ALL AMENDMENTS AS ADOPTED.
10. ADDITIONAL ELECTRICAL REQUIREMENTS MAY BE SHOWN ON PLANS FROM OTHER DISCIPLINES IN THIS SET. IT IS THE CONTRACTOR'S RESPONSIBILITY TO REVIEW ALL PLANS AND SPECIFICATIONS FOR A COMPLETE UNDERSTANDING OF THE PROJECT REQUIREMENTS.
11. WHERE CONFLICTS ARE FOUND BETWEEN DRAWINGS, DETAILS, OR SPECIFICATIONS, THE MORE STRINGENT REQUIREMENT SHALL APPLY. NOTIFY ARCHITECT OF DISCREPANCY IN WRITING.
12. INITIATING WORK CONSTITUTES CONTRACTOR ACCEPTANCE OF THE EXISTING CONDITIONS ASSOCIATED WITH THE WORK IN QUESTION.
13. CONTRACTOR SHALL CONTACT UTILITIES AND VERIFY UTILITY REQUIREMENTS PRIOR TO COMMENCING CONSTRUCTION. CONFLICTS BETWEEN UTILITY REQUIREMENTS AND THE PLANS OR SPECIFICATIONS SHALL BE SUBMITTED TO THE ARCHITECT IN WRITING PRIOR TO PROCEEDING WITH WORK. CONTRACTOR SHALL ARRANGE A PRE-CONSTRUCTION MEETING WITH THE UTILITY COMPANY TO REVIEW REQUIREMENTS. INCOMING SERVICE CONDUITS AND SUBSTRUCTURES SHALL BE INSTALLED PER UTILITY COMPANY STANDARDS.
14. THESE DRAWINGS AND SPECIFICATIONS DO NOT INDICATE METHODS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND IS RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, PROCEDURES, AND SAFE PRACTICES.
15. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND CANNOT SHOW EVERY CONNECTION, JUNCTION BOX, WIRE, AND CONDUIT, ETC. THE EXACT LOCATIONS AND ARRANGEMENT OF PARTS SHALL BE DETERMINED AS THE WORK PROGRESSES. ITEMS NOT INDICATED ON DRAWINGS REASONABLY INFERRED TO BELONG TO THE WORK DESCRIBED SHALL BE FURNISHED AND INSTALLED TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM.
16. WORK SHALL BE COORDINATED WITH EXISTING CONDITIONS, NEW CONSTRUCTION, OWNER'S VENDORS, OTHER TRADES, AND THEIR DOCUMENTS. THE CONTRACTOR SHALL VISIT THE SITE BEFORE SUBMITTING HIS BID. CONTRACTOR SHALL CONTACT OWNER FOR AN APPOINTMENT TO VISIT THE SITE.
17. AN INSULATED GROUND CONDUCTOR SIZED PER NEC SHALL BE PROVIDED WITH EACH FEEDER AND BRANCH CIRCUIT.
18. PROVIDE A DEDICATED NEUTRAL FOR EACH LINE TO NEUTRAL CIRCUIT. MULTI-WIRE BRANCH CIRCUITS ARE NOT PERMITTED UNLESS SPECIFICALLY INDICATED ON PLANS.
19. MINIMUM WIRE SIZE IS #12 AWG. SEE SPECIFICATIONS FOR MINIMUM CONDUIT SIZE.
20. CONDUIT SHALL BE CONCEALED WHEREVER POSSIBLE ABOVE CEILINGS, INSIDE WALLS, OR UNDER FLOOR SLAB WHERE SHOWN ON DRAWINGS. IN AREAS WITH NO CEILING, RUN EXPOSED CONDUIT AS HIGH AS POSSIBLE AND PARALLEL TO NEARBY SURFACES OR EXISTING RACEWAYS. CONDUIT SHALL NOT BE INSTALLED IN FLOOR SLAB UNLESS SPECIFICALLY INDICATED ON PLANS AND WHERE APPROVED BY STRUCTURAL ENGINEER. DO NOT INSTALL MC CABLE IN EXPOSED LOCATIONS.
21. CONTRACTOR SHALL PROVIDE RIGID METAL SLEEVES TO FACILITATE PATHWAYS THROUGH FULL HEIGHT WALLS FOR ELECTRICAL AND TELECOMMUNICATION WIRING.
22. PROVIDE TEMPORARY OR PERMANENT END CAPS FOR STUBBED CONDUITS. PROVIDE INSULATED THROAT BUSHINGS FOR CONDUITS INTENDED TO REMAIN OPEN ENDED.
23. SEE ARCHITECTURAL PLANS FOR LOCATIONS OF FIRE RATED ASSEMBLIES AND SMOKE BARRIERS. SEAL PENETRATIONS IN ACCORDANCE WITH UL AND PROJECT SPECIFICATIONS.
24. MOUNTING HEIGHTS FOR WALL MOUNTED DEVICES INDICATED ABOVE FINISHED FLOOR ARE TO BOTTOM OF DEVICE UNO. MOUNTING HEIGHTS TO CEILING SUSPENDED DEVICES ARE TO BOTTOM OF DEVICE UNO.
25. PROVIDE SOUND INSULATING PUTTY AROUND DEVICES INSTALLED ON OPPOSITE SIDES OF A WALL IN THE SAME VERTICAL CHANNEL. IF DEVICES ARE LOCATED AT LEAST 8" HORIZONTALLY APART NO SOUND INSULATING PUTTY IS REQUIRED.
26. COORDINATE CEILING MOUNTED DEVICES WITH MECHANICAL AND ARCHITECTURAL REFLECTED CEILING PLANS. NOTIFY ARCHITECT IN WRITING OF CONFLICTS PRIOR TO PROCEEDING WITH WORK.
27. JUNCTION BOXES LOCATED ABOVE ACCESSIBLE CEILINGS SHALL BE LOCATED NO MORE THAN 36" ABOVE CEILING LEVEL. LABEL EACH BOX IN AREA OF WORK WITH A PERMANENT MARKER OR IN ACCORDANCE WITH SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
28. CONDUITS DESIGNATED AS EMPTY OR FUTURE SHALL BE PROVIDED WITH A #12 PULL LINE. OPEN ENDED CONDUITS SHALL BE PROVIDED WITH INSULATED THROAT BUSHINGS.
29. FOR LUMINAIRES, CIRCUIT NUMBER IS SHOWN ONLY ONCE IN EVERY ROOM. PROVIDE CIRCUIT INDICATED TO EVERY LIGHT FIXTURE INDICATED IN SAME ROOM UNLESS OTHERWISE INDICATED.
30. QUANTITY AND LOCATION OF TAMPER AND FLOW SWITCHES IS FOR BIDDING PURPOSES ONLY. VERIFY EXACT QUANTITY AND LOCATIONS WITH SPRINKLER CONTRACTOR PRIOR TO FIRE ALARM SHOP DRAWING SUBMITTAL.
31. ELECTRICAL PANELS INCLUDING BUT NOT LIMITED TO FIRE ALARM CONTROL PANELS, LIGHTING CONTROL PANELS, POWER DISTRIBUTION WILL HAVE A MAX DEVICE HEIGHT OF 72" AFF.
32. PROVIDE GROUNDING TYPE EXPANSION FITTINGS OR OTHER APPROVED METHODS TO ALLOW FOR EXPANSION, CONTRACTION, AND DEFLECTION WHERE CONDUITS CROSS BUILDING EXPANSION JOINTS.
33. PROVIDE SEPARATE RACEWAY FOR EMERGENCY SYSTEM WIRING PER NEC ARTICLE 700. MINIMUM WIRE SIZE #10AWG.
34. ALL CONDUITS SHALL INCLUDE AN INSULATED GROUND WIRE, SIZED PER N.E.C.
35. AUTODOORS AND WHEELCHAIR LIFT PROVIDED AND INSTALLED BY OTHERS. PROVIDE CONDUIT AND BOX ROUGH-INS FOR MOTORS AND PUSHBUTTONS. MAKE FINAL POWER CONNECTIONS. ALL CONTROL WIRING BY OTHERS.
36. MASONRY LOAD-BEARING WALLS AND MASONRY SHEAR WALLS: DO NOT PENETRATE CMU WALLS INDICATED AS BEARING WALLS AND SHEAR WALLS ON STRUCTURAL DRAWINGS UNLESS NOTED OTHERWISE ON PLAN. DO NOT CORE THROUGH CMU BOND BEAMS OR LINTELS. DO NOT CUT ANY VERTICAL REINFORCING IN CMU WALLS. OBTAIN PRIOR APPROVAL FROM ENGINEER BEFORE PENETRATING ANY OF THE STRUCTURAL ELEMENTS LISTED ABOVE.
37. CONCRETE BEARING WALLS AND BEAMS: DO NOT PENETRATE CONCRETE WALLS INDICATED AS BEARING WALLS AND SHEAR WALLS ON STRUCTURAL DRAWINGS UNLESS NOTED OTHERWISE ON PLAN. DO NOT CORE THROUGH CONCRETE BEAMS , GIRDERS, OR COLUMNS. DO NOT CUT ANY VERTICAL REINFORCING IN CONCRETE WALLS. OBTAIN PRIOR APPROVAL FROM STRUCTURAL ENGINEER BEFORE PENETRATING ANY OF THE STRUCTURAL ELEMENTS LISTED ABOVE.
38. STEEL FRAMING: DO NOT CUT OR CORE THROUGH ANY STRUCTURAL STEEL BEAMS, GIRDERS, OR COLUMNS UNLESS NOTED OTHERWISE ON PLAN. NOTIFY ENGINEER OF POTENTIAL CONFLICTS BETWEEN FRAMING AND ELECTRICAL WORK.
39. CONCRETE FLOOR SYSTEMS (APPLIES TO CONCRETE BLDG. OR STEEL WITH CONCRETE DECK, MASONRY W/ CONC. FLOOR): DO NOT CUT HOLES OR CORE THROUGH CONCRETE FLOOR SLAB UNLESS NOTED OTHERWISE ON PLAN OR IN TYPICAL STRUCTURAL DETAILS. PENETRATIONS THROUGH EXISTING SLABS SHALL BE X-RAYED PRIOR TO CORING HOLES. NO EXISTING REINFORCEMENT SHALL BE CUT WITHOUT PERMISSION OF THE STRUCTURAL ENGINEER. PENETRATIONS THROUGH EXISTING BEAMS AND COLUMNS IS NOT PERMITTED.



PORTAGE HIGH SCHOOL AUDITORIUM UPGRADES

6450 US Hwy 6
Portage, IN 46368

Portage Township Schools

ARCHITECT

FANNING HOWEY

317-848-0966 WWW.FHAI.COM

350 East New York Street

N

CONSTRUCTION DOCUMENTS

BRIAN W. BUTLER REGISTERED No. PE19900085 STATE OF PROFESSIONAL ENGINEER

DRAWN BY: Author

PROJECT NUMBER: 223151.00

PROJECT ISSUE DATE: 03.06.2024

REV. NO.	DESCRIPTION	DATE
1	ADDENDUM #1	03/22/2024

ELECTRICAL SYMBOLS & ABBREVIATIONS

E-001

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